



20th Conference on Postgraduate Research
International Postgraduate Research Conference
2019

**"Sustaining Multidisciplinary Research through Digital
Transformation/s"**

Abstracts

December 30, 2019



Faculty of Graduate Studies
University of Kelaniya, Sri Lanka

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20th Conference on Postgraduate Research

"Sustaining Multidisciplinary Research through Digital Transformation/s"

Abstracts

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Faculty of Graduate Studies

University of Kelaniya

Sri Lanka



Message from the Vice-Chancellor



It is with great pleasure that I welcome you to the International Postgraduate Research Conference 2019 organized by the Faculty of Graduate Studies, University of Kelaniya.

It is a great honor for us to host IPRC 2019, which is a forum for researchers and scholars to share knowledge, information, exchange experiences, to present innovative concepts and research related to all areas of Commerce and Management, Science, Medical Sciences, Humanities, Social Sciences and Computing and Technology for sustainable development, and to promote the quality of life.

In addition, the conference will also lead to future research collaborations and strengthening of common network with over 200 participants both from local and overseas. The presentations and deliberations will bring up great opportunity to gain insightful knowledge about the projects being conducted in the region. Through the interaction, we expect to stimulate an active research environment that is relevant to our communities.

I would like to thank and congratulate the Dean of the Faculty of Graduate Studies, the organizing committee, and the supporting staff for organizing this event. I would also like to thank the researchers, reviewers, editors and other academics who contributed to sustaining the core values of quality and innovation throughout this conference. I wish the conference and all the presenters all the very best.

Professor D. M. Semasinghe
Vice-Chancellor
University of Kelaniya
Sri Lanka

Message from the Chairman, Research Council



It is with great pleasure that I issue this message on the occasion of the International Postgraduate Research Conference 2019 (IPRC – 2019) organized by the Faculty of Graduate Studies, University of Kelaniya. IPRC is the principal research conference of the University of Kelaniya participated by all the Faculties and it provides a platform for its academic staff to highlight their research contribution towards the advancement in diverse fields of Humanities, Social Sciences, Science, Commerce & Managements, Medicine and Computing & Technology.

Research and innovation is the mainstay for economic development of a nation and mission of the University Research Council is to promote research excellence among its academic staff to make a significant contribution to the knowledge enhancement and national development. I am very pleased to note that our University community at present is highly motivated and involved in high quality scientific research with the objective of achieving the national development goals of Sri Lanka.

The University Research Council has established a research culture within the University community by providing financial support to conduct research symposia at the Departmental and Faculty levels and University level in addition to rewarding researchers individually. Academic staff members of the University in diverse academic and scientific disciplines have regularly published their research findings in reputed international journals and therefore the Research Council has taken steps to recommend them for senate honours and cash prizes to be awarded by the Vice Chancellor.

I am happy to state that the new action plan introduced by the Research Council has improved the quality of research which will presented at this premier conference IPRC 2019 and I hope the presenters will be able to publish their findings in high impact indexed journals.

I wish to congratulate Dean of the Faculty of Graduate studies and the organizing committee for their untiring efforts in organizing IPRC 2019 as a University level symposium in a highly successful manner. I hope that this conference will provide a stage to presenters and participants representing scientists, professionals and academia to present their research under the theme "**Sustaining Multidisciplinary Research through Digital Transformation/s**" and also to find opportunities to interact, exchange ideas and to develop research collaborations locally and internationally. I wish this conference all the success.

Senior Prof. N.P. Sunil-Chandra
Chairman of the Research Council
University of Kelaniya
Sri Lanka

Message from the Dean, Faculty of Graduate Studies



It is with much pleasure that I write this message for the 20th International Postgraduate Research Conference, 2019 organized by the Faculty of Graduate Studies. This annual conference organized by the Faculty of Graduate Studies remains a favorite venue for local and international scholars to exchange their research and ideas.

Research over the years has grown in multiple directions, sustaining the interest in academic inquiry into new knowledge. Multidisciplinary and interdisciplinary research has been able to push the academic inquiry onto new frontiers creating new avenues, new disciplinary interests and new world views. Digitising and digital platforms have added the needed sustainability to academic inquiry making research and expanding critical horizons a possibility, ushering academic inquiry into a digital age, thus creating exciting new platforms and avenues for research and researchers to grow.

Drawing on these new trends of sustaining multidisciplinary research and interdisciplinary inquiry into new knowledge frontiers through digitizing and digital transformations, this year's International Postgraduate Research Conference focuses on "Sustaining Multidisciplinary research through Digital Transformation/s". We believe horizons in research should be expanded and experimented with to provide new knowledge and thus invite papers that inquire into disciplinary differences and specificities that expand and sustain new ideas through digital transformations in their different fields and through their collaborative efforts. We welcome papers that focus on the relation between disciplinary specificity that strengthens collaborative work and introduce new means of preserving and sustaining research integrity through digitising and digital transformations in the following broader tracks; Humanities, Social Sciences, Science, Medical Research, Commerce and Management and Computing and Technology.

IPRC- 2019, now in its 20th year, remains a pioneering conference that has established a strong tradition of research at the University of Kelaniya. Its cross-disciplinary focus draws scholars from across over seven disciplines from around the world to this conference annually. This year, too the conference was organized using an online conference management platform that facilitated a smooth organizing process and better data management in registration and reviewing. I trust that our participants will benefit much from these innovative interventions and I hope that this conference will stimulate future collaborative interventions in the field of interdisciplinary research in Sri Lanka. I wish all the participants all my best!

Professor Ariyaratna Jayamaha

Conference Chair and
Dean
Faculty of Graduate Studies
University of Kelaniya
Sri Lanka

Editor's Note



International Postgraduate Research Conference (IPRC) 2019 organized by the Faculty of Graduate Studies (FGS), University of Kelaniya, Sri Lanka revolves around the theme of “Sustaining Multidisciplinary Research through Digital Transformation/s”. This theme is consistent with the research culture inculcated within the University of Kelaniya to promote new knowledge and its application towards betterment of world of work and society as a whole. Digital transformation requires specific organizational structures and bears consequences for the metrics used to calibrate performance. Digital transformation encompasses digitization, digitalization, and digital transformation. With this background, it is worth to note that FGS provided a research agenda to stimulate and guide future research focusing on multidisciplinary research on digital transformation.

IPRC is a unique conference, because instead of limiting itself to a single subject discipline or traditional branch of knowledge it covers all disciplines in the higher education domain. For many years, the advancement of knowledge in Asian civilization has taken a path of increasing specialization. We have approached understanding our world by deconstructing it into smaller and smaller fragments creating the disciplines and sub-disciplines in order to be able to predict, or at least to explain, behaviour in nature, individuals, and society. Interdisciplinary research moves beyond simple collaboration and teaming to integrate data, methodologies, perspectives, and concepts from multiple disciplines in order to advance fundamental understanding or to solve real world problems. Interdisciplinary research requires either that an individual researcher gains an in-depth understanding of more than one discipline and be fluent in their languages and methodologies, or more frequently that multidisciplinary teams assemble and create a common language and framework for discovery, innovation and creativity. I appreciate the enormous efforts put forth by authors to compile research abstracts to IPRC 2019. In addition to that I value the contribution of eminent review panel of reviewing research abstracts. Further, it is worth to admire involvement of faculty coordinators and staff of the FGS in this endeavor.

I wish all the success for IPRC 2019.

Professor P. M. C. Thilakerathne

Chief Editor/ IPRC 2019

Director, Center for Distance & Continuing Education

University of Kelaniya

Sri Lanka

Keynote Speaker – Profile

Prof. Kishore Singh
Central Queensland University, Australia



Prof. Kishore Singh is a Senior Lecturer in Accounting Data Analytics at Central Queensland University. He holds a PhD from the University of Southern Queensland, specializing in Fraud Detection in Enterprise Systems. He has further qualifications in computer science, electronic engineering, and business. He is a Certified Fraud Examiner. Kishore has broad experience in the Information Systems industry. He has an excellent track record in IT security, network and systems management, and software development. Kishore has worked in several roles in South Africa and United Kingdom. His research interests are in the areas of continuous auditing and continuous monitoring, data visualization, forensic accounting and fraud detection in enterprise systems. He has published several journal articles in these areas. Kishore spent several years researching and developing methods and procedures for fraud detection in SAP enterprise systems. His work involved designing and building systems for fraud detection. Kishore has consulted for large local and international firms in the area of forensic analytics and anti-money laundering. He applies the methods and techniques developed in his research to identify anomalous activities in enterprise systems.

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Firm Characteristics and Intellectual Capital Disclosure: Evidence from Sri Lanka

Viraj Weerawickrama¹, Prabath Perera²

The purpose of this study is to examine the level of voluntary intellectual capital disclosure (ICD) by Sri Lankan listed companies and to evaluate four main company characteristics; industry type, listing age, leverage and auditor type on ICD.

In current context ICD has identified as one of the most significant factors in creating and maintaining stakeholder value and gaining competitive advantages for the organization. Majority of these disclosures are qualitative, non-financial and historical oriented.

In this study the level of ICD is examined in all non-financial traded companies (222) listed in the Colombo Stock Exchange using content analysis for the period of 2016 to 2018. The results of the study show that; the industry type has a significant impact on the disclosure level while, listing age and leverage did not show any significant influence on ICD. Further, knowledge-intensive and high technology-based industries as well as companies with Big Four auditors showed higher level of ICD than other companies. All other companies except previously mentioned, showed a homogeneous disclosure patterns over time. This study contributes new insights to the existing literature on ICD in Sri Lanka as the first study to consider all listed non-financial companies, while inviting future researchers to conduct more ICD related research for a considerable time period with different content analysis techniques.

Keywords: Firm Characteristics; Intellectual Capital; Disclosure; Sri Lanka

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Buddhist Philosophy for Business Management

Dinusha Dissanayake¹

In 2500 years ago Buddhism was founded by Siddhārtha Gautama in India and concentrates on the essentials of spiritual development of humans and deep insight to enhance the ethics and moral for better life. According to the James A.F stoner defines management is a process of planning, organizational, observation and guidance of effort all organizational member and usage of resource, other organizational to be reaching the target of organization. In this sense Effective decision making is the inherent responsibility of the managers. When studies the Buddhist Philosophy There are several teachings found in related to Business management. There are many scholars that that done researches in Buddhist Philosophy and Management but still a gap in focus of Business management align with four functions of business management including **People management, Finance management, marketing management and Production management** with holistic view. Therefore this study fills the above literature gap. The objectives of this study were to review the Buddhist Philosophy for Business Management aligns with four functions of business management. The methodology applied in this study was qualitative and developed as a concept paper through historical documentary review with the purpose of examines Buddhist teaching for Business Management. **People management** in Buddha's Philosophy it leads to enhance the human's spiritual development with greater moral and balanced life to develop mindfulness worker. This will increase the organization productivity. In **Finance management** according to the Buddha's teaching if any person does not manage money properly it will become Black Cobra. Buddha suggested that the amount generated through business should not be fully expended for domestic use. There are four ways to use that money. First divided that in to four parts two can reinvest to the business and one part for expenses and one for savings. Also in Buddhist teaching clearly stated that loans and debts should be returned on time. Considering the **Marketing management** in several jātakas of Buddhist literature clearly mentioned that how to sell the products and services to the people with ethical behavior, kind speech, honesty and selling quality products. (Seri Vanija Jathaka). In talking about **Production management** According to the Buddha's teaching the five precepts and the meditation provides the smooth operations of production through people. This will minimized alcohol addictions, industry disputes, accidents, conflicts among people. The findings of the review revealed that there were valuable teachings, approaches and practices in Buddhist Philosophy that can apply business management context in all over the word. Some people believe that business can be success through only manipulations, frauds and misappropriation. But Buddhist Philosophy revealed that it can gain by being honest, morality and through ethics.

Keywords: “ Buddhist Philosophy; People management; Finance management; Marketing management; Production management”

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Business Failure of Small and Medium Enterprises - A Review

B.E.A. Jayasekara¹, P.N.D. Fernando², R.P.C.Ranjani³

Small and Medium enterprises are back born of developed and developing economies around the world. However the sector has not provided desired level of contribution and suffers from high failure rate in worldwide. The main purpose of this study is to critically evaluate the causes of failure of SMEs based on literature. The objectives of this study is to determine the causes of failure of SMEs, critically evaluate the literature on small and medium business failure theories as well as lessons that could be learnt from the existing literature and to determine the methods of improving the business success to achieve sustainable economic development. The methodology used this study to review literature systematically using sample of 95 studies selected from most relevant articles published from 1968-2016 and critically appraised and synthesized findings qualitatively. The Small and Medium business can be failed due to an inability to achieve certain goals due to activating opposition forces, tensions between assets against liabilities, limited access to finance, unbeatable competition, isolation, inadequate staff, wrong pricing, lack of co-operation, technical insolvency, inability to satisfy principal stakeholder's aspirations, losses to creditors, cessation of operations, termination due to under performance, involuntary change in both the ownership and management of the business owing to poor performance, unable to meet liabilities, not made profit for the previous three years, sale of the firm or personal decision by the owner to accept employment with another firm, fall in revenue, rise in expenses becomes insolvent ,unable to attract new debt or equity funding, cannot continue to operate under the current ownership and management, exiting the economy or not meeting the "performance threshold" of the market, owner's personalized management style, end state, liabilities exceeds the value of the company's available assets, decline and deterioration of financial performance, revenue does not sufficiently exceed costs, decline performance, deviation from goals, continuous performance lapses, inability of a business to meet its financial obligations, economic failure, venture failure, outcomes less than the expectations, poor management practices, overtrading, lack of additional resources, resource insufficiency, unbalance of the resources and opportunities in the organizational life stages, lack the necessary skills or versatility, entrepreneurs lack of strategic management knowledge, entrepreneur's lack of vision, threat rigidity, strategic persistence, lack of will, lack of turnaround strategies and inability to respond effectively and make necessary adjustments to reverse the downward spiral of decline triggered by external factors. The literature recommend, failures can be mitigate through improving business management skill of the entrepreneurs, continuous concentration on cost reduction, quality improvements, service / product innovation; breakdown organizational barriers between departments; create close relationship with customers and suppliers, eliminating layers of management ,creating flatter organizational hierarchies, transform to advanced latest technology, global focus and enhancing human resource skills and obtain decisions based on the group discussions. The findings of the study useful in identifying practices to be avoided and in aiding educators, consultants, and SME business support agencies in meeting the needs of the business community.

Keywords: "Business Failure, Small and Medium Enterprises, Business Management Capabilities, Organizational issues, Systematic risk and unsystematic risk"

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Influence of Corporate Governance on Leverage Structure in Sri Lankan Manufacturing Companies

Prabath Perera¹, P.R.M.R. Perera²

Leverage structure of manufacturing companies provide an indication of the financial health of the company, while number of factors affect the leverage structure decision. Governance is the mechanism that controls decisions of the company that includes leverage structure decisions. The objective of this study is to examine the influence of corporate governance on leverage structure decision making in Sri Lankan manufacturing firms. Data collected from annual reports of manufacturing sector companies for the period from 2014 to 2018 were analyzed using panel data.

The study identified board size, board composition, managerial ownership, board independence, institutional ownership and CEO duality as corporate governance attributes to measure their influence on leverage structure decision making. Firm Size and profitability were employed for control purpose. Findings of the study reveal a significant influence of corporate governance attributes of CEO duality and board independence on leverage structure with a moderate effect of firm Size and profitability.

Keywords: Firm Characteristics; Intellectual Capital; Disclosure; Sri Lanka

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Ethics and Entrepreneurial Behavior; A Study based on Chartered Engineers in Sri Lanka

D.P.S. Wijesinghe¹, V.P.T. Jayawardane², S.W.S.B. Dasanayaka³

Many innovative-minded chartered engineers have become successful technology entrepreneurs around the world. Thus, a tremendous responsibility lies upon these engineers to behave and perform ethically in today's competitive business world to create a sustainable world. Being professionally ethical does not always give positive results in businesses. Although the case is like that, as business leaders who manage their technological ventures, entrepreneurial professional engineers cannot neglect Engineering Ethics and perform entirely as pure business managers. But, novice engineers who just stepping to techno-entrepreneurship are showing a dilemma in adhering to Engineering Ethics from the beginning of their entrepreneurial journey. Hence, there is a blooming requirement for a deep study to ascertain the implications of Engineering Ethics on entrepreneurial behavior and corporate performance of professional engineers working as techno-entrepreneurs. The research literature also does not contain sufficient evidence of such investigation around the world. In this context, this study is designed to ascertain the implications of Engineering Ethics focusing on Chartered Engineers working as techno-entrepreneurs in the Sri Lankan industrial sector. The main methodology intended for the study will be qualitative with semi-structured face to face interviews with experienced chartered engineers working as techno-entrepreneurs in Sri Lanka. The main analysis methods will be based on grounded theory techniques. A framework, which can be developed from such a study to guide the impact of Engineering Ethics on entrepreneurial behavior and corporate performance of engineers working as techno-entrepreneurs will be helpful for current and future entrepreneurial engineers. This will assist them to make ethical decisions without a dilemma as professional engineers to create a sustainable business culture in technological ventures in Sri Lanka.

Keywords: Behavior; Engineers; Ethics; Implications; Techno- Entrepreneurs

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The Impact of Green Marketing on Consumer Purchase Intention: Evidence from Sri Lanka

R.A.S. Rajapaksha¹, K.K. Tilakasiri²

The environmental issue is the common and major problem faced by every single country's government. This situation leads to accept the concept of Green Marketing in most of firms. Due to the increasing of global warming and climate changing, the public concern about environmental problem is continuously increased over the past decades. Most consumers and businesses have begun to move to eco-friendly products as they pay more concern on the environment, health and wealth. The aim of this study is to identify the impact of Green Marketing on Consumer purchase intention toward personal care products. Based on the literature review, three Green Marketing tools were identified which are predicted Consumer's purchase intention. They are Eco labeling, Eco brand and Environmental advertisements. The study is mainly based on the primary data. The primary data were collected through closed structured questionnaire from 397 respondents from Colombo district and used unilabiate and bivariate analysis techniques in order to analyze data and find the results of study objectives. The results show that Eco brand is having high level of contribution to determine the purchase intention of consumers and Green Marketing dimensions significantly and positively impact on Consumer's purchase intention and among them Eco labeling and environmental advertisements having more impact on consumer purchase intention towards personal care products. Thus findings of the study are significant and practical implication in marketing.

Keywords: "Green Marketing, Consumer Purchase Intention, Eco Labeling, Eco Brand, Environmental Advertisements"

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Impact of Customer Orientation on Brand Equity with Reference to Sri Lankan Airlines

Romita De Silva¹

Maintaining positive customer orientation is highly significant to build the brand name of a particular product or service in today's highly-competitive market. Customer buying behavior and response towards a product or service are highly associated with the brand. Consequently, brand equity is considered as one of the key approaches to target the potential customer as it reflects the real value that a brand name holds. Srivastava (2015) defined that brand equity is the added value endowed on products and services. It may be reflected in a way as consumers see, think, feel and act towards a particular brand. Sri Lankan Airlines has managed to keep up its brand by focusing on customer orientation in the airline industry. Considerably, the Airline has reduced airfares to attract more customers. Further, Sri Lankan airline has been continuously working on the quality of flight by redesigning the interior, especially the business class cabins with first-class recliner seats for added comfort. Therefore, the purpose of this study is to examine the impact of customer orientation on brand equity with reference to Sri Lankan airlines. Here, the researcher considered brand equity as a dependent variable and customer orientation as an independent variable that has three dimensions as customer relationship management, service quality and price of the service. The sample size of the study is 75 respondents who used Sri Lankan airlines during the period of December 2017 to May 2018. The researcher used a convenience sampling method in order to collect data from 75 passengers. The findings of the study are based on primary data which was collected through a questionnaire. Secondary data were collected through published research papers, journals, reports, websites, and guidelines to support the study. There are no gender biases in the study as 53% of the respondents were male and 47% of the respondents were female. The researcher used multiple linear regression analysis to examine the collected primary data. The outcomes of the study reveal that customer relationship management, service quality, price of the service are significant factors, where p values are less than 0.05. Moreover, findings of the study show that 1-point increases customer relationship management, service quality, price of the service corresponding to 0.038, 0.057, 0.080, increases on brand equity. It also indicates that service quality has a higher impact than customer relationship management and price of the service by comparing the standardized coefficients (beta = 0.732 versus beta = 0.063 and 0.096). Apart from these, respondents are averagely satisfied with the price of the service and customer relationship management. Therefore, it suggests that Sri Lankan airlines should offer reasonable low-price tickets than the competitors' prices and vary the prices according to seasons and situations. It's vital that they build, maintain and improve strong and positive customer relationships in a manner that the customers will recommend the airline to their friends and family.

Keywords: "Brand equity; Customer orientation; Sri Lankan airline"

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Determinants of Tax Compliance among Small and Medium Sized Enterprises in Colombo District

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Tax compliance is imperative to any nation since it determine, slackens income tax administration and government tax revenue. This study is about the “Determinants of tax compliance among Small and Medium sized Enterprises (SMEs) in the Colombo district”. Taxation is a system of imposing financial charge or levy on an individual or a legal entity by a state. A sub-national entity could also impose taxes. Taxation is the most important source of revenues for any governments, typically accounting more than 90% of their income. (Central Bank report in Sri Lanka 2017). The remainder of government revenue comes from borrowing and from charging fees for services. Countries differ considerably in the amount of tax they collected. The SMEs are considered as the backbone of the any economy and it provides a significant contribution to the government tax revenue. Hence the main purpose of this research is to analyze the impact of demographic factors, tax payers understanding of the tax laws, government accountability and perception on tax system on the SME tax compliance. The current study has gathered the primary data from 120 SMEs in Colombo district to address the population of SMEs in Sri Lanka by using a questionnaire method. It has used descriptive measures, correlation and regression analysis to analyze the data. It has found that understanding of the tax law, perception on government accountability and perception on tax system are positively influenced to tax compliance in SMEs in Colombo district while gender of tax payers not influenced to the tax compliance. The findings of this study could help the organization to make suitable alteration or to take corrective actions in their tax practices. Furthermore, this study will help to identify the attitude of the SME about taxes. And also opinion from the individuals may lead to more practical solutions for the Department of Inland Revenue.

Keywords: Tax compliance, Small and Medium Sized Enterprises

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Impact of Emotional Intelligence on Perception of Organization Change and Organization Commitment: In Airport and Aviation Industry in Sri Lanka

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Air travel remains a large and growing industry by accelerating economic growth, world trade, international investment and tourism and is therefore central to the globalization-taking place in many other countries. The aviation industry plays a significant role in the development process in each and every country. Most airlines have been struggling to cope up with the competition that is generated in the Airline Industry. As a solution, most airlines have chosen organization change. In addition, the airline industry in Sri Lanka has been struggling to cope up with the growing economy and competition as well. Mihin Lanka, the low cost airline in Sri Lanka ceased operations in 2016, 10 years after its commencement. SriLankan Airlines is also in negotiations with the government on restructuring and the BIA is planning for new developments.

In this stage employees have to face critical situations with organization change. The operational staff exerts an emotional labor and they also have to face unexpected situations with their customers everyday. Since airline and airport front line staff have direct contact with passengers for long periods of time, their behavior and emotional attitude toward passengers heavily shape the customers' perception of the airline's image as well as the image of the country. Due to the structural changes in the industry, cabin crew, ground handling, and airport staff experience higher levels of stress and fatigue, which can result in some negative behavioral outcomes such as lack of commitment. As the level of emotional intelligence varies across different individuals, the way they respond to organizational change may differ. Prior research has found that very few employees get adapted easily to new changes, but most of them are struggle to adapt. However, from the results of previous research, it can be seen that the level of emotional intelligence has influence on organizational outcomes.

The result of the pilot study has revealed that the lack of communication from higher management, political influences, pay-cuts and reduction of premiums as the main issues that employees experience. Moreover, supervisor and managers revealed that customer complaint, employee issues, employee's complaints to the management, absenteeism, and employee turnover are higher at Airport and Aviation Industry.

However, there has been a general lack of empirical evidence which systematically analyzes the connection between the construct of emotional intelligence, organizational change and organizational commitment and as well as the lack of research on the Sri Lankan context. Thus, the main objective of this study is to empirically examine the impact of emotional intelligence on organizational change and organizational commitment. Based upon the deductive research approach, this research tests a model to understand how emotional intelligence influences organizational commitment through perception of organization change. To attain this objective, the survey method will be used for data collection from Airport and Aviation front line staff and the sample of the study is drawn with simple random sampling. Future Research can replicate this study in different contexts and use cross-cultural data.

Keywords: Emotional Intelligence; Emotional Labor; Organization Commitment; and Perception of Organization change

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A Study on Organizational Readiness to Adopt Green HRM: A Case Study based on University of Kelaniya

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The increasing trend of adopting sustainable development practices in the corporate world have resulted in internalization of green principles into different organizational practices. Adoption of Green HRM is one such trend that is gaining increased attention as that pave the way for an organization to reach its goals via green principles and help inculcate a green culture within community as a whole. Green HRM reflects on how driving the human force of an organization is aimed at achieving organizational goals in all the activities of HRM for recruitment up to the termination of an employment. Studies show that awareness of green practices among the stakeholders of an organization is vital in internalization of green concepts to organizational processes. However, there is no empirical evidence to assess whether adoption of green principles into an organization have been successfully inculcated to the mind-set of the organizational community and whether organization is ready to adopt green principles to HRM practices. University of Kelaniya was selected as the study site as it has remained as the first green university in Sri Lanka according to UI greenmetrics ranking for 4 consecutive years as a result of adopting green practices. Hence the study is carried out to meet two objectives. Firstly, to assess the awareness and perceived value among the university community on the adoption of green practices in the university. Secondly, to identify the organizational readiness to adopt Green HRM in the university. Primary and secondary data were gathered regarding the current practices and policies of sustainable development adopted in University of Kelaniya. It is expected to adopt a mixed method using qualitative and quantitative research techniques. It is expected to use qualitative research methods to meet the first objective which require in depth analysis towards awareness and perceptions of university community towards green practices. In order to meet the second objective quantitative research methods are expected to be applied as identification of organizational readiness would require a statistical validation which would help identify where we are. University staff is the target population as practices of HRM are best experienced by staff as compared to other segments of university community and since the staff consists of several categories, stratified random sampling is expected to be used as the sampling method. The research work is ongoing and is currently at the stage of collecting qualitative data to meet the first objective and several interviews have been conducted.

Keywords: Awareness; Green Practices; Human Resource Management; Internalization; Organizational Readiness.

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Degree of ICT Integration on SMEs in Health Services: A Study of Mahara Divisional Secretariat, Sri Lanka

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Integration of Information and Communication Technology (ICT) is very widespread in businesses of all sizes. As is the case with all technologies, small businesses are slower than large ones to adopt new ICT. Known fundamental reasons for non-adoption are lack of applicability and little incentive to change business models when returns are unclear. Also trust and transaction security, and challenges in areas of management skills, technological capabilities are significant barriers to adaptation of ICT in to SMEs.

This research focuses on the degree of ICT integration on SMEs in health services at the Mahara Divisional Secretariat - Sri Lanka. The degree of ICT applications in SMEs observed according to the use of ICT at each level in the business (inbound logistics, operation, outbound logistics, marketing and sales, services), include: readiness for ICT, infrastructure facilities for ICT, available ICT.

Response data of a sample of 50 SMEs in health services have been gathered through interviews with the help of structured questionnaires. There is a high usage of ICT in their background infrastructure for support inbound logistics, operation, outbound logistics, marketing and sales, services (Telephone -100%, Fax-90%, VOIP – 0%, Dial up connection - 22%, ADSL – 0%, Leased line - 0%, Fiber – 96%, Laptop or Desktop PC – 100%). Also there is a favorable usage of ICT applications in marketing and sales, services (Office package – 100%, E-mail / social media – 100%, Own Website / systems – 0 %, POS – 62%, Online payment – 0%). In conclusion, more than 50% of SMEs in health services use ICT facilities in their business processes. They have accumulated strong customer relationships through ICT and have reduced non value adding activities and wastages.

Keywords: eHealth, SMEs in health services, ICT integration to Healthcare

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Evaluating Digital Health System's Success of Public sector Hospitals in Sri Lanka

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The use of Information and Communication Technology (ICT) in the health care sector offers great potential for improving the quality of services provided, the efficiency and effectiveness of health personnel, and organizational cost reduction. Thus, digital health has been a priority for the World Health Organization (WHO). The majority of developed and developing countries report having national digital health initiatives and their digital health budgets continue to rise. Despite large investments made by countries, the magnitude of evidence of success is not proportionate thus, the evaluation of digital health interventions after implementation is critical to ensure perceived benefits, reduce potential negative effects and provide decision-makers with accurate information for improvements and future planning. The purpose of this paper is to focus on digital health success in Sri Lankan public sector hospitals. This study aimed to understand the evidence of success and study different models to select the best model to evaluate digital health success.

The qualitative research was carried out and 15 primary users of digital health projects in Sri Lanka are interviewed to understand their perceived benefits and success. The purposive sampling technique was used to select experts in current digital health projects. A systematic literature review was conducted to explore the Information Systems' success models, usage in other countries and applicability to digital health.

The empirical study findings show that digital health implementation in public sector hospitals in Sri Lanka has made significant progress in establishing digital health policy, national guidelines, administrative structures, heavy investments. Existing research findings show that user acceptance and system usage has positive results. However, the perceived benefits are not adequately evaluated and this study reveals that primary users have mixed opinions on success. They suggest a scientific evaluation to prove the level of success. The systematic literature survey results show Delone & McLean's Information Systems success model as the most comprehensive and preferred model out of many other models. This model has been adapted to suit the digital health evaluation in different contexts adding new dimensions apart from seven original dimensions: Information Quality, System Quality, Service Quality, Use, Intention to Use, User satisfaction, and net benefits. Leadership has been recognized as one of the key driving forces to success in Sri Lankan digital health thus, Delone & McLean's Information Systems success model together with the Leadership dimension could reveal the success level and these results significantly contribute to digital health transformations.

Keywords: Digital Transformation, Digital Health, Public Sector Hospitals, Information System Success Model, Delone & McLean Model

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Employee Training and Development : Is it important for Changing Employees' Performance with Special Reference to Non-Academic Staff in University of Kelaniya, Sri Lanka

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The most important asset of every organization under stiff and dynamic competition is its human capital. In that situation employee is a key element of any organization. Every organizations aims to succeed through the employee performance. Hence organizations are investing a huge amount of money on employee development and expect changes in employee performance. Training is the most suitable method to improve employee efficiency. Training increases efficiency and effectiveness of both employees and the organizations. Many Organizations meet their needs for training in an ad hoc and haphazard way while others set about identifying their training needs and wants, then design training activities and programmes in a rational manner and finally assess the results of training. The employee behavior depends on various factors. Hence, this study is filling the gap in the area of training and its impact on employee performance. The main objective of this study is to identify the effectiveness of training programme on changing employees' performance among non-academic staff in University of Kelaniya. The data was collected through questionnaire in non-academic employees of university who recently participated training programme by using non-probability sampling method. This study found, the effectiveness of training programmes are positively correlated with employee performance. Further the effectiveness of training programmes is positively correlated in two dimensions; these are skill and attitudes. But it does not have any impact on knowledge of employee.

Keywords: Employee training, Employee development, Employee behavior, University system

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Impact of the Entrepreneurship Education on Entrepreneurial Intention of the University Undergraduates

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Entrepreneurship Education can be highly regarded as one of the most preferred areas in the modern world where people access. The importance of Entrepreneurship Education is that it not only helps people to generate a new opportunity in the business world, but also helps the society to address the issue of unemployment. It was observed that the rate of unemployment among high schools and university graduates remains proportionally higher than the rate of less-educated workers in Sri Lanka. This study was conducted with the purpose of assessing the impact of the Entrepreneurship Education on Entrepreneurial Intention of the university undergraduates of University of Kelaniya. Main question addressed in the study is whether the Entrepreneurship education which is provided for the undergraduates is really having an impact on the entrepreneurial intention of them. The theory that was used is the theory of planned behavior. Most of the previous studies expressed that entrepreneurship education has an impact on developing entrepreneurial intention while few studies showed that there is a negative impact. 150 students who at least studied entrepreneurship once as a subject for his or her degree were taken into consideration as the sample of the study. Data was collected by means of a structured questionnaire and was analyzed using SPSS. Further, the regression analysis was used to test the hypothesis. It was observed that there is a positive relationship between entrepreneurship education and entrepreneurial intention. However, gender has weakened the impact of this relationship as a moderating variable. Therefore, the result of the analysis shows that only few entrepreneurship students intend to pursue entrepreneurship immediately after graduation and some intend to utilize entrepreneurial knowledge to improve the paths in their existing organizations and establish a financial stability before entering in to their own business. This study attempts to measure that impact in terms of the Sri Lankan context and fill the gap of the existing literature with relevant to the Entrepreneurship field. Further, it is also recommended for the future researchers to obtain data from both state and private universities in order to get an overall, comprehensive view.

Keywords: Entrepreneurship Education; Entrepreneurial Intention; Gender

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Interest Rate and Bank Performance: Evidence from Sri Lanka

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Banking sector in any country plays an important economic role as the provider of financial intermediary role for the borrowers and lenders. It is evident in the empirical literature that effect of interest on profitability of banking industry shows mixed results. Banks profitability is identified through its ability to enhance the deposits from the savers. Higher the deposit greater the profitability as it is able to collect at lower rate of interest and lend at higher rate of interest. The purpose of this study is to examine the effect of interest rate on performance of banking industry in Sri Lanka. The study conducted to check and examine the effect of deposit interest rate and lending interest rate on banks' performance of licensed commercial banks in Sri Lanka. Lending interest rate and deposit interest rate were considered during the period over 2007 to 2018. Size of the bank, capital, liquidity, credit risk and operational efficiency were used as control variables. To analyse interest rate fluctuation and performance of bank industry in Sri Lanka, 11 licensed commercial banks in Sri Lanka were selected as the sample. Return on Assets (ROA) and Return on Equity (ROE) were taken as performance measurements of the banks. Regression analysis used to analyze data and the results show that there is a negative significant relationship between lending interest rates and financial performance of commercial banks in Sri Lanka. It is also found that there is a negative significant relationship between deposit interest rates and financial performance of commercial banks in Sri Lanka. Therefore the banks should prudently manage their interest rates to improve their financial performance.

Keywords: Interest rate, Bank performance, Return on Assets, Return on Equity

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Tourists' Loyalty Behavior in Pollonaruwa Sacred City in Sri Lanka

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As the leading service industry in the world, Tourism has a major capacity to progression the world economy through regional development. The industry recorded that 1.4 billion tourists to world in 2018, and upgraded above the 3.7% economic grow in the global economy. (UNTWO 2018). The growth was common to even Sri Lanka which contributed 4.5% to its GDP attracting 2,116,407 foreign tourists in 2017, as an elegant destination to world. Tourists' intention to visit to Sri Lanka is aroused by well-dressed promotional program, where more weightage has been kept on world heritage destinations including the Cultural Triangle. At the tourists' attraction, Udurawana 2018, recognized that there is a reducing trend of tourists' attraction to cultural areas in Sri Lanka. Therefore this explanatory study conducted to identify the qualities should have with Pollonnaruwa as a world heritage ancient destination to advancement of the international tourists' loyalty. Seven elements were identified, as Entertainment, Education, Event and experiences, Attraction, People Trait, Price, and Infrastructure to develop the independent variable. And Tourists Loyalty was the dependent variable of the study. 248510 tourists' have visited in the year 2017 to Pollonnaruwa, considered as the Population of the study, and as the sample, 200 tourists were designated through convenient sampling technique. To test the loyalty behavior, tourists' preferences were identified through well-developed questionnaire under the two research hypotheses (H1, H2). At testing all the hypothesis were accepted, where H1, in means tourists' geo-demographic factors such as, tourists country of origin, marital status, sex, age category, income, occupation, and religion have shown significant association to vary tourists' behavior in Pollonnaruwa area. H2, in means tourists' loyalty behavior was positively influenced by the destinations' elements, such as attraction, entertainment, infrastructure, and people trait. Finally researcher suggested to develop Pollonnaruwa area as an attracted area through enough infrastructures and entertaining opportunities, facilitating for all type of tourists needs to gain exciting experience.

Keywords: Destination Marketing, Destination's Elements, Tourists' Loyalty

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Influence of Personal Factors on Whistleblowing Among Accountants in Sri Lanka

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Whistle blowing plays a crucial role in preventing unethical behavior in organizations. Previous studies on whistleblowing behavior have been conducted in various cultural context and identified the influence of employees' personal factors on whistle blowing behavior, but results of these studies were inconsistent. This study aims to deepening the understanding of whistle blowing behavior by identifying the influence of employee's personal factors (age, gender, and experience) on their both internal and external whistle blowing in Sri Lankan cultural context. This study was conducted among 52 accountants in Sri Lanka. T-test and ANOVA were employed to test if there is any significant differences in whistle blowing behavior (internal and external) related to these personal factors. This study found that age, gender and experience have an influence on both internal and external whistle blowing behavior. Younger (M= 2.3), female (M=3.1) and less experienced employees (2.4) engage in low level of internal whistle blowing compare to older (M=2.9), male (M=4.1) and high experienced (M= 4.7) employees. Regarding to external whistle blowing behavior there is no significant differences in whistle blowing behaviors between male (M= 3.8) and females (M= 3.4), but there is a significant difference in whistle blowing regarding age and experience. Younger (M= 3.1) employees and less experienced (M = 4.0) employees are highly engaged in external whistle blowing than older (M = 1.9) and more experienced (2.1) employees. Mean differences were significant at 0.05 significance levels. Further this study found that younger and less experienced employees are highly engaged in external whistle blowing than internal whistle blowing. Findings of this study highlights the individual differences in whistle blowing behavior in Sri Lankan context that help organization to motivate internal whistle blowing and demotivate external whistle blowing of employees. This study contributes to the literature by examining the influence of personal factors in both internal and external whistle blowing among accountants in Sri Lankan cultural context which was unnoticed in the literature.

Keywords: whistle blowing, culture, Sri Lanka, gender, age, experience

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Expatriate Turnover and Recruitment Process of Projects-Abroad Sri Lanka: A Case Study

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Volun-tourism is a relatively a modern concept which combines the volunteering and tourism. Projects Abroad is the world's leading global organizer of volunteer work placements where Gap year volunteers and recent graduates are the main market segments. The main role of Expatriate is to "work with volunteers, so they become more likely to tell the world how they had a good and worthwhile time". Since most of expatriates were from Western countries, the recruitment costs are at a higher level.

The main problem identified was the higher labor turnover/premature return. It caused a cycle of negative consequences including low customer service and decline of organizational performance. The objective of this study was to evaluate the current recruitment process and to find out causes for higher labor turnover of expatriates. Literature review was carried out to explore the international best practices and the causes underlying the problem in the study area. The research design was built on the integrated policy framework of recruitment aimed at increasing person-position fit, person-organisation fit and person-culture fit, and the satisfaction that ultimately lead to decreased expatriate premature returns. The data collection methods used in this study were the questionnaires, discussions and observations. Completed questionnaires were processed mainly through quantitative approach of data analysis.

Findings revealed that majority of the expatriates were sourced outside the organization and more than a half of the respondents (67%) believed that they didn't have a clear and adequate job description and a job specification. It was found that lack of centralised and well-defined human resources (HR) function as the main reason for not having structured, well-built and tested practices in HR Planning and recruitment of expatriates. It was further observed that the company doesn't have documented procedure for recruitments. Inconsistency of the practices was the next major issue as there was no clarity in terms of the conditions and the procedural sequence of the prevailing guidelines. Hence, it was concluded that gaps in the recruitment process lead to the higher labor turnover among expatriates.

Keywords: "expatriate; international staffing; recruitment; volun-tourism industry; international assignments"

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**Computing
&
Technology**

Impact of Subjective Norms on E-Banking Adoption: A Multivariate Analysis

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Technological advancements positively affect economic progression and development of countries in the long run. One of the broadly studied areas of technological transformation is the retail financial services which includes consumer banking activities with reference to the wide-ranging service sector of the country. E-banking enables customers to experience a vast array of financial services instantly with any-time access to the particular user. Nevertheless, in practice; this phenomenon is dependent on the particular context. Primary objective of the study is to identify the significance of subjective norm (SN) towards user intentions and actions on adoption of e-banking (AoEB). Secondly, it is necessitated to identify the differences in between 3 SN groups (SN-friends, SN-family and control group-No SN) towards intentions and actions on AoEB. Sample was drawn from the students of Uwa Wellassa University (UWU) those who are using e-banking services. Initially, 400 questionnaires were distributed and 279 duly completed questionnaires were considered for the final data analysis. Conceptual model was formulated by referring to theory of reasoned action (TRA) and dimensions of the variables were measured by five-point Lickert scale. In analyzing data, MANOVA test was followed by ANOVA with contrast tests and discriminant function analysis. MANOVA test results indicated that SN can have a significant effect on AoEB and the significant univariate ANOVAs suggested that this may be in terms of either a combination or individual thoughts/behaviours. Furthermore, it was noted that friends SN is better at changing both actions and intentions on AoEB. Subsequently, observed that both the hypotheses have been supported by the empirical evidence. Accordingly, No SN group can be distinguished from the two groups using the variate that has opposite effects on intentions and actions on AoEB. Also, the friends SN and family SN groups can be distinguished by the variate that has similar effects on intentions and actions. Consequently, friends SN is better than both No SN and family SN, regardless of whether it's more important to consider intentions or actions. Empirical evidence contributes towards theoretical and practical perspectives given the particular context, method and usability of the results towards commercial banks, policy makers and e-banking system developers. As respondents were the students of the UWU, it could be possible to obtain different results had the study being conducted in another context as the respondents may not exactly replicate the whole Sri Lankan e-banking customers of the selected private commercial banks. Meanwhile, as there were restrictions due to time and other resources, future researches could be performed with improved representation of the entire population to validate the research findings in different country, cultural, social, industry and economic sector contexts by incorporating different models, perspectives and variables.

Keywords: Adoption; e-banking; multivariate analysis; subjective norms; TRA

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ER to Relational Model Mapping: Information Preserved Generalized Approach

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The Entity-Relationship (ER) model is widely used to create ER schemas to represent application domains in the Information Systems development field. However, when an ER schema is transformed to a Relational Database Schema (RDS), some critical information modeled on the ER schema may not be represented meaningfully on the RDS. This situation causes a loss of information during the transformation process.

In our previous studies, we showed that the deficiencies that exist both in the ER model and the transformation algorithm cause this situation. Accordingly, we modified the ER model and the transformation algorithm to eliminate the deficiencies and thereby to preserve the information in the transformation process. We then showed that a mapping that is one-to-one and onto exists from the ER Schema to the RDS, and the information represented on the ER schema is preserved on the RDS. For this purpose, the ER schema should be created using the modified ER model and transformed to the RDS by the modified transformation algorithm. However, this concept has not yet been proved formally. It needs to be testified for any ER schema representing any application domain. Subsequently, following the modified ER model, we also proposed a generic ER schema—an ER schema that represents any real-world phenomena in symbolic notation—for using in a future proof creation process.

Thus, in this work, we aim to create a formal proof for validating the work that we had done. For simplicity, we use a generic ER schema that consists of two regular (strong) entity types and a one-to-many-relationship-type. We first show that the generic ER schema can be partitioned into unique segments. We call them ER-construct-units, where each one represents a unique semantic meaning in the real world. The ER schema can be viewed to have been made up of the set of ER-construct-units. Both the ER schema and the ER-construct-unit set are equivalent. Second, we transform the generic ER schema to its corresponding RDS using the modified transformation algorithm. We then show that the RDS can also be partitioned into unique segments, which we call Relation-schema-units. Next, we show that a mapping that is one-to-one and onto exists from the set of ER-construct-units to the set of Relation-schema-units.

In conclusion, we show that any ER-construct-unit in the ER schema has its own and unique Relation-schema-unit on the RDS. Therefore, any piece of information represented on the ER schema has its own and unique representation on the RDS. The proof can be expanded to any generic ER schema that is even bigger than the current one, and accordingly, the same result can be obtained. Since the generic ER schema means a generalized representation of any real-world ER schema, we conclude that information represented on any ER schema is preserved on its corresponding RDS.

Keywords: ER model, Relational database schema, ER schema, Information preservation, Transformation

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IoT Based Automated Mushroom Farm Monitoring System

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The rising demand for food production requires effective agricultural solutions. This project is one of the best artefacts which has been developed using the newest technology. The purpose of introducing IoT device to an industry like mushroom production is that, in agriculture domain it faces lot of difficulties with the environmental conditions when people attend to the production area. And the other reason why people are not interested to this high profitable business is that it requires regular monitoring rather than growing a plan in a pot. Because if there are no accepted conditions inside the mushroom house, always it gets infections from insects. To address those solutions we have developed an IoT system.

The proposed IoT system consists of two major sections. They are monitoring and controlling. In order to monitor the environmental conditions, the monitoring section comprises a DHT11 sensor and an LDR sensor. The NodeMCU microcontroller acts as the heart of this system. The controlling section consists of a cooling fan and a water pump. These two sections are combined through Ubidots.com which is easy to use IoT development platform.

The developed system continuously monitors the environmental condition inside the mushroom farm and sends the sensor data to the IoT server for the analysis and visualize. The threshold values of the measuring parameters are 29°C, 50%, and 85% for temperature, light and humidity respectively. If the sensor data do not rival to the defined threshold values, cooling fan and water pump operate automatically to balance the condition.

The system provides real-time values of sensors and plot them on a dashboard for the visual output and this can be used to implement a mobile application in the future.

Keywords: Internet of Things (IoT); sensors; agriculture; environmental conditions; mushroom

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The Gift of Life: Transform Organ Donation and Transplantation Process with Blockchain enabled AI System

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Every year many thousands of people receive the gift of life but due to various factors such as serious trauma, drug abuse, loss of blood, sepsis, poisoning, leukemia, and other acute diseases and due to unhealthy dietary habits, lack of exercise, alcohol consumption and drug abuse leading to failure of organs. Transplantation is one of the great medical advances of the time. With the rapid advancements in the health industry, organ transplantation has become one of the greatest medical procedure for saving the lives of humans and it is considered as one of the most noble acts of humanity. It is a way in which an organ is removed from one body and transferred to another body, to replace the missing or damaged organ. A lifesaving transplant of a heart, kidney, liver, lungs, pancreas or intestines and thousands more people receive corneas and other tissues that restore sight and health. If a person is a good candidate for a transplant, he or she will be on a national transplant waiting list. Once a person is on the list, the wait for an organ begins. A national system matches people on the waiting list with donors. In certain situations, some people do not receive an organ in time and sometimes result in loss of life. Because the waiting list is very long and there are not enough donors available. If there is a proper system in place how many we could save if everyone could be donors. So, this study proposes a disruptive technology-based solution to transform the organ donation and transplantation process. The report discusses the organ donation and transplantation process and its issues in the world and in Sri Lanka, what are the systems currently available in the world. Thereafter, all the factors were analyzed, and a disruptive technology-based solution was proposed. Finally, the roadmap was given to solve the issue in Sri Lanka by implementing the solution and the recommendations were discussed. A blockchain enabled AI system was developed to transform the organ donation and transplantation process. Anyone can make the decision to donate an organ. Any age is the right age, young or old and any day is the right day to register as a donor through the system. The hospitals, medical centers and the general public can adapt to this system and save the lives.

Keywords: Organ Donation; Donor Recipient Matching; Organ Transplantation Process; Blockchain; Artificial Intelligence

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Using Google Analytics to Enhance the Quality and Layout of a University Website: A Case Study

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A university website plays a significant role in showcasing the culture of the university, academic achievements and study programmes. The objective of this case study is to use Google Analytics data effectively to revamp the website of the Faculty of Medicine, University of Kelaniya. Google Analytics records web traffic and performance data which can be used to identify the areas to improve a web site, however, this information does not indicate the ways to improve a website. Hence three hypotheses were developed to make effective modifications based on the Google Analytics reports. Hypothesis 1 is to restructure the Home page to enhance pageviews. Hypothesis 2 is to lessen the page depth to increase user retention on the page. Hypothesis 3 is to improve responsiveness to attract more mobile visitors.

This section presents results according to the Old Website (OW) versus New Website (NW) for a period of 6 months (April to November 2018 vs 2019). Page interaction from Landing page as Home to visited pages were identified in Student notices (SN) (4 vs 0) and Staff directory (SD) (4 vs 2). Furthermore, pageviews for the SN (42,173 (15.6%) vs 53,478 (16.6%)) and SD of the department sites (23,417 (8.7%) vs 4,427 (1.4%)) were examined. Further, News and Events (4,180 (1.6%) vs 6,806 (2.1%)), Academic programmes (3,358 (1.2%) vs 5,703 (1.8%)), Research (538 (0.2%) vs 1,611 (0.5%)) and About Us pages (273 (0.1%) vs 2,465 (0.8%)) were visited. We also explored Page depths (3.78 vs 3.20), Average session durations (02:53 vs 02:40), Average time on page (01:02 vs 01:13) and Bouncing rates (55.1% vs 64.8%). Users visited the website using desktops (12,003 (61.9%) vs 10,983 (34.4%)), mobiles (6,178 (31.9%) vs 19,331 (60.6%)) and tablets (1,210 (6.2%) vs 1,597 (5.0%)).

First hypothesis was assessed with views to restructured home page. We observed an increase in views for SN, News and Events, Academic programmes, Research and About Us pages. Decrement of pageviews to SD by individual department sites may due to visitors directly referred to SD via home page rather than via department sites. Therefore, we concluded that the first hypothesis is satisfied. Second hypothesis was assessed with Average time on a page. There we observed an increment. However, there was a decrease in Average session duration and Bouncing rate. It indicates that the visitors find the results they seek through the landing page. Therefore, we concluded that the second hypothesis is satisfied. Third hypothesis was assessed with device type. We observed an increase in mobile users. Nevertheless, there was an increment of overall users. Therefore, we concluded that the third hypothesis is satisfied. The overall review of Google Analytics pre and post-revamping data explains the increase in pageviews, user retention and user attraction.

Keywords: Google Analytics; Pageviews; Hypothesis; Revamping; Website

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Android Mobile Malware Detection using Deep Ensemble Machine Learning

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The Android operating system is one of the most used operating systems in the world and has become a target to malware authors. Traditional malware detection methods such as signatures find it impossible to deal with detecting complex and intelligent malware which are capable of obfuscating and repackaging to avoid being detected. There is therefore an increase in the need to have more efficient and intelligent forms of malware detection. Recently deep machine learning and ensemble machine learning algorithms were used to malware detection and classification. Most of the shallow learning models such as SVM, Random Forest etc. had given less accurate results. Hence this research is focused on using deep learning and ensemble methods for better accurate results. Due to its accuracy and intelligence it has become an ideal solution to bridge the gap between traditional classifiers and the intelligent malware. Methodology used was based on opcode, syscalls and API calls in integrated using static and dynamic analysis. Currently, research is mainly being conducted using deep learning techniques to target all or a given malware family. Research addresses several issues related to android malware detection. One such is to proper identification of obfuscated and repackaged android malware packages using the implemented platform. Next research managed to solve one of the major problems faced in dynamic analysis. This is namely the issue of malware going to a silent mode once tested in the sandbox. This problem was also addressed within the research. This paper proposes a methodology which brings an ensemble solution between the shallow machine learning algorithm and deep learning algorithm to create a solution that provides a higher accuracy and performance friendly application to detect and classify malware.

Keywords: Android Malware; Deep Learning; Malware Classifications

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Deep Learning-Based Malware Detection and Cleansing Mechanism for Server-Side Cloud Computing

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Traditionally, malware is detected by inspecting its signature, which is a unique identifier of the software's binary. Signature based malware detection approaches are now less effective for identifying intelligent and creative malware's that emerge today. New detection techniques inspect the behavior of the malware instead, where an algorithm is used to learn the patterns of malware activities. In machine learning we need to have handcraft features to train the algorithm. This research is focus on specifically identifying malware in cloud-based systems. For this implantation features like cloud API calls, Energy Consumption and etc. is being used. Some cases these handcraft features might fail to perform to get expected results. To overcome this problem, we proposed a deep learning-based approach. One of the major problems faced in the process of deep learning-based approach is to manage the accuracy versus the performance. Most of the shallow learning techniques records less accuracy but higher performance. But research world had realized for real time implementations the accuracy levels of shallow learning methods like SVM is not suitable with comparing to signature based methods. Hence as the authors selected the deep learning methods was proposed to improve the accuracy. Most of the research work carried out in the last few years in malware detection using deep learning had better accuracies but recorded lower performance parameters. Our approach used an experimented model based on shallow learning and deep learning which gives better accuracy values and performance values. From the deep learning models main focused was RNN/LSTM model. Hence this model is more suited for real time implementations. Initial results revealed better measurements in Precision, Recall and F-measure.

Keywords: Cloud Based Malware; Deep Learning; RNN

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Code Vulnerability Identification and Code Improvement Methods using Advanced Machine Learning

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Dealing with cyber-attacks has become a routine task of modern information systems. The misconfigurations of source code can result in security vulnerabilities that potentially encourage attackers to exploit them and compromise the system. The security of a software critically depends on its underlying source code because hackers always hunt for the loopholes of the software which reflects the vulnerabilities of the source code. To mitigate the above-identified threats the researches have produced several commercially used tools such as Vera code, OWASP, source clear, etc. But still, the frequency of threats and data breaches is very high. 'Veracode' is capable of doing both static and dynamic analysis but it is very expensive software. 'OWASP' uses only the static analysis to automate the detection of the vulnerabilities. 'Source clear' is capable of scanning the repositories either manually or automatically. As all the above-mentioned tools are in their testing phase, number of false positives of the results can be high. In this research, we investigated how to automatically identify the software vulnerabilities by conducting a live scan to detect the error fragments and how to correct the detected source code vulnerabilities automatically at the development stage. This system consists of mainly two phases, Error Detection, and Error Correction. Error Detection is done through a live scan. In the live scan, both Static analysis and Dynamic Analysis will run in parallel. In the dynamic analysis the source code was run in the background and checked with random input data. In Static analysis, the source code was checked line by line and verified by another Rule-Based Engine. The source code is highlighted with markers based on the two outputs of static and dynamic analysis. Research analyzed several machining learning models for better accuracy and performance. After the most suitable machine learning model was identified, the model was trained with enough training samples to develop a generalized model. The final system was implemented to identify vulnerable code segments in Java source codes and suggest corrected code fragment to the developer.

Keywords: Vulnerability; Machine learning; CVE; Static Analysis; Dynamic Analysis

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Successful ERP Implementation and Challenges: A Case Study of ERP Implementation at Private Educational Institute in Sri Lanka

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The Enterprise Resource Planning software market has been growing at a very fast pace over the last few years and has been predicted to keep growing rapidly in the long term.

The objective of the study is to discuss the implementation process of successful implementation of an ERP system at a chosen private educational institute in Sri Lanka.

Selected education institute is one of the largest private education conglomerates in the country which conducts both undergraduate and postgraduate programs with the partnerships of UK, USA, Canada and Australian universities as an International Program Centre. This has enabled introducing various university programs under Transnational Education System (TNE) in Sri Lanka. The institute shines with its motto of “education without borders”, which allows the younger generation to benefit from higher education in some of the best Universities and study destinations in the world. Hence, Institute’s ERP system can be categorized as a multi-university platform which facilitates to operate more than one country, one university, and also the degree programs are built-in absorbing credits from multiple universities. Multi-University platform is a rare found among the ERP systems which have been developed in the field of education and available with the ready-made purchase.

The new ERP system has been introduced as a result of replacing the old system which was an in-house developed MIS, with the requirement of upgrading due to the various reasons, such as slowness, inability of transfer data, modification issues, not user friendly and limitation of expanding cater to future organizational and technical needs and staff/ student growth. MIS which was the old system supported the academic functions of Enrollment, Registrations, Examinations, Scheduling and other academic processes at the institute.

ERP was developed to cover the same activities initially and will be expanded to accommodate other department functions in the future. Expansion will be initiated after a considerable time upon monitoring the performance of the initial stage.

This study discusses the implementation process followed by the comparison of past literature.

Keywords: ERP; TNE; Multi-University; Academic; Processes

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Route Prediction for a Driver

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Training a model for the Route Prediction is not something new for the Research world. However, I found no Research, which concerns about the features, which are specific to the passengers, in predicting the Route for the journey. As an example, we will consider two geometric points as A and B. Let us assume there are five routes (R1, R2, R3, R4, and R5) to travel between A and B. Client C1 travels daily from A to B with his wife who is working in a company, which meets only if they travel in route R3. However, as R3 is the Route with the highest traffic; client C2 who travels alone in his car prefer Route R1, which has less traffic and so let him to move fast. This is not something imagined but a scenario, which happens in real world. This screams that a model, which was trained with general data (data that are not specific for the user), would not suffice the need 'Route Prediction' accurately. Next problem is the privacy. Collecting one's travel data to a central server is something, which makes him uncomfortable. This research provides the solution for these cases. Here the model has been trained with Federated Learning. First, the central model was trained with a dataset, which was collected from a general sample of the community. Then I have selected three specific clients and collected their Travel Data for two months. Central model was retrained separately for three times with those client data. By the end of the two months each of the three clients, have three different models for Route prediction, which were trained with their own data. This way while each client gets his own model, which is specific to his data, their privacy is also preserving (As their data was collected in their own device). Then model parameters of the three models were averaged and next the central model was created with those averaged values. As I have collected data specifically for the research (Not a previously collected data set), the dataset and so the Research is up to date. Every model was trained with 13 attributes, which were selected by discussing with daily travelers. Considered Travels were limited to the trips which were between Kelaniya, Sri Lanka and Kohuwala, Sri Lanka. A one can understand the whole process of federated learning and specially the productivity of training a model with federated learning by studying this Research. The accuracy of the models trained proves that federated learning suits to train a model for Route Prediction.

Keywords: "Federated Learning;Route;Model"

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Industry 4.0 Readiness Assessment Model for Sri Lankan Apparel Industry

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Sri Lankan apparel industry is the most significant and driving contributor to the country's economy by constituting a large portion of GDP. It has achieved rapid growth rates over the past four decades. In the highly competitive apparel world, manufacturers search solutions for future problems such as worker inadequacy and for minimizing the human impact at most of the stages of production to increase productivity. Therefore, there is a need for apparel manufacturers to align value chain processes with the latest technologies. After the first three industrial revolutions, the world is now experiencing the fourth industrial revolution that integrates emerging digital technologies; additive manufacturing, artificial intelligence (AI), autonomous robots, cyber-physical systems (CPS), horizontal and vertical system integration, Internet of Things (IoT), big data, simulation and augmented reality. Industry 4.0 enhances the process functions from new product development to logistics by providing real-time visibility of the production flow with predictive and prescriptive solutions to the outcomes. As an example, the factories that are enabled with machine learning are capable in monitoring critical factors such as machine life to predict the frequency of machine replacement to maintain a smooth flow of production with minimum disruptions. Before the transition to Industry 4.0, there is an urgent need for guiding companies to improve their capabilities in a purposeful, sustainable and standardized way. Current literature mentions applications of industry 4.0 in the apparel industry but has not assessed readiness to adapt it. This study proposes a readiness assessment model to assess the current readiness of the Sri Lankan apparel industry to adapt industry 4.0 technologies and practices. A systematic review of the literature was conducted to implement the readiness assessment model. A set of assessment criteria were recognized as compatible with the literature, and the strengths and weaknesses of each existing readiness model were evaluated systematically. The factors that determine the readiness for Industry 4.0 within an organizational context were identified and they were transformed into readiness dimensions under four categories; People, Process, Technology and Data. The proposed model consists of five readiness levels namely: Stranger, Beginner, Intermediate, Advanced and Elite. The model enables to measure the readiness in adapting to Industry 4.0 along with selected apparel value chain processes by specifying the minimum requirements under each dimension and level. The outcome of this study will help industry practitioners in the apparel sector to assess the current readiness level and move up the technology ladder while maximizing operational performance. Further, it is suggested to validate this model through a case study approach in a real industrial scenario where the final result of the model will reveal the overall readiness of the Sri Lankan apparel industry.

Keywords: Industry 4.0; Readiness assessment model; Sri Lankan apparel industry; Apparel value chain; Readiness assessment factors

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Explore the Connectivity between Business Leadership, Business Strategy, Digital Economy and Digital Transformation of Banking Industry in Sri Lanka

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Digital transformation has become a buzzword, yet, the role of business strategy by business leaders, the dynamic capability of digital entrepreneurship and the digital economy are maximally broad. The banking industry in Sri Lanka is a highly performing industry that has continued evolution in the delivery of services that is influenced by incumbent firms for digital disruption. In the discipline of digital transformation, business leaders are the people who initiate the business strategy of an organization and leadership to drive technology processes and capability requirements needed for transformation in an enterprise. The digital entrepreneurship process with the digital ecosystem develops opportunities and strategies for the digital economy. Hence the researcher in this study aims to show the gap and key challenges on business leadership, business strategy, digital entrepreneurship, technology capability and processes for the framework to digital transformation journey of banking in Sri Lanka. In the research stream, the article reviews the innovation intention and realization among executives and strategic consideration of technology they adopt and the level of the digital transformation of the banking industry in Sri Lanka. Moreover, it gives the outlook of potential future research directions. Different aspects of research article have taken up the digital transformation and digital economy topics and categorized in to in different industries and technology enable new business models, customer centricity, the importance of banking industry and time period on the basis of a literature review in a combination of qualitative analysis. Finally, formulation of strategic consideration need to demonstrate digital transformation, this article 1) consolidate the current state of literature, theories, findings, and methodologies regarding digital transformation 2) major areas of agreement, disagreement, controversy or debate, content, context and strategy process of digital transformation; and 3) reveal insight regarding the positioning of digital transformation in banking industry.

Keywords: Banking Industry; digital business strategy; digital economy; technology adaptation; digital entrepreneurship

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Performance Comparison Analysis of Docker Container and Virtual Machine in the Cloud Computing Environment for Database Management Systems

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Recently, Virtual machine and Container technology have become widely used as two of the most important virtualization technologies in the industry. The virtual machine provides better mechanisms for solving many existing manageability issues in database systems. Therefore, database systems are increasingly running on virtual machines. But after introducing container technology, it has gained increasing attention in recent years and has become an alternative to traditional virtual machines. Some of the core motivations for the enterprise to adopt containerization technologies include application integration and deployment, lightweight operations, as well as resource sharing efficiency and flexibility. This provides many opportunities for researchers in the database systems to deploy the databases with server consolidation, but it is also important to understand the cost of virtualization. The additional abstraction layers provided by virtualization come from the interchange between performance and cost in a cloud computing environment where everything is on a pay-per-use basis. So, containers which are considered to be the future of virtualization are being developed to address mainly this issue. However, a systematic comparative study of the performance of the database servers in the container environment and in the virtual machine environment is still missing. Accordingly, the main objectives of the research study are to monitor, analyze and evaluate the performances of different database servers on the virtual machine and Docker containers and to study which is better for microservice-related database deployments. The proposed comparison environment was designed on the Microsoft Azure cloud computing environment with separated virtual machines and Docker containers on top of the Linux operating system as the host. An experimental research study of comparing virtual machines and containers for the overhead of running a database workload and a critical assessment of each database metric and its behavior basically when subjected to Query execution performance, Load performance and Resource utilization of the standard databases are going to be presented. The initial results have shown that the container gets the manageability benefits of virtualization over the virtual machine. Although query execution is fast, the high query latency is quite noticeable when receiving a large number of data records from container-based database servers. After reviewing the results and discussing the limitations, the conclusion of this research study will be useful for future research as well as database server deployments.

Keywords: Virtual machines; Docker Containers; Cloud computing environment; Microservice-related databases; Database metrics

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A Trust Framework for Social Networks in MANET Environment

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The improvement of online social networks such as Facebook, Twitter, Instagram has been expanded the idea of using social networks wider. The utilization of mobile phones of general public that given access to social networks makes such platforms popular. Node to node communication in a network gives a discussion to their individuals to associate with different individuals in the systems and share hobbies, opinions, and educational involvements including daily experiences. A significant number of these online social networks are operated with the point of associating to connect many people. Hence, it is important to enhance trustworthiness in social networks. This research is focusing on implementing a trust factor in the device layer. Information within the social networks can be used to get additional trust value for the devices. Hence trust can be calculated at the upper layers to be used at the device level. Thereby, research has developed a social trust framework to allow MANET (Mobile Ad-hoc Network) environment to move cross layer to find trust-related information which can be used at the device level for decision making. The captured social network behavior will provide an indication of how trustworthy the same device by capturing upper layer information. The intent of this research project is to create a trust layer on top of a social environment, in order to achieve the advantages of trustworthy connections. A network structure has been developed in order to complete that achievement. Prior to that, information of Facebook personal friend networks has been extracted and analyzed. Analyzing the parameters which are related to security of the social network is done through a literature survey. While examining the information from social networks, appropriate security-related parameters were selected with their possible states and values. A social network is a group of people or organizations or other entities that connected by a social relationship including friendship, information exchange or corporative working. Social network analysis is the process of mapping and measuring relationships, interactions and flows between people, groups, organizations or other social entities. In general, social network trust can be defined as a measure of confidence that an entity or entities behaves in an expected manner. The research work is reviewing the definitions and measures of trust by focusing on social networks where it can be utilizing within further achievements such as improving security within any kind of network.

Keywords: Social Network; Trust; Machine Learning; MANET; Trust Framework

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Implementation of an Online Results Issuing System in the Faculty of Commerce and Management Studies, University of Kelaniya

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The Faculty of Commerce and Management Studies of the University of Kelaniya, has implemented a Student Information System that is capable of handling complex administrative processes; from student registration to the issuing of final examination results. This will immensely benefit the students and the staff alike and will help streamline the processing of information. Currently student examination results are handled by a central location and marks are fed into the system by a single user in the Faculty Office. This is a time-consuming endeavor and tends to create a lot of inefficiencies and has limited data retrieval capabilities. This process not only delays the issuing of the results, but also has no traceability if needs arise for tracking for any errors or duplicity. Also, the current system possesses no method of retrieving data for research purposes and decision-making purposes for academics and administrators.

This manual process causes prolonged turnaround time, unnecessary document transferring, inability to track delays, complications in data entry and report dispatch. A newer mechanism was required to address the issues faced. Efficient data retrieval for research purposes and decision making was also considered important. The objective was to design, develop and implement an online result issuing system that would benefit diverse parties: students, staff, administration and the environment. Data entry will be done by the examiners themselves, right after the marking of papers; ensuring data integrity in order to overcome unnecessary delays and errors. Further this will permit progress tracking for top management. The efficacy, transparency and ability to avoid human error and delays would support decision making by enabling the top management to analyze the time taken, quality and quantity of work done by the students as well as the examiners. Furthermore, the students would experience the convenience of accessing their results as soon as they have been issued whether they are present at the university or not. In addition to seeing the final grading for the relevant semester, they would be able to self-evaluate their academic performances based on the report they can view indicating their semester GPA through four years in a graph. Additionally, this online system would prove to be environmentally friendly with the reduction of paper printing. This web-based application was developed using open source scripting languages and databases: PHP, HTML 5, CSS, JavaScript, Ajax and MySQL. The system is hosted on the faculty premises and available 24/7 from anywhere. The system supports both windows and Mac operating systems via desktop and mobile devices and is accessible on IOS and Android devices, using any commonly used modern web browser with use of a log-in. This would mean the staff and student would no longer require a complex processes and lengthy timelines for the issuing of examination results.

Keywords: Results Entering System, Semester results issuing process, Results analyzing, Design, Development, Implement

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Medical Sciences

Assessment of Possible Risk Factors Affecting Transmission of Dengue in the District of Gampaha Based on Reported Dengue Cases

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Dengue is a fast spreading arboviral infection transmitted by the bite of infected females of *Aedes aegypti* (Linnaeus) and *Ae. albopictus* (Skuse). According to the Epidemiology Unit, the second highest number of dengue cases is reported in the District of Gampaha, Sri Lanka over past ten years. Objective of this study was to investigate the entomological and socio-economic risk factors affecting transmission of dengue in laboratory-confirmed dengue case reported stations in the District of Gampaha. Laboratory confirmed positive dengue patients (n=100) by dengue NS1 antigen test during the period of June, 2018-August, 2019 were selected. Entomological surveillance was conducted by visiting to each patient within one week of notification of a positive case. For the collection of socio-economic data, an interviewer-administrated questionnaire was used. Adult *Aedes* mosquito samples collected using a back-pack aspirator showed, 98.64% (73/74) of *Ae. albopictus* and 1.35% (1/74) of *Ae. aegypti* mosquitoes. Larval collection using standard larval surveillance techniques showed 92.96% (185/199) and 7.04% (14/199) of *Ae. albopictus* and *Ae.aegypti* larvae respectively. The highest House Index (55.17%-16/29), Container Index (28.89%-13/45) and Breteau Index (44.83%-13/29) were reported in the month of June, 2019. The major *Aedes* breeding place was identified as plastic buckets/barrels (48.6%-84/173) that being used to discard waste. Piped borne water (88%-88/100) was the major water source of the house-holds. Water source of tube well (9%-9/100) was the next popular water source and 66.67%(6/9) of tube wells were positive breeding places for *Aedes* larvae. Average homestead of the premises of dengue patients was 16.14 perches. From the 100 dengue cases, 67 cases were from middle of town areas, while 2 were from rural areas. Vegetation coverage of the 78% (78/100) house-holds were grass, bushes and small trees and 3% (3/100) house-holds didn't have any vegetation coverage. The major mosquito prevention method was usage of mosquito nets (54%-54/100) and among dengue patients 7% (7/100) of dengue patients weren't using any mosquito prevention method. High density of *Ae. albopictus* mosquitoes, was reported although *Ae. aegypti* is the major vector of dengue. Therefore, it is required to draw more attention about the *Ae. albopictus* breeding sites in dengue control programmes. Participants from the study sites were well aware about the disease but still there is a lack of knowledge on breeding sites and vector control methods. Drawbacks in the waste disposal methods, lack of cleanliness in gardens, unplanned water sources and neglecting preventive actions could be considered as the possible risk factors.

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Keywords: "Dengue; Aedes; entomological surveillance; socio-economic factors; vector control"

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Evaluation of the Pyrethroid Resistance based on Voltage-Gated Sodium Channel (VGSC) Mutations in *Aedes aegypti* populations of Colombo, Gampaha and Kandy Districts in Sri Lanka

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Many countries focus on chemical based vector control strategies to restrict the disease transmissions, where pyrethroid insecticides are widely used as the first line of defense against *Ae. aegypti*. However, the constant use of insecticides have proven to induce insecticide resistance in mosquitoes. The knockdown resistance (kdr) occurs due to mutations in the Voltage Sensitive Sodium Channel (VSSC) or mutations in the Voltage-Gated Sodium Channel (VGSC), coded by the VSSC gene. Only three kdr mutations namely, the V1016G, S989P, and F1534C have been confirmed as commonly occurring amino acid substitutions among mosquito populations in Southeast Asia. Therefore, to extend this observation, current study was conducted to evaluate the prevalence of V1016G and F1534C mutations among *Ae. aegypti* mosquito populations in three different geographical regions of Sri Lanka. Immature (both pupae and larvae) stages of *Ae. aegypti* mosquitoes were collected from Colombo, Gampaha and Kandy districts from March to December 2018 and samples were transported to the Molecular Medicine Unit, Faculty of Medicine, University of Kelaniya. A total of 855 *Ae. aegypti* larvae were collected from all districts and polymerase chain reaction (PCR) assay for molecular genotyping of mutations was performed for collected all *Ae. aegypti* larvae (III instar), to identify the prevalence of kdr mutations in the three *Ae. aegypti* populations. The frequencies of the resistant and susceptible kdr alleles were determined by using the Hardy–Weinberg Equilibrium for each of the point mutation. The *Ae. aegypti* populations from Colombo, Gampaha and Kandy districts showed 40.07% (123/307), 39.58% (114/288) and 19.58% (47/240) of V1016G and F1534C mutations, respectively. The wild type (RR) genotype remained predominant within all the three districts, whereas the homogenous (SS) mutation genotype occurred only in minority. Further, the F1534C was predominant in *Ae. aegypti* populations of all districts. Among the kdr mutation population, heterogeneous genotyping (RS) for both V1016G and F1534C was prominent, while SS genotyping for V1016G mutation was not observed in the Kandy district. The findings clearly denote that long-term insecticide applications and multiple use of pyrethroids has led to the progression of insecticide resistance among local *Ae. aegypti* populations. Therefore, evaluation of the prevalence levels of these kdr mutations highlights the necessity for shifting towards novel vector control strategies.

Keywords: *Ae. aegypti*, kdr, pyrethroid, insecticide resistance, F1534C and V1016G

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Assessment of Real Time Polymerase Chain Reaction (PCR) Assay for the Early Diagnosis of Leptospirosis in Humans

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Leptospirosis is the most widespread zoonotic disease worldwide having a great impact on health issues in developing countries. It is caused by a pathogenic spirochete of the genus *Leptospira* where humans become infected through contact with the urine of infected animals. It is often exceptionally under-recognized as the clinical manifestation mimics variety of similar disease conditions that occur in the same environmental and climatologic conditions which accentuate the importance of laboratory diagnosis of leptospirosis. At present, no hospital based facilities are available for acute confirmation of the disease. The existing practice is retrospective confirmation with serological diagnosis. Therefore, the establishment of acute phase diagnosis will help in monitoring the disease, determining when hospital admission is required and reduce case fatalities. The objective of this study was to establish and evaluate a molecular-based assay to provide laboratory confirmation of leptospirosis at the acute phase of the infection (1-5 days of fever). Patients fulfilling clinical criteria stipulated by the accepted case definition were selected for the study and patients who failed to show evidence of sero conversion were considered as true negatives. A real time Polymerase Chain Reaction (PCR) assay with targeting a 203 bp fragment in the *secY* gene which is conserved among pathogenic serovars of *Leptospira* was established using a reference DNA sample (*L.interrogans* serovar *Icterohaemorrhagiae* strain RGA). Analytical sensitivity and the analytical specificity of the assay were calculated. The accuracy of the real time PCR was determined by a panel of acute blood samples collected from laboratory confirmed leptospirosis patients (n=35) and non-leptospirosis (n=44) patients based on Microscopic Agglutination Test (MAT) and/or IgM immunochromatography. Patients who failed to give positive test results either with MAT or IgM immunochromatography were considered as true negatives. Analytical sensitivity was approximately 314 genome equivalents per reaction and analytical specificity showed no amplification of *Leptospira* saprophytic sp. and other micro-organisms. The assay could effectively detect *Leptospira* DNA from clinically diagnosed leptospirosis suspected patients with 60.0% (21/35) diagnostic sensitivity and 77.27% (34/44) diagnostic specificity. This may be attributed to some samples failing laboratory confirmation despite their collection based on clinical suspicion. Therefore, real time PCR established can be used for rapid and definitive diagnosis of leptospirosis during the acute phase of infection.

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Keywords: Leptospirosis; *Leptospira*; diagnosis; molecular; PCR

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Optimization of Irradiation Dose for Sterilization of *Aedes aegypti* (Linnaeus) Mosquitoes for Application of Sterile Insect Technique (SIT) Program in Sri Lanka

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There is an increasing demand for exploration of the potential of applying sterile insect techniques (SIT) in area-wide integrated vector management (AW-IVM) in many countries. Sterility of male insects can be accomplished with ionizing irradiation and SIT focus on release of sufficient sterile male mosquitoes to induce sterility in the wild females which over time causes decline of the target mosquito population. Therefore, current study was focused on determining the effects of different doses of radiation on survival, flight ability and reproductive capacity of local strains of *Aedes aegypti* (Linnaeus) for SIT application in Sri Lanka. Adults *Ae. aegypti* were maintained under standard laboratory conditions at the Molecular Medicine Unit, Faculty of Medicine, University of Kelaniya, Sri Lanka. Male pupae and female pupae were separated using a Fay and Morlan glass plate technique. A total of 100 male *Ae. aegypti* pupae were exposed to each different irradiation doses (40, 50, 60, 70 and 80 Gy) using Co60 source of gamma rays. Effects of irradiation on pupal mortality, flight ability, fertility and adult male survival were monitored under laboratory conditions. One-way analysis of variance (ANOVA) was used to investigate the significance in the variations among observed factors. Kaplan-Meier survival analysis was conducted to estimate the survival functions of irradiated males. The survival in relation to different radiation doses were compared using ANOVA followed by Tukey's pairwise comparison. The survival of irradiated pupae was invariably greater than 90% in control- and in test groups and they did not differ significantly ($P > 0.05$). Irradiation had no significant adverse effects on the flight ability (capacity to fly out of a test device) of male mosquitoes, which consistently exceeded 90%. The fertility of female mated with irradiated male was significantly reduced in *Ae. aegypti* at all doses and zero fertility was observed at 70 and 80 Gy. *Ae. aegypti*, fertility in irradiated males mated with female was less than 1% at 50 and 60 Gy. The male mean survival time was reduced by irradiation in a dose-dependent manner. However, the mean survival time in control and sterilizing doses of 40, 50, 60 and 70 did not differ significantly ($P > 0.05$). Therefore, 50 Gy dose will be used as the optimal radiation dose *Ae. aegypti* population for future evaluations of SIT-based control. The results of the present study will be applied to studies of male sexual competitiveness and for stepwise evaluations of the SIT for suppression of *Ae. aegypti* population in Sri Lanka.

Keywords: "Sterile insect technique, *Ae. aegypti*, irradiation, fertility, flight ability, survival"

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Identification of Allergens (By Skin Prick Testing) in Adult Patients with Bronchial Asthma, Presenting at Asthma Clinic, Chest Hospital Welisara: A Preliminary Study

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Allergic diseases warrant identification of specific allergen triggers. Although many studies were done to determine patterns of allergen sensitization in Western countries, sensitization patterns are not known in Sri Lanka. The objective of this study was to identify the common aero-allergens by skin prick testing (SPT) in adult patients with bronchial asthma, at asthma clinic, Chest Hospital, Welisara. The specific objectives were to describe the exposure patterns, risk factors, severity, and control of symptoms of asthma and to compare allergen sensitization patterns with the severity and exposure patterns.

A cross sectional descriptive study was conducted among 200 patients >12 years of age with bronchial asthma diagnosed by a chest physician. SPT was done from 2018 January- 2019 January in all consenting and eligible 10th patient, to test maximum of 5 patients for a day until a minimum of 200 patients were tested. SPT was done for common aeroallergens with positive (0.1% histamine) and negative controls (saline). The aero-allergen panel was selected according to the most prevalent allergens in patients with asthma found by previous researchers. An interviewer administered questionnaire was used to obtain demographic data, clinical details including severity, co-morbid factors and exposures. Classification of asthma and symptom control was done according to 2016 Global Initiative for Asthma guidelines.

The study population was mostly (93%) comprised of patients above the age of 40 years. Adult onset asthma was present in 78% of patients. There was a significant female to male ratio of > 3:1. Allergic rhinoconjunctivitis (ARC) was the most prevalent concomitant atopic disease (63%). Most patients complained of worsening of their symptoms mainly at outdoors (62%) than indoors (37.5%). Out of total 200 study sample, 174 (87%) patients had a SPT positive result for at least one allergen tested. House dust mite (HDM) was the commonest allergen trigger which was positive in 87.3% of patients. Nearly 60% of patients were allergic to storage mites (SM) (59.2%), and cockroach (58.6%). Significant number of patients who complained of worsening of symptom indoors (88.0%) were allergic to both HDM and SM than who had worsening of symptoms outdoors (69.3%). Patients who complained of worsening of symptoms outdoors were allergic to pollens significantly (29.0%), more than who had symptoms indoors (12.0%). The SPT positivity is significantly higher in patients who had other concomitant atopic conditions (90.18%).

In conclusion, 87% of asthma patients were sensitized to one or more allergens. HDM is the most common allergen trigger in all sub-populations in the study group, but it was commoner in the sub-groups of patients who had symptoms indoors (88.0%) and had concurrent ARC (84.9%). Pollen sensitization was commoner in patients who had symptoms outdoors.

Keywords: “Asthma; Allergy; Skin prick test, Aero-allergens, Atopy”

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Open Educational Resources (OER) and Social Media (SM) for Academic Information Seeking at Faculty of Medicine, University of Kelaniya

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Use of Open Educational Resources (OER) and Social media (SM) for academic information seeking is a common practice among modern undergraduates. There are limited data in Sri Lanka on OER and SM use as educational tools. This study aimed to evaluate the use of OER and SM for academic purposes among the medical students at Faculty of Medicine, University of Kelaniya.

We undertook a cross sectional study at the Faculty of Medicine, University of Kelaniya. Stratified sampling with proportional allocation was used to select students from each batch and 287 students were recruited from 1st to 5th year. Informed written consent was obtained and a self-administered questionnaire was given. The questionnaire consisted of questions on OER and SM use in academic activities along with the frequency of usage. 257 completed questionnaires were analyzed.

Of 257 (89.6%) respondents, 185 (72.0%) were females. The OER and SM use in education were 92.5% (95% CI: 89.3% - 95.8%) and 89.0% (95% CI: 85.2% - 92.6%) respectively. Both findings were not significantly different by gender or between academic years. The reasons for using OER in education included: the availability of information at any time (38.1%), easiness to search (33.9%), availability of detailed information (17.3%) and updated information (7.2%). Wiki sites (89.0%) were the most popular OER followed by Slide Share (37.2%) and e-journals (20.3%). 3.8% participated in medical forums. 53.4% believed information in wikis are reliable. Facebook (79.8%) was the commonest SM platform followed by YouTube (60.3%) and Google+ (50.2%). 79.0% used SM to follow the medical related web sites. 76.3% used SM to join education groups. 41.2% used SM in academic discussions and sharing information with group of foreign students. 35.8% could not find academic information via SM due to the information overload. 31.1% mentioned that the SM disturbed concentration on their academic works. 12.5% did not trust the contents in SM. Students also searched the web to find the information. 58.9% trusted the information without considering the source and only 36.4% specifically searched the information in educational and government related sites. Majority of students have used OER and SM for academic purposes. Wiki sites and Facebook were the most popular OER site and SM platform among students. Majority students trusted the information found on web search without considering the credibility of sources. E-journals are not popular among students. The majority had followed the medical related web sites and joined educational groups via SM. Disturbances to academic works and difficulty in finding accurate information were major concerns in using SM. This study highlights the importance of improving information literacy among the medical students.

Keywords: Open Educational Resources; Social Media; Undergraduate medical students; Wiki; Face Book

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Susceptibility among Dengue Vectors to Malathion and Deltamethrin Insecticides in Three Selected Medical Officer of Health (MOH) Areas in the District of Gampaha, Sri Lanka

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Dengue has become the most important public health problem in Sri Lanka at present. As there is no effective vaccine or drug up to now, vector control is the main arm of disease control. Of these approaches, insecticide based control is used widely. However, excess use of chemicals and inappropriate application without determining the discriminative doses has given rise to the insecticide resistance among vector mosquitoes. Entomological surveys (Ovitap) were conducted in Negombo, Attanagalla and Dompe Medical Officer of Health (MOH) areas representing Urban, Sub urban and rural conditions, respectively from December 2016 to June 2019. A total of 100 ovitraps each was placed outdoor and indoor in randomly followed by the collection after 5 - 7 days. Eggs collected from ovitraps were reared under laboratory condition the laboratory (Temperature; $27 \pm 10^{\circ}\text{C}$; Relative Humidity 70 - 80%). The reared larvae were identified using standard taxonomic keys. Identification was further confirmed by identification of adults emerged from larvae. Adult mosquitoes were reared under optimized insectary conditions provided with sugar feeding. Batch of 140 mosquitoes from *Aedes aegypti* (Linnaeus) and *Ae. albopictus* (Skuse) was taken separately from the colony 24 hours after a sugar feeding. Each batch of mosquito was exposed to malathion (0.8%) and Deltamethrin (0.03%) insecticide susceptibility following the World Health Organization (WHO) defined procedures. The experiment setup was repeated for 2 times. Mortality and corrected mortality was calculated using Abbott's formula after 24 hours' exposure period. The results indicate that both dengue vectors have evolved high level of insecticide resistance to malathion (0.8%) and deltamethrin (0.03%) in the District of Gampaha except *Ae. albopictus* mosquitoes in rural areas. *Ae. albopictus* mosquitoes were found fully susceptible for 0.03% deltamethrin in Dompe (rural) MOH area and emergence of resistance (95.9%) was observed in Attanagalla (suburban) area. It was found resistant in Negombo area (83.8%) which is highly populated. *Ae. albopictus* mosquitoes were found fully resistant for 0.8% malathion in both urban (71.5%) and Sub urban (85.3%) areas while emergence of resistance was observed in Dompe MOH area (90.8%). *Ae. aegypti* was found resistance to both 0.03% deltamethrin and 0.8% malathion in Negombo area (88.1%, 53.5% respectively) and resistance was suggested for 0.03% deltamethrin in Attanagalla MOH area (91.8%) while it was found resistant for 0.8% malathion (89.8%) in the same area. *Ae. aegypti* was not recorded in Dompe MOH area during the study period. Since both the dengue vectors have developed resistance to WHO diagnostic discriminative doses for Malathion and deltamethrin intensity bioassays (five times and ten times of discriminative dose) are needed to be done to confirm the level of resistance in these vectors. Therefore, results highlight the requirement of continuous insecticide resistance monitoring incorporated with the surveillance and control efforts. Hence, use of evidence based discriminative doses of insecticide for each area should be vital to delay the development of resistance among natural population.

Keywords: “*Aedes*, insecticide, resistance; Susceptibility; monitoring”

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A Time-Series Analysis of the Incidence of Leishmaniasis Integrated with Climatic Variables in Kurunegala District, Sri Lanka

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Leishmaniasis is one of the main health considerations in the tropical areas of the world. The disease is caused by the parasites of genus *Leishmania*, which is transmitted from one host to another through female Phlebotomine sand flies. The information on the correlation between weather conditions and leishmaniasis in Sri Lanka is limited. However, studies from other tropical countries suggest that leishmaniasis is highly influenced by climatic variables, but the nature and magnitude of these effects may differ from one geographical region to another. In the current study, we conducted a time series analysis of the number of patients reported from Kurunegala District of Sri Lanka integrating climatic factors as external regressors. Monthly reported cases of leishmaniasis from January 2014 to December 2018 in Kurunegala District were tracked from the Regional Director of Health Services (RDHS) office. The climatic factors recorded from regional Agro meteorological stations in Kurunegala District were obtained. A time series of the number of patients was created using “tseries” package of R statistical software. The variance of the time series was stabilized by log transformation. The “forecast” package of R software was used to generate an ARIMA model. Resulting model was slightly changed based on the partial autocorrelation function (PACF) plot, the autocorrelation function (ACF) plot, and the number of differences required to achieve the stationarity of the time series. These models were assessed by Akaike information criterion for goodness-of-fit. Spearman’s rank correlation and cross-autocorrelation tests were performed to assess the associations between the number of patients and climatic variables at different lags. The most associated lags of each factor was used as external regressors in a multivariate ARIMA model to assess the effects of climatic factors on the predictive power of the model. The application of “auto.arima” function of forecast package to the log transformed and differenced time series of the number of patients resulted in the model ARIMA (1,1,0), which is also the selected model as it had the lowest AIC among the models generated by changing the values of autoregressive (p), integrative (d), and moving average (q) terms of the model. The time independency of the residual series according to the Ljung–Box test further confirmed the suitability of this model for forecasting. The maximum temperature and the relative humidity were positively correlated with the occurrence of leishmaniasis at 1 and 3 months’ lag periods respectively, which can be plausibly explained by the conditions being favorable for vector sand flies and the climate driven changes in host immunity. However, the integration of climatic factors did not increase the predictive power of the model, indicating the possibility of a latent interaction effect between the climate and the regressing terms (AR and MA) of the model or a stochastic mechanism of interactions between weather factors and leishmaniasis incidence. Therefore, the climatic factors, despite their effects on the disease incidence, cannot be used to improve the predictive power of the ARIMA model.

Keywords: Leishmaniasis, Time series, ARIMA, Climate, Sri Lanka

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Bacterial Diversity in the Midgut of Field Caught *Culex tritaeniorhynchus*

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Ingestion of blood meal by female mosquitoes triggers a series of physiological processes in midgut where symbiotic microbes also exist. These symbiotic microbes can be engineered to produce molecules that inhibit pathogens; through paratransgenic approach. Little is known about the midgut microbes of *Culex* mosquitoes and no attempt has been made so far in Sri Lanka. *Cx. tritaeniorhynchus* mosquitoes were separated from the entomological surveys conducted at Kelaniya Medical officer of Health (MOH) area from June – August 2019. Unfed adult female mosquitoes were sacrificed using a cold shock and were surface sterilized using 70% ethanol followed by rinsing with phosphate buffer saline (PBS). Midgut of mosquitoes were dissected and midgut of ten mosquitoes were pooled in sterile PBS (250 µL) to make a homogenized lysate. A dilution series (10⁰- 10⁻⁷) was made from lysate. 100 µL from each dilution was plated on Plate Count Agar (PCA) and were incubated for 48 hours at 37 °C. Pure cultures for each microbe were obtained from the primary plates using streak plate method, sub culturing in Nutrient Agar. The experiment set up was repeated 25 times with ten mosquito pools at each effort. Colony separation was done based on phenotypical differences and basic biochemical tests. Stab cultures of isolates were sequenced for 16S ribosomal RNA partial gene. To identify the closest related sequence, obtained sequences were analyzed by Bioedit software package and completely aligned sequences were compared with the BLAST database. The evolutionary history was inferred using the neighbor-joining method and the evolutionary analyses were conducted in MEGA X. A total of eight bacterial strains namely; *Staphylococcus pasteurii*, *Bacillus megaterium*, *Staphylococcus cohnii*, *Pantoea dispersa*, *Staphylococcus chromogenes*, *Bacillus aquimaris*, *Staphylococcus arlettae*, *Staphylococcus scuirii* was isolated from *Cx. tritaeniorhynchus* (n=250). All of these species were belonged to two phyla; Firmicutes and Proteobacteria. Phylum Firmicutes was the dominant phyla which include seven species. The evolutionary distances which were computed using Tajima-Nei method were used to infer the phylogenetic tree. It represented a close relationship between the species of two genera; *Staphylococcus* and *Bacillus* while the relationship was distant for genus *Pantoea*. The present data strongly encourage further investigations to explore the potential usage of these microbes through the paratransgenic approach which is a novel eco-friendly vector control strategy.

Keywords: evolutionary; microbe; mosquito; paratransgenic; symbiotic

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Mosquito Breeding Habitat Diversity and Distribution of Species in Selected Areas in the Districts of Kurunegala, Gampaha, Kegalle and Kandy in Sri Lanka

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Sri Lanka has been suffering from mosquito-borne diseases since ancient times with the high prevalence of malaria, filariasis and Japanese Encephalitis (JE). As a result of successive efforts in control programs, Sri Lanka has received remarkable achievements. However, with all these successful efforts some arbovirus infections majorly the dengue has increased rapidly over last few decades. Some control programs only target the specified vectors for that disease and report of other vector species is ignored. The prevalence of different mosquito species from surveillance has been limitedly document is Sri Lanka which is grossly inadequate in providing evidence for potential health risks. The present investigation attempts to cater for this knowledge gap by documenting the prevalence of mosquito species in four selected districts of Sri Lanka. Entomological surveys were conducted from a total of 160 temporary and permanent mosquito breeding habitats identified in selected areas, in the districts of Kurunegala, Kegalle, Kandy and Gampaha from June 2017 to October 2018. Mosquito immature stages were sampled using standard dipping, siphoning or pipetting methods according to the nature of breeding habitat and collected specimen were identified up to the species level. Chi-square test of independence was used to evaluate the significance in the distribution of different mosquito species among different breeding sites in the studied districts. The diversity indices for breeding habitats were subjected to a Kruskal Wallis test followed by Dunn's Multiple Comparison to identify the significance in the variations of diversity indices across breeding sites and studied districts. A total of 4663 mosquito larvae belonging to seven genera and fifteen species of mosquitoes were collected from natural and artificial water holding macro and micro habitats located in study sites. The relative distribution of different mosquito species differed significantly among the four studied districts ($\chi^2=143.248$; $df= 33$; $P < 0.001$). Mosquito assemblages in the districts of Gampaha and Kandy indicated a similarity of 83.16%, while the district of Kegalle shared a similarity of 75.45% with the above cluster. A total of 21 permanent/temporary key breeding sites were found from the study areas. As suggested by the Kruskal Wallis statistics ($P < 0.05$ at 95% of significance), all the diversity indices for immature stages of mosquitoes varied significantly across different breeding sites recorded during the study. Meanwhile, none of the diversity indices indicate significant differences in terms of locality. The highest values of Pielou's Index (2.01 ± 0.6), Menhinik's Index (3.34 ± 0.83) and Margelef Index (0.59 ± 0.19) and highest species richness (4.0 ± 2.82) in terms of mosquito larvae were shown by paddy fields within the studied four districts. Findings of the current study would be useful to identify the entomological potential for disease transmission and facilitate implementation of appropriate vector control interventions.

Keywords: entomological; health; natural; temporary; vector

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Evaluating Spatiotemporal Dynamics of Snakebite in Sri Lanka

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Snakebite data has shown spatial and temporal variations in many countries and regions. Yet, no study has evaluated spatiotemporal patterns of snakebites across a country in detail. We used data from the National Snakebite Survey (NSS), which sampled 0.8% of the national population (165665 people) living in 1118 clusters representing all the provinces. Explanatory variables of previously published spatial and temporal models for the NSS data were considered as candidate explanatory variables for our spatiotemporal models. Spatial prediction models for snakebite incidence was a geostatistical binomial logistic model and the temporal prediction model was a Poisson log-linear model, which predicted snakebite incidence at the national level. These spatial and temporal models could not explain locally varying temporal patterns in the country. Therefore, we constructed spatiotemporal models at the provincial levels. The NSS was conducted for 11 consecutive months, and different clusters were surveyed in each month. Therefore, the NSS can be considered as a set of 11 repeated cross-sectional surveys at different locations. NSS captured bite events that occurred in the survey month and in the 12 preceding months. Hence, each individual provided information regarding the number of bites experienced in each of 13 months. In the NSS data, the location of each sampled individual was fixed at the cluster centroid and the data contain the month of each recorded bite, if any, over a 13 month period covering the survey month and each of the preceding 12 months. We modelled the data from each cluster as an inhomogenous Poisson process with cluster-level explanatory variables and estimated the model parameters by maximising the pooled log-likelihood over all. The fitted cluster-level spatiotemporal models were aggregated so as to predict the province-level monthly bite incidence rates in Sri Lanka. Snakebite incidence showed complex spatiotemporal patterns in Sri Lanka. Models fitted for Southern, North Central, Uva and Sabaragamuwa provinces showed both spatial and temporal variation in snakebites. The geographical extent of the high-risk areas (i.e. hotspots) in these provinces dynamically changed over a period of a year. The remaining five models (i.e. Western, Central, North Western, Northern and Eastern) did not show any spatio-temporal interaction, in risk, i.e. the geographical extent of the hotspots persisted throughout the year. Southern, Sabaragamuwa and North Central provinces showed triannual seasonal trends. High snakebite incidences in Southern and Sabaragamuwa provinces were noticed in April followed by December and August to September. Peak incidences in North Central province were seen in November and another two smaller peaks were observed in April and July. Uva province showed a biannual trend with highest incidences in June followed by December. These findings can inform healthcare decision-making at local level, taking account of the seasonal variations in order to prevent and manage snakebites in Sri Lanka.

Keywords: Snakebite; spatiotemporal models; risk map

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Scrub Typhus, Its Potential Zoonotic Hosts and Vectors in Sri Lanka: A Preliminary Report

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Scrub typhus or tsutsugamushi disease is an acute febrile infectious disease endemic in the “tsutsugamushi triangle” of Southeast Asia, the Asian Pacific rim, and Northern Australia, with approximately one billion individuals at risk of infection. Currently one million new infections occur annually. The term scrub typhus is descriptive of the typical habitat endemic to the vector, although its existence is not limited to such niches. It is caused by a Gram-negative, obligate intracellular bacterium *Orientia tsutsugamushi*, of the Rickettsiaceae family, transmitted to humans following an accidental bite by an infected larval trombiculid mite commonly known as chiggers. Chiggers are a group of ectoparasites prevalent on a variety of mammals, mainly small mammals like rodents. Clinical cases of scrub typhus are documented in almost all ecological zones including both rural and urban Sri Lanka, as year-round sporadic cases or as outbreaks. However, the reservoir hosts in Sri Lanka and transmitting vector species are yet to be identified. Such knowledge is important for effective implementation of control measures of this re-emerging infection. Therefore, this study was designed to live capture small rodent/mammal hosts and identify chigger mite species present in the country. Traps designed to live capture small rodents/mammals were placed in peri-domestic areas of clinically confirmed scrub typhus patients in southern province, Sri Lanka. Traps baited with fried coconut were placed around residences and in pre-selected sites with scrubby vegetation and rodent burrows, one hour before sunset and were retrieved the next day morning. The captured animals were anaesthetized with ketamine/xylazine and inspected for the presence of vector mites. Collected mites were preserved in 70% alcohol and identified by microscopy using standard morphological keys. Collected data were analyzed using chi square test, MINITAB 17 statistical software. Rodents belonging to *Rattus norvegicus* (n=15; 56%), *Rattus rattus* (n= 10; 37%) and shrews of *Suncus murinus* (n=2, 7.4%) were captured during the study over 6 months and a total of 147 mites were isolated. Isolated chigger mites belonged to genus *Leptotrombidium* (n=90; 67%), *Eutrombicula* (n=31; 23%), *Helenicula* (n=24, 17 %) and species *Leptotrombidium lagone* (n=2; 1.5 %). Majority were potential vectors for *Orientia tsutsugamushi*. It is noted that *Rattus norvegicus* harbored significantly more chigger mites (mean of 7 per individual; $\chi^2 = 110.35$; $p < 0.001$) compared to other species captured. We are currently in the process of molecular speciation of sampled chigger mites and molecular detection of *Orientia tsutsugamushi* in collected mites in order to determine their vectorial potential.

Keywords: Chiggers; *Leptotrombidium* ; *Orientia*; Infectious disease; rodents

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Awareness of Rickettsial Infections (Typhus Fever) in a High Endemic Community in Hambantota District, Sri Lanka

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Rickettsial infections are re-emerging in Sri Lanka with an average annual incidence of 1500 patients. Low awareness and the scarcity of proper diagnostic tools has resulted in delayed disease diagnosis and negligence towards the disease leading to extended morbidity in Sri Lanka. Community awareness of the disease is important for timely diagnosis and control. Hambantota district in Southern Province of Sri Lanka, which records the fourth highest incidence of typhus, was selected for the study.

Households (n= 204) situated around index cases of typhus fevers were randomly selected for the survey. An interviewer-administered questionnaire was used to gather data on illness awareness (disease aetiology, symptoms, transmission, disease associations) by selecting a consenting representative from each household. Descriptive and inferential analysis of the data was carried out using SPSS IBM statistical software.

Of the 204 interviewed, only one (0.5%) identified the illness as “typhus”. Majority identified the disease as “Peacock fever” (43.12%; n= 88) followed by “tick fever” (14.71%; n=30). It is interesting to note that 41.67% (n=85) of the households were not aware of the disease even though they are living in a disease endemic area. None were aware of the etiological agents of typhus fever. Among those with awareness, 65.55% (n=78), believed that infection was tick-borne and the vector ticks were harbored by peacocks. About 27.73% (n=33) believed that the transmission was directly from peacocks, followed by other birds (2.52%; n=3). Majority 82.35 %, (n=98) were unaware of symptomatology while only 1.77%, (n=14) recognized it only as a febrile illness and myalgia (4.20%; n=5). Of those who were aware, 73.95 %, (n=88) had received information through acquaintances, 25.21% (n=30) from health personnel and one through mass media. None were aware of preventive measures. The results of the present study highlight the lack of proper awareness of the disease condition, which may adversely impact on disease control efforts.

Keywords: Typhus; Rickettsia; disease awareness, vectors

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An Observational Study on Urinary Catheterization with Emphasis on Infection Control Practices

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Introduction: Urinary tract infections (UTI) are predominant nosocomial infections. Of them, catheter-associated UTI (CA-UTI) is prevailing. Of the reasons behind CA-UTI, factors associated with catheterization plays a vital role. Identification of such reasons would scrutinize the preventive measures of CA-UTI.

Objective: To find out the compliance with standards in the urinary catheterization.

Methodology: A descriptive-cross-sectional study was conducted observing hundred urinary catheterizations done at a secondary-care hospital in Sri Lanka during 01-10-2018 to 15-10-2019. The study was conducted through the hospital infection control nurse. Study observations, including measures taken before, during and after each catheterization were recorded. The observations were assessed against the catheterization guidelines provided in the infection control manual of Sri Lanka. The level of satisfaction in each measure was considered when the correct measure was followed in >75% of catheterizations.

Results: Of the 100 catheterizations, 85 were from wards, 11 in the preliminary care unit and four in the intensive care unit. Before the catheterization, patients' privacy was secured in 96% of patients. Healthcare worker (HCW) was introduced by himself/herself to the patient in none of the catheterizations. In all cases, patients' details were confirmed with the patient records (name, age, admission number) in the bed head ticket. In 64% of patients, they were inquired for relevant allergies (plaster, povidone or latex). In 86% of cases, HCW explained the catheterization procedure to patients and obtained verbal consent. Requirements for the procedure were checked in the catheterization tray in 97% of cases. Washing hands with soap and water and wear sterile gloves were observed in 66% of catheterizations. Catheterization was done by a medical officer in 55% and 45% was done by a nurse. However, the cleaning of patients' genital area before catheterization was done by a medical officer in 9%, nurse in 32% and a laborer in 59% of patients. During the procedure, the urethra was lubricated with sterile anesthetic gel in 34% and the catheter was lubricated with anesthetic gel in all catheterizations. After catheterization, the catheter bulb was inflated with the ideal volume of water in all cases and the catheter was anchored to thigh securely with plaster in 87%. Urine bag kept below the level of the bladder in all cases. Following catheterization, the patients' perineal area was cleaned in 31% of patients. In 96% of catheterizations, HCWs washed hands after the procedure. Documentation of procedure in the BHT was done in none.

Conclusion: Satisfactory measures were taken in the pre-catheterization stage as explaining the procedure to the patient, obtain consent and verify patient details. However, measures were unsatisfactory as inquiring about relevant allergies, wash hands, and wear sterile gloves before the procedure. Though trained personnel did the catheterization, the same person did not do the cleaning of the perineal area, which is very important. After catheterization, cleaning of the perineal area was not performed in majority and recording of the procedure was not satisfactory at all.

Keywords: "Urinary catheterization; catheter-associated UTI"

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A Single-Center Study on Intravenous Cannulation

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Introduction: Of the nosocomial infections, bloodstream infections are vital since it has potential to ends up with sepsis, which has high mortality. Of the hospital-acquired bloodstream infections, a significant proportion is associated with intravenous (IV) cannulation.

Objective: To find out the compliance with the protocol for IV cannulation in practice.

Methodology: A descriptive cross-sectional study was conducted observing a hundred IV cannulation done at a secondary care hospital, Sri Lanka following approval from hospital administration from 01-10-2018 to 30-10-2019. The study was conducted through an infection control nurse with no prior notice to the relevant ward/unit. Observations were recorded and the procedure was checked against the IV cannulation guidelines stated in the infection control manual of Sri Lanka.

Results: Of the 100 cannulations procedures, 90 were from wards and 10 from the preliminary care unit and four from the intensive care unit. In none of the procedures, the healthcare worker (HCW) himself or herself was introduced to the patient. In all procedures, physicians' recommendation for cannulation was checked and patient details were verified with bed head ticket. Allergy for plaster or povidone-iodine was inquired in 70%. The cannulation procedure was explained to the patient in 83%. The patients' preference as to which arm the cannula should insert was inquired in 28% of patients. Patients' non-dominant arm was used for cannulation in 52% and patients' dominant hand was used for cannulation in 48%. The selected insertion site was disinfected with 70% alcohol and allowed to dry in 24%. After cleaning, the tentative puncture site was touched by HCW in 58% cannulation and not so in 42%. Following the procedure, the cannula was secured with plaster in all calculations. The cannula was flushed with normal saline in 89% of cannulation procedures. Entry ports of cannula kept closed when not in use in 94%. The clinical waste following cannulation was disposed into an appropriate bin in 96%. The date of cannula insertion was labeled on the plaster over cannula in 69% and it was not labeled in 31%. After the procedure, hand washing was performed by 44% and not at 56%. The patient was thanked for the compliance in 24% of cannulation and not so in 76%. In all cannulation procedures, the procedure was not recorded in patient records.

Conclusion: Before cannulation, verification of patient details and the physician's recommendation was highly satisfactory. However, the cleaning of the cannulation site before the procedure was highly unsatisfactory. Flushing the cannula, which is against the guidelines, was observed in 89%. Securing the cannula was satisfactory but label the date of cannulation was poor and recording of the cannulation was not observed following any cannulation. Waste disposal following cannulation was satisfactory. Ethics relating to patient handing such as explain the procedure to the patient was satisfactory but introduce the HCW by himself/herself to the patient, obtain consent, inquire about patients' preference and be thankful to patients for compliance following procedure was poor.

Keywords: "Intravenous cannulation; Infection control"

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Study on Contemporary Ayurveda Practice in Sri Lanka Overview to the Policy and Issues

P.G.I. Gunathilaka¹

Introduction: Traditional medicine plays a significant role of the Health Care delivery system in Sri Lanka. Traditional and natural medicine has long ancient history of effective diagnosis and treatment. Unfortunately, there is a lack of scientific research to support this history. Ayurveda Healthcare professionals should have adequate knowledge, skills and correct attitudes regarding Ayurveda Medical Practice in order to control adverse consequences related to contemporary Ayurveda practice.

Objective: This study was conducted to assess the gap in registration of Ayurveda Physicians in different categories (Graduated physicians, Physicians with diploma and Traditional practitioners) due to educational qualifications by accessing the standard of Ayurveda Health care practice in Sri Lanka using education, knowledge, attitudes and practices of Ayurveda practitioners regarding Ayurveda Healthcare practice among Ayurveda physicians working at Western Province Ayurveda Department, Practitioners with Diploma and Traditional practitioners.

Methods: A cross-sectional survey was conducted using a self-administered questionnaire in a sample of Ayurveda Physicians. A convenient sample of 100 registered physicians were selected from the graduated physicians, physicians with diploma and hereditary physicians in the Western Province, Sri Lanka SPSS software was utilized under the guidance of the statistician and data presented in a sound manner safeguarding the existing policy frame work and guide line of the Ministry of Health, Ayurveda Medical council and International Institute of Health Science (IIHS).

Results: Policy regulations on registration of differently qualified Physicians and the standard of practice related to Ayurveda Healthcare practice were the areas that need attention from the health authorities. The majority of physicians had a positive attitude regarding policy change of registration of physicians at Medical Council. Significant positive associations between knowledge and attitudes, knowledge and practices were observed in this study. It meant that those who possess good knowledge also have good attitudes and good levels of practices. So, knowledge is an important factor in standard Ayurveda Health Care practice and this should be emphasized in future strategies.

Discussion and Conclusion: The different categories of Ayurvedic physicians register in a same register at SLAMC creates an important issue while providing Ayurveda Healthcare service Knowledge gaps found in the study should be considered in future training that are designed for Ayurveda Physicians in different categories. Attitudinal changes and associated behavioral changes that are needed from Ayurveda Physicians especially diploma and traditional practitioners in this process of standard Ayurveda medical practice should be discussed at top administration level in order to identify effectiveness of interventions. Practices related to standard Ayurveda Medical system among Ayurveda Physicians could be improved by increasing their knowledge, education, training and also by providing necessary equipment and infrastructure needed for the relevant activity such as workshops, training programs and guide them to conduct researches on Ayurveda Medicines.

Keywords: Ayurveda Health Care Service; Ayurveda Physicians; Sri Lanka; Health policy on Registration

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The Bacteriological Profile of Ear Infections: An Analysis from a Secondary Health Care Center of Sri Lanka

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Introduction: Bacteria responsible for ear infections are diverse. Therefore, the treatment of such infections needs to be guided by the antibiotic sensitivity data. To prevent shift into the chronic form which leads the burden of morbidity and increased healthcare cost. Having a microbiological profile of ear infections with its antibiotic sensitivity pattern would minimize the burden.

Objective: To find out the bacteriological profile and their antibiotic resistance pattern in patients with ear infections

Methodology: A descriptive cross-sectional study was conducted prospectively from 01.10.2018 to 30.09.2019 involving sixty-two patients with clinically diagnosed otitis media or otitis externa by the . Organisms responsible were identified and their antibiotic sensitivity was recorded. Antibiotic sensitivity data of the most common organisms were analyzed. Data related to demography, clinical history and previous antibiotic therapy were noted. The level of significance was considered as $P < 0.05$.

Results: Of the sixty-two patients, 63% (39/62) had otitis externa whereas 37% (23/62) had otitis media. The difference was not significant statistically ($P = 0.096$). In 97% (60/62) of patients, the ear infection was unilateral and in 3% (2/62), it was bilateral. In 48% (30/62) of patients, the current presentation was the first episode, in 27% (17/62), it was the second, in 16% (10/62), it was the third and in 8% (5/62), it was beyond the third episode. In 89% (55/62), patients were treated with empirical antibiotics whereas, in 11% (7/62), the samples were obtained before antibiotics. Of the organisms causing ear infections, *Pseudomonas*–32% (20/62), *Staphylococcus aureus*–25% (15/62), *Candida* spp 12% (8/62), other fungal spp-3%, (2/62) Coliforms-3% (2/62), *Proteus* spp- %, (1/62), *Streptococcus pneumoniae*-2%, (1/62), mixed bacterial growth in 2% (1/62) and no bacterial growth in 19%, (12/62). According to ABST of *Pseudomonas* spp sensitivity was 85% (17/62) for piperacillin-tazobactam, 80% (16/62) for ceftazidime, 75% (15/62) for meropenem, 75% (15/62) for cefoperazone-sulbactam, 70% (14/62) for ticarcillin–clavulanic acid, 70% (14/62) for amikacin, 50% (10/ 62) for gentamicin, 50% (10/62) for Ciprofloxacin and 40% (8/62) for norfloxacin. Of the *S. aureus*, 66.7% (10/15) were methicillin-sensitive (MSSA) and 33.3% (5/15) were Methicillin-resistant (MRSA). According to ABST of MSSA, sensitivity was 100% for gentamicin, chloramphenicol, fusidic acid, teicoplanin and vancomycin, 90% (9/10) for clindamycin, 80% for co-trimoxazole, 70% (7/10) for ciprofloxacin, 60% (6/10) for erythromycin and 50% (5/10) for norfloxacin. Of MRSA, all were sensitive for vancomycin, teicoplanin and fusidic acid, 60% (3/5) were sensitive for clindamycin and none were sensitive for gentamicin, chloramphenicol, co-trimoxazole, ciprofloxacin, erythromycin and norfloxacin.

Conclusion: Of ear infections, there was no significant difference between otitis externa and otitis media in proportions. Almost all had unilateral infections. *Pseudomonas* spp were the predominant bacterium identified and the *S. aureus* was the second. More than 75% of the *Pseudomonas* spp were sensitive to piperacillin-tazobactam, ceftazidime, meropenem and cefoperazone-sulbactam. The sensitivity was <50% for gentamicin and norfloxacin. MSSA was sensitive to most antistaphylococcal antibiotics. However, MRSA was sensitive only for limited antistaphylococcal antibiotics.

Keywords: “Bacterial ear infections; Antibiotic sensitivity”

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Prediction of Dengue Incidence Based on Time Series Modelling in the District of Colombo, Sri Lanka

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Timely implementation of intervention activities, is essential in controlling dengue epidemics. This requires the prediction of dengue epidemics, while respecting the spatial and temporal trends in dengue incidence. However, such aspects are limitedly focused in dengue epidemic management of Sri Lanka. Therefore, the current study was conducted to develop a temporal prediction model for dengue incidence in the district of Colombo in Sri Lanka. Dengue cases reported from 2000 to 2018 in the district of Colombo were collected from the Epidemiology Unit, Sri Lanka. Selected meteorological parameters such as number of rainy days, monthly cumulative rainfall, minimum and maximum relative humidity and temperature corresponding to the same study period were collected from the Department of Meteorology, along with the Oceanic Niño Index (ONI) from the National Oceanic and Administration (NOAA) Centre. All the data were arranged at monthly level. After evaluation of the normality, seasonality, stationarity and seasonal stationarity of the epidemic data, a Seasonal Autoregressive Integrated Moving Average (SARIMA) model was fitted for the prediction of dengue by using the R statistical package. Subsequently, the meteorological factors and the dengue incidence was subjected to a cross correlation analysis to identify the most representative meteorological factors associated with dengue epidemic incidence and an Autoregressive Integrated Moving Average with Exogeneous Input (ARIMAX) model was fitted. The best fitted SARIMA (0, 1, 0) (3, 0, 0)₁₂ model was characterized by an Akaike Information Criteria value (AIC) of -19.04, Bayesian information criterion (BIC) of -5.42, Mean error (ME) of 0.002 and Root Mean Square Error (RMSE) of 0.518. According to the cross correlation analysis, number of rainy days (RD) and Oceanic Niño Index (ONI) denoted a significant negative association with the reported dengue cases in Colombo, while monthly cumulative rainfall (RF), maximum relative humidity (Max_RH), maximum temperature (Max_T) and minimum temperature (Min_T) shared a positive correlation (P < 0.05 at 95% level of confidence). The best fitting ARIMAX model (as indicated below) was characterized by an AIC of -15.74, BIC of -11. 2, ME of 0.006 and RMSE of 0.171.

ARIMA (0, 1, 1) + [-0.0006 RD_{t-3} + 0.0008 RF_{t-3} + 0.0260 Max_RH_{t-3} + 0.0766 Min_T_{t-4} - 0.0661 ONI_{t-5}]

Based on the performance, the ARIMAX model is recommended to be used for the prediction of dengue incidence in the Colombo district to ensure rational allocation of resources for vector control and dengue epidemic management.

Keywords: "Dengue, prediction, time series, ARIMA, ARIMAX, Colombo"

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Dengue Encephalitis with Concurrent Infections by Multiple Dengue Virus Serotypes

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Dengue is a serious public health problem caused by an arbovirus. Abnormal-neurological presentations associated with dengue infection is rare. Herewith, we report a case of a patient with dengue encephalitis who was concurrently infected with multiple serotypes. A 36-year-old, male resident from Poogoda presented to North Colombo Teaching Hospital with a history of generalized tonic-clonic seizures (GTCS) and unconsciousness. On admission, he displayed only a persisting headache. He had no significant illnesses in the past. Detailed history revealed that he has had a fever and left the hospital against the medical advice on the same day. On clinical examination, he was afebrile and blood pressure was 110/80 mmHg. He was well oriented with a Glasgow Coma Scale (GCS) of 15/15 and there was no focal neurological deficit. The fundoscopic examination was normal. His initial full blood count revealed a rise in white blood cells with a predominant elevation of neutrophils of $12.44 \times 10^3/\mu\text{L}$. His platelet count was reported to be $306 \times 10^3/\mu\text{L}$ and, he was treated for a bacterial infection. On the following day, the patient started developing a fever and GTCS. Aggressive behavior, confusion, and delirium were also demonstrated. Neck stiffness was not observed. Non-contrast computed tomography (NCCT) scan, contrast-enhanced computed tomography (CECT) scan, chest X-ray scan and magnetic resonance image (MRI) of the brain were normal. Electroencephalography (EEG) revealed encephalopathy with non-epileptic discharge. Lumbar puncture was performed on the third day of admission and analysis of cerebrospinal fluid (CSF) was unremarkable. IgM antibody for the dengue virus (DENV) was detected in CSF. All the other viral and parasitological studies were normal. The patient was treated with anti-epileptic, anti-psychotic, antibacterial and antiviral drugs. High fever spikes and seizures were continued. GCS started to deteriorate from 9/15 to 3/15. Urine out-put started to decline. Ultra-sound scanning revealed mild ascites. Blood picture analysis showed evidence of having a severe bacterial infection. On day 9, both CSF and serum specimens were referred to Molecular Diagnostic Laboratory, Faculty of Medicine, Ragama for dengue viral investigations. The presence of NS-1 antigen, IgM/IgG antibodies, and the occurrence of concurrent infections with serotype 2 and 3 in the serum sample confirmed that the patient was infected with DENV. The presence of IgM/IgG antibodies were observed in the CSF sample. On day 10, the patient was transferred to the medical intensive care unit and monitored thoroughly. As the condition was deteriorated, he was ventilated and incubated for 11 days in the intensive care unit. He started to recover gradually after the 31st day. On day 36, the patient was discharged without any residual neurological symptoms. The patient is currently being followed up at the neurological clinic. Dengue encephalitis is a rare and deleterious manifestation of dengue infection. It is believed that concurrent infections with multiple serotypes and serotype replacement may cause disease severity. Therefore, reporting uncommon cases will provide insights for the physicians in early diagnosis and effective management.

Keywords: Dengue Encephalitis, Dengue virus, Serotype, Concurrent infections, Neurological presentation

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Evaluating the Antibiotic Properties of Bee Honey as Against Common Pathogenic and Antibiotic Resistant Bacteria Found in Wound Infections

Lakmini Inoka Wijesooriya¹, S. Abeysundara²

Introduction: Antibiotics have largely been effective in treating bacterial infections. However, inappropriate use of antibiotics has led to extensive antibiotic resistance globally. In addition, no new classes of antibiotics are available to counter the dramatic rise of antibiotic resistance. This has led to unorthodox methods in treating antibiotic-resistant bacterial infections. One of these methods is the use of bee honey, which has been used since ancient times.

Objective: The objective of the present study was to determine the effectiveness of bee honey against common pathogenic bacteria in wound infections

Methodology: Common bacterial wound pathogens viz. *Streptococcus pyogenes*, *Streptococcus agalactiae*, methicillin resistant *Staphylococcus aureus* (MRSA), *Escherichia coli* (extended-spectrum beta-lactamases producing), *Klebsiella pneumoniae*, *Acinetobacter* spp, and *Enterococcus* spp were selected for the study. Suspensions of 0.5 McFarland strength of *S. pyogenes* was streaked on blood agar and the others were streaked on Muller Hinton agar. Sterile, 1"x1" size, single gauze layer, soaked with commercially available pure Bee honey (100%) was placed on the center of each inoculated plate and incubated overnight at 37 °C. On following day, each piece of gauze was removed aseptically. Presence of live bacteria from the site where gauze was removed from each plate was checked by streaking on blood agar. The same place where gauze was removed was repositioned with new, sterile gauze layer soaked with bee honey. All plates were incubated at 37°C. Same procedure was continued until no growth was observed. Control tests were done in parallel using same sized gauze without bee honey. Sterility of bee honey was previously confirmed by inoculation on blood agar. The experiment was repeated two times.

Results: Following repeat applications of bee honey, there was no bacterial growth from plates inoculated with *S. pyogenes* and *S. agalactiae* after two applications, *Acinetobacter* spp - three, MRSA – four, *K. pneumoniae*, *E.coli* and *Enterococcus* spp - five and *Pseudomonas* spp – six applications. There was no inhibition of bacterial growth in the control plates.

Conclusion: Antibacterial effect of bee honey against *S. pyogenes* and *S. agalactiae* was highly satisfactory with clearance of the organisms with only two applications whereas it was satisfactory against MRSA, *Acinetobacter* spp. *Klebsiella* spp, *E.coli* and *Enterococcus* spp and longest duration of application was needed for *Pseudomonas* spp. These in vitro anti-bacterial test results suggest that bee honey has effective antibacterial property against common wound pathogens with varying duration of application.

Keywords: “Antibacterial effect; Bee honey”

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Development of a Dichotic Digits Test, Pitch Pattern Test and Duration Pattern Test for Sri Lankan Young Adults: Preliminary Findings

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Dichotic Digits Test (DDT) involves listening to simultaneous digits presented bilaterally with different digits presented to each ear. Pitch Pattern Test (PPT) and Duration Pattern Test (DPT) are temporal processing tests that involve ordering auditory patterns in frequency and duration respectively. Dichotic listening and temporal processing are auditory processes that play a crucial role in everyday speech understanding. Poor performance shown in one or more of these auditory processes are an indication for Central Auditory Processing Disorder (CAPD). Research evidence suggest that performance scores are influenced by the language spoken by the population tested. Therefore, this study aimed to develop a DDT, PPT, and a DPT and establish norms for Sinhala speaking young adults. 25 single pair digits, 30 frequency patterns and 30 duration patterns were recorded using 6 bisyllabic Sinhala digits, 880 Hz and 1122 Hz, and 250ms and 500ms stimuli respectively. All tests were developed based on gold standards for CAPD test material construction. Initially, the stimuli were piloted on 20 participants who met the inclusion criteria, but not included in the main study. A sample of 128 right-handed normal hearing young adults aged 20 to 28 years were tested to establish cut-off scores, ear differences and gender differences in performances for all three tests. The participants were limited to young adults in order to minimize effects of aging on test performance. The DDT was performed under free recall, directed right and directed left listening conditions. Free recall involved repeating digits heard in both ears while directed recall involved repeating the digit in the monitored ear and ignoring the digit in the other ear. The cut-off scores for the DDT were 91.64% in the right ear and 85.96% in the left ear for the free recall and 69.15% in the right ear and 68.75% in the left ear for the directed recall listening condition. The PPT and DPT reported cut-off scores that were 27.82% in the right ear and 29.90% in the left ear, and 72.99% in the right ear and 73.33% in the left ear respectively. The right ear scores were significantly higher than the left ear scores ($p < .001$) in the DDT free recall listening condition, re-establishing the phenomena of right ear advantage. Interestingly, ear differences were not significant ($p > .001$) for PPT and DPT. No gender differences were noted for any of the tests. The study provide audiologists in Sri Lanka access to feasible tests and preliminary cut-off scores that would help diagnose CAPDs in young adults.

Keywords: “DDT; PPT; DPT; CAPD; cut-off scores”

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Science

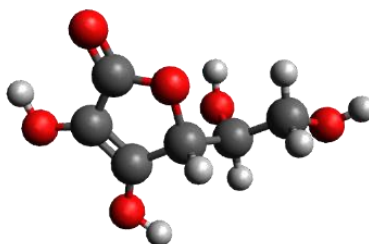
Computational Investigation of Antioxidant Activity of Dietary Vitamins; DFT Study

S.B. Jayawardana¹, D.R. Pandithavidana²

Among numerous types of antioxidant compounds, dietary vitamins form an important class of chain-breaking compounds which have a potential to quench reactive radical intermediates produced during the oxidative processes of both biological and commercial importance materials. According to the recent investigations, the possible role of antioxidants in prevention of human diseases has taken a leading role. Antioxidants are also capable to defend against number of disease conditions such as aging, atherosclerosis, cancer, asthma, arthritis and autoimmune diseases. Antioxidants as external supplements are used to maintain the concentration of free radicals as low as possible and to avoid the oxidative stress. They are heavily used in food industry to maintain the quality of the ready-to-eat foods, and to boost the shelf life.

The computational chemistry has become a versatile tool to investigate wide range of thermodynamic properties which are hardly measurable, as well as to predict the trends between them. The efficiency of an antioxidant can be successfully estimated by analyzing the potential energy surface (PES) of the reaction with a certain radical. This potential energy surface permits calculation of the activation and reaction energies, entailing that both kinetic and thermodynamic approaches to the interested reaction are presented. As well as the computed parameters provide useful information on the radical scavenging power without considering reaction pathway. Density functional theory (DFT) was used to explore the antioxidant properties of some naturally occurring dietary vitamins, and the reaction enthalpies related to various mechanisms of primary antioxidant action, i.e., hydrogen atom transfer (HAT), single electron transfer–proton transfer (SET–PT), and sequential proton loss–electron transfer (SPLET) have been investigated in detail. B3LYP, M05-2X, and M06-2X functionals were utilized in this work. For aqueous phase studies, the integral equation formalism polarized continuum model (IEF–PCM) was employed.

From the outcomes, hydrogen atom transfer (HAT) was the most probable mechanism for the antioxidant action of this class of compounds. Comparison of found results with experimental data (available in literature), vitamin C possesses the lowest enthalpy values for both proton affinity (PA) and bond dissociation energy (BDE) in the aqueous phase, suggesting it as the most promising candidate as an antioxidant. Accordingly, these computational insights encourage the design of structurally novel, simple vitamins which will be more economical and beneficial in the pharmaceutical industry.



*Computationally
optimized geometry of
vitamin-C*

Keywords: antioxidant; DFT; HAT; SET–PT; SPLET

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Effect of Biofilm Biofertilizer and Chemical Fertilizer Application Practices on Growth and Endophytic Bacterial Count of Rice (*Oryza sativa* L.)

A.L.A. Lakmini¹, G. Seneviratne², K.P.K.Madushani³

Utilization of beneficial microbes as a biofertilizer has become paramount importance in the agriculture sector for their potential role in sustainable crop production. Nitrogen-fixing bacteria with rhizosphere fungi form fungal-bacterial biofilms which can be developed as biofilm biofertilizers (BFBFs) as an extension of biofertilizer research application which could save chemical fertilizer use (CF) for many crops with a wide range of beneficial biological functions. BFBF application has been reported by many authors to significantly increased rice yield with lower CF inputs, as it facilitates biological nitrogen fixation with non-legumes (rice, tea, wheat, and vegetables), while increasing solubility and availability of phosphorous and other macro, micro nutrients as a result of its beneficial interactions between bacteria and fungi as well as interaction between soil and microorganisms. This study investigates the effect of commercially available biofilm biofertilizer and chemical fertilizer application practices on growth and endophytic bacterial count of rice after the 2013 new chemical fertilizer recommendation by the Department of Agriculture Sri Lanka. This experiment was conducted in two selected fields at Dehiaththakandiya in Mahaweli system C and Rice Research and Development Institute, Bathalegoda. Six different treatments were applied (100% CF, 80% CF, 80% CF + BF, 65% CF, 65% CF + BF and no fertilizer as the control). The experiment was arranged in Randomized Complete Block Design with four replicates to each treatment. Plant growth (root and shoot length, tiller and panicle count, total dry mass) and soil parameters (soil pH, available ammonium, nitrate and phosphate levels) were recorded at both tillering and flowering stages. Endophytic bacteria were isolated from rice leaves and root samples to obtain a colony count. Data were subjected to statistical analysis. Results indicate that BFBFs influenced positively on plant-microbe interactions. BFBF significantly increased both vegetative and reproductive parameters of rice plants with increasing trend of total and diastrophic endophytic bacterial count compared to CF. Therefore, the application of BFBFs to the soil could induce endophytic diversity and their functionality. This indicates that the effects of community based approach of microbial biofilms increases soil and plant well-being for ensuring higher yield with the sustainability of the rice agro-ecosystems to restore their depletion due to chemical agriculture.

Keywords: “Biofilm biofertilizer; chemical fertilizer; rice; endophytic bacteria; rhizosphere”

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Increasing DMF Leaching Efficiency in Polyurethane Dipped Gloves Manufacturing Process

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N,N-Dimethylformamide (DMF) is used in glove industry as a solvent to mix the polyurethane (PU) resin to form the polyurethane compound that is used as the coating in knitted and dipped gloves. N,N-Dimethylformamide is considered to affect human health. Hence it is essential to leach out the residual (DMF) content from coated gloves. The present invention provides a method to leach out the residual DMF content more efficiently in polyurethane coatings in knitted and dipped PU gloves. This investigation comprises two approaches, leaching the dipped glove in methanol-water mixtures and in DMF-water mixtures at 5 different percentages by varying the leaching time and temperature of the mixture. Methanol was used for these trials due to its close polarity index compared to that of DMF, thereby it facilitates leaching of more DMF into methanol-water solution. Blank sample was leached in pure water as the usual practice.

Adding pure DMF to water tend to increase the residual DMF content in the glove when its percentage in water-DMF mixture is greater than 5%. The use of methanol-water mixture as a leaching solution has shown a significant 90 % reduction of DMF content in the gloves than using water as the leaching solution at 25 ° C. Both optimum percentages of DMF and methanol in their respective leaching solutions were chosen and thereafter, the effect of temperature and leaching time were also examined. Optimum DMF percentage in leaching tank which gave preferable low residual DMF content in PU gloves were marked as 5% while the optimum leaching time was 60 minutes and optimum temperature was 25 ° C. Optimum methanol percentage in leaching solution which gave low residual DMF content in PU gloves were marked as 10% while the optimum leaching time in that was 20 minutes and optimum temperature was 35° C. Physical parameters such as abrasion, cut index, tear force and puncture force were not significantly varied in gloves treated with both methods and remain at same levels as in the blank. Gas chromatographic analysis was used to quantify the residual DMF content according to EN 16778 test method.

Keywords: Polyurethane; Gloves; N,N-Dimethylformamide; Leaching; Methanol

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Assessment of Awareness and Socio – Economic Status on Edible Oil Consumption among Housewives in Dehiwala Divisional Secretariat Area

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Non-Communicable Diseases (NCDs) prevail in the present-day society due to unhealthy food habits and inactive lifestyle of the people. Excessive consumption of edible oil is a cause for obesity which is a contributory factor for NCDs. Edible oils should be used in moderation by adopting proper methods of cooking to minimize their unhealthy effects.

A descriptive cross-sectional study was carried out in Dehiwala divisional secretariat area to assess the awareness, socio-economic status on edible oil consumption among housewives and, the individual's fat intake through edible oil consumption. Since, the total fat intake of an individual includes fats received from coconut kernel, processed coconut milk and coconut milk powder used in food preparations, in addition to edible oils, fats coming from these food items were also considered in calculating the daily per capita fat intake.

The study sample consisted of 405 randomly selected housewives representing all the fifteen Grama Niladari divisions of the area including 27 housewives from each division. Data were gathered using a self-administered questionnaire.

Results showed that daily per capita edible oil consumption was 59.75 ml. Only 31.50% housewives consumed edible oils, within the recommended level of fat and oil intake per person as in Food based dietary guidelines for Sri Lankans, prepared by the Ministry of Health. The daily per capita fat intake by consuming edible oil together with coconut kernel, processed coconut milk and coconut milk powder was 80.13 g. 77.75% housewives used edible oils and coconut products in food preparations to receive energy more than the amount of energy recommended to be received from fat (no more than 30% of the total energy coming from fat). Chi-square test results showed that there were significant relationships between educational level of housewives and the type of edible oil used ($p < 0.01$) and monthly family income and the type of edible oil used ($p < 0.01$).

Since, the majority of the individuals consume more fat than the recommended level, there is a need for an intervention to educate people on healthy use of edible oil as to prevent from obesity, a contributory factor of NCDs.

Keywords: consumption; fats; coconut; edible; oil

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In-vitro* and *in-vivo* Seed Germination Percentage of *Typha angustifolia

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Typha is a cosmopolitan genus and *T. angustifolia* is considered an alien invasive plant species in Sri Lanka. Extensive distribution of *T. angustifolia* is observed in Bundala wetland complex during the recent past. Seed germination is an important process that contributes to plant distribution and invasiveness. Therefore, this study aimed to investigate the *in-vitro* and *in-vivo* seed germination of *T. angustifolia* seeds to evaluate the percentage seed germination of *Typha* seeds. *Typha* seeds were collected from Bundala wetland complex, Hambantota, Sri Lanka (6°12'50"N; 81°13'30"E) during the South West monsoon windy season (seed dispersing period). *Typha* seeds were cleaned with distilled water and settled in distilled water to select the most viable seeds, which sink to the bottom of the container, whereas non-viable seeds float. Seed viability was tested by placing 50 seeds on cavity slides with 3% 2,3,5-triphenyltetrazolium chloride (TTC) solution and percentage seed viability was calculated after incubating in dark for 8 hours. For the seed germination test, 50 seeds were placed on a layer of Whatman grade no. 1 filter paper (pH 7) in 90mm petri dishes and watered weekly. Seed was counted as germinated when the radical reached 2 mm. For seedling emergence test, 50 seeds were sown in lagoon soil in trays at 0.5 cm depth, which were collected from Bundala wetland complex and they were weekly irrigated with distilled water. A seedling was considered emerged when the hypocotyl was fully erect. All tests were replicated 5 times. Finally the percentage seed germination and percentage seedling emergence were calculated. Results indicate that there is a significant difference ($p < 0.05$) between seed viability in TTC test and seed germination in petri dishes/ seedling emergence in soil trays. TTC test resulted in $87.2 \pm 7.2\%$ seed viability, but only $51.2 \pm 2\%$ of seedlings germinated in soil trays. Seedlings were emerged after 2 to 3 weeks of sowing. However radicals were failed to appear in petri dishes. Therefore, results conclude that even though *T. angustifolia* bear numerous viable seeds they show moderate percentage seed germination in wetland soils. It may be due to seed dormancy and further investigations are recommended to evaluate the effect of seed dormancy on distribution of *T. angustifolia*.

Keywords: “*Typha* seeds; seed viability; germination; seedling emergence, invasive plants”

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Isolation, Identification and Characterization of Microorganisms from Different Cosmetic Samples

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Cosmetics means any substance or mixture of substances that are applied to the human body for use in cleaning, coloring, conditioning, improving, or altering the complexion, skin, hair, teeth, nails, lips or eyes. Cosmetics are generally mixtures of different chemical compounds derived from natural sources (such as coconut oil, king coconut oil, plant extracts and etc.) or may be synthetic or artificial. Cosmetics can be classified to 4 major groups depend on the area of the body intended for application including Oral care (Mouth wash, Toothpaste and etc.), Skin care (Lotions, Cream and etc.), Hair care (Shampoo, Hair cream and etc) and Perfumes. Microbial contamination of cosmetic products is a matter of great disadvantage to the industry and it can become a major cause of both consumer safety and economic loss. The moisture and nutrients present in cosmetics make them susceptible to microbial growth, however few cases of human injury due to contaminated cosmetics have been reported. For the manufacturer of cosmetic products, it is important to ensure that their products are free of pathogenic microorganisms and are safe for consumer use. Microorganisms in cosmetics may cause spoilage or chemical change in the product and can possibly harm health, beauty and personal care. The usages of cosmetics are increasing day by day, although it is contaminated by various microorganisms like *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Candida* and etc. The purpose of this study was isolation and identification of microorganisms with the ability to survive and develop in cosmetics. Ten cosmetic samples from various brands which were used at home (Toothpaste, Cream, Lotion, Powder, Face wash, Hair oil, Hair cream, Shampoo, Body wash and body spray) were collected. The surface of sample container was disinfected with 70% Iso Propyl Alcohol before opening and removing contents. Then 10g of sample was dispersed in 90 ml sterile Eugon broth. From this 10⁻¹ to 10⁻⁷ series of dilution were done and plated out on Tryptone Soy Agar to isolate and determine the bacterial load of the sample (Test Method – ISO 21149:2017). Sabouraud dextrose with chloramphenicol agar was used for the isolation and enumeration of yeasts and molds (Test method – ISO 16212:2017). Then plates were observed after 3 days incubation (25°C-yeast & molds, 32.5°C-bacteria). Morphological characterization of colonies was done by observing the appearance of colonies. Microscopic characterization was accomplished by Gram staining, motility test and endospore staining. Further biochemical tests and molecular biological tests were performed for further identification. Here, twenty-nine biochemical tests were carried out according to Cowan and steel's manual. And molecular biological 16s rRNA sequencing was carried out for confirmation of identified strains from biochemical tests. The performed study confirms that microbiological contamination in cosmetic product is a current issue. According to the tests isolated strains were *Pseudomonas aeruginosa* from cream, lotion, *Serratia marcescens* from lotion, *Aspergillus niger* from powder and *Escherichia coli* from toothpaste. No micro contamination was observed from body wash, body spray, hair oil, shampoo, hair cream and facewash.

Keywords: Cosmetics; *Pseudomonas*; *Serratia*; *Aspergillus*; *Escherichia coli*

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Meta Heuristic Approach to Optimize Airline Fleet Re-Assignment

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Disruptive situations occur very often in airline environments where daily operational plans related to airline fleet deviate from the original schedules due to unanticipated circumstances, particularly as airlines operate in extremely uncertain and cost intensive environments. The frequency and cost associated with disruptions affect airline profitability to a great extent. In a disrupted state, it is needed by the airline to dynamically change fleet schedules; re-assign fleet to stabilize operational continuity. The research aims at developing a model based on meta-heuristics for the formal optimization of disruption recovery decisions. The mathematical model proposed, has the objective of recovering the disrupted flight(s) with minimum deviation from the original schedule, minimizing the total cost of disruption management. When deciding on the recovery action, the best suited option that implies the lowest cost must be chosen. In order to achieve this, flights can be swapped, delayed, cancelled or its passengers could be rerouted using a flight offered by the same airline or a different airline. The costs of different recovery strategies such as delaying, cancelling, swapping and passenger rerouting are therefore included in the objective function of the model. Costs related to passengers are incorporated to the cost calculations of each of the recovery strategies. The constraints involved in the model support consistent operations in a practical airline environment and are related to aircraft, airports, itineraries, turn-round times, configuration of aircrafts and maintenance. Variables in the model could be categorized as input data and cost coefficients, strategic decision variables and computed output variables and cost factors which will be reported from the optimization process. Variables and constraints in the proposed model were identified through a thorough survey of literature and interviews conducted with airline operations control personnel to gather and cross validate the industrial acceptability of the propositions and to identify possible revisions. Solving one disruption has a downstream impact on the entire airline operations plan and may require changes to be made in the overall operational schedule subsequent to the recovery of one disruption. This is solved using a metaheuristic algorithm based on tabu search, where the optimum way of adjusting the rest of the flight schedule is found. The study identifies and validates the heuristics involved in the current procedure followed in aircraft schedule recovery and the rational/logic behind the process practiced, that can support the optimization of disruption recovery decisions.

Keywords: “Airline Disruptions; Fleet Reassignment; Operations Optimization; Operations Research”

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Risk assessment of Nephrotoxic Metal Contaminations of Rice (*Oryza sativa*) in a CKDu Prevalence Area, Sri Lanka

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Sri Lanka is categorized in the G14 cluster of global dietary consumption groups according to the WHO GEMS diet categorizations based on the high consumption of cereals, especially rice, in diets and rice significantly provided 30% of the dietary energy supply and 20% of the dietary protein intake. Chronic low levels of exposure to nephrotoxic metals can be occurred via rice consumption and the magnitude of such exposures have to be understood in order to assess the risk of adverse health effects such as CKDu and to propose suitable public health interventions. Therefore, present study attempts to assess the nephrotoxic metal contamination of rice (*Oryza sativa*) in a CKDu prevalence area; Girandurukotte Grama Niladhari Division (GND), Badulla District, Sri Lanka. 20 rice samples were collected from the households who are consuming rice from their own paddy fields and the dietary survey was carried out using a semi-quantitative food frequency questionnaire (FFQ) during the period of June 2019 to determine the approximate quantity and frequency of rice intake over specific time periods. Rice samples were analyzed by Inductively Coupled Plasma Mass Spectrometry (ICP-MS) for nephrotoxic metals; Lead (Pb), Cadmium (Cd), Arsenic (As), and Chromium (Cr) followed by the Microwave digestion. Descriptive statistics were performed by SPSS statistics software. Non-carcinogenic health risk from rice consumption was estimated using the hazard quotient (HQ - the ratio of determined dose of a pollutant to a reference dose level) and total hazard index (THI). The estimated weekly intake (EWI) values for selected metals were determined to assess the health risks. The mean metal concentrations ($\mu\text{g/g}$) of rice grains were 259.20 ± 54.00 (Pb), 216.00 ± 34.40 (Cd), 20.79 ± 3.65 (As) and 131.80 ± 35.90 (Cr). The rice ingestion and the exposure frequency was recorded as 330 g/person/day and 350 days/year respectively according to the FFQ. Calculated EWIs ($\mu\text{g/kg}$ body weight) for the concerned metals were 25.92 (Pb), 21.56 (Cd), 0.42 (As) and 2.64 (Cr). EWIs for Pb and Cd were exceeding the provisional tolerable weekly intake values (PTWI) which have been set up by the WHO and EWI for Cr was complied with the PTWI level. The oral reference doses for the metals which used to estimate the hazard quotient (HQ) in mg/kg/day were: Pb = 0.004, Cd = 0.001, As = 0.014 and Cr (III) = 1.500 (USEPA 2000). The hazard quotient of 60 kg adult from rice consumption was in the order of Cd > Pb > As > Cr. Amongst the toxic metals, ingestion of Cd have the highest potential for adverse effect while Cr ingestion have the minimal potential. The total hazard index for rice consumption was 7.623 with relative contributions of selected nephrotoxic species; Pb (22.98%), Cd (76.46%), As (0.53%), and Cr (0.03%). Hence, rice is accumulating heavy metals with the use of heavy metal-laden chemicals for paddy cultivation and rice can be considered as a major exposure route for the dietary intake in Girandurukotte GND which is considered as a CKDu prevalence areas in Sri Lanka.

Keywords: "G14 cluster; Risk assessment; hazard quotient; dietary intake; *Oryza sativa*"

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Preparation, Characterization and Evaluation of Lead Adsorption Efficiency of Chitosan Coated Activated Carbon

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Heavy metal contamination in various water resources is of great concern because of the toxic effect on human beings and other animals and plants in the environment. Lead is a major element which is released to the environment including water bodies by many industries and it is well known that the presence of Pb(II) in water, even at very low concentrations, is extremely harmful to the human. Therefore, the aim of the present study was to investigate the Pb adsorption potential of chitosan coated activated carbon derived from rice husk (CCAC) in aqueous media. First, chitin was extracted from shrimp shell wastes by following a standard procedure and it was deacetylated to obtain chitosan (deacetylation percentage = 82%). In the preparation of activated carbon from rice husk, HCl acid (5 % v/v) was used as the activating agent. The adsorbent of the study, CCAC was then prepared by coating activated carbon derived from rice husk (20.00 g) with chitosan (3.00 g dissolved in 1% v/v acetic acid) to improve the stability and mechanical strength of chitosan. The surface morphology and the elemental composition of CCAC was examined by Scanning Electron Microscopy & Energy Dispersive Spectroscopy (SEM/EDAX). The novel adsorbent was further characterized by Fourier Transform Infrared Spectroscopy (FT-IR). In order to determine the Pb adsorption potential of CCAC, batch adsorption studies were conducted at room temperature at pH 7. The effects of various experimental parameters such as initial Pb (II) concentration, dose of adsorbent and shaking time on Pb adsorption to CCAC were evaluated. According to the results, the maximum lead removal percentage (89%) was observed at initial Pb (II) concentration of 2 ppm, adsorbent dosage of 1 g/L and 120 minutes of shaking time. Further, the equilibrium adsorption data were analyzed by the Langmuir isotherm model and the Freundlich isotherm model for Pb adsorption onto CCAC. Among the two models, Langmuir isotherm best fitted with the equilibrium data ($R^2 = 0.9916$) with a maximum adsorption capacity (q_0) of 24.39 mg/g. Based on the results, it can be concluded that CCAC can be considered as an efficient and cost-effective adsorbent for the removal of heavy metals such as Pb from industrial wastewater.

Keywords: "Pb (II) removal ; Chitosan ; Activated carbon ; wastewater"

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Evaluation of the Survival of *Dendrobium crumenatum* Swartz. Pollen Stored at Different Temperatures

W.E.R. Silva¹, R. Attanayake², S. Ratnayake³, S.P. Senanayake⁴

Dendrobiums have a high demand in the Sri Lankan floriculture industry as cut flowers and potted plants. Most *Dendrobium* cultivars found in the Sri Lankan market are imported from countries like Thailand, Singapore and Malaysia. Development of new cultivars and commercial cultivation of orchids has become a billion-dollar profitable industry in the world. In order to uplift the local orchid industry, cultivars with Sri Lankan identity should be developed. As Sri Lankan *Dendrobiums* have high floral diversity with economically important characters like fragrance, patterns and shapes, such characters could be introduced to the popular cultivars through breeding programs. Pollinia of these species and cultivars may not be always available throughout the year. Therefore, a suitable pollen storage method that maintains pollen viability and germinability, should be developed. The objective of this study was to develop a pollen preservation technique for *Dendrobium crumenatum* (E: Pigeon orchid, S: Sudu pareyi mal) by storing at different temperatures in order to use them in breeding programs. Pollen were collected into 0.2 mL tubes from fully opened fresh flowers at the onset of the anthesis around 7.00 – 8.00 am in July 2019. A set of pollen was dried in silica for 24 hours before storage and the other set was directly stored at -80 °C, -20 °C, -1 °C, 9 °C and 28 °C temperatures. Cryopreservation of pollen at -80 °C and -20 °C were also conducted in modified Murashige and Skoog medium (pH 5.7). Treatments were performed in triplicates. Samples of stored pollen were removed after 1, 3, 7, 14, 30 and 60 days and *in vitro* germinability and viability were tested in 10% sucrose and 2,3,5-Triphenyltetrazolium chloride (TTC) respectively. To confirm pollen viability and germinability, pollen of *D. crumenatum* stored at 9 °C were used in controlled cross pollination with *Dendrobium* ‘Pink Stripe,’ *Dendrobium* ‘Sonia Red’ and *Dendrobium* ‘Pink New Splash’. *D. crumenatum* had 54.97±12.22 % germinability and 76.0±4.58 % viability prior to storage. Pollen stored at subzero temperatures or subjected to cryopreservation lost viability and germinability. Pollen stored at 9 °C without drying, were viable for 14 days and produced pollen tubes (8.63±0.71 %). Although, percent *in vitro* germination of *D. crumenatum* pollen reduced to less than 20% after 7 days of storage (19.57±6.55 %) at 9 °C, pollination of stored pollen resulted in fruit set in *Dendrobium* ‘Pink Stripe,’ and *Dendrobium* ‘Pink New Splash’. This study found that seasonally flowering *D. crumenatum* pollen can be stored for short periods at 9 °C while maintaining their viability and germinability and can be used for cross pollination in breeding programs. However, subzero temperatures and cryopreservation may not be appropriate for storage of *D. crumenatum* pollen.

Keywords: Cross pollination; Cryopreservation; *Dendrobium crumenatum*; Pollen viability; Subzero temperatures

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In Silico and In Vitro Analysis of Inhibition of Rice Bran Lipase to Extend the Shelf Life

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Rice bran is a byproduct of the rice (*Oryza sativa*) milling process. The hard, outer layer removed from the starchy endosperm of the rice grains is known as rice bran. Rice bran is a rich source of nutrients. Rice bran is used to produce rice bran oil and as animal feed. Oxidation of fatty acids in lipids is one of the main causes for the spoilage of rice bran during storage. Lipase enzymes catalyze the hydrolysis of ester bond in triglycerides (lipids) releasing free fatty acids, which are more prone to oxidation than fatty acids in triglycerides. Therefore, inhibition of lipases can be a possible solution to restrict the lipid oxidation. The active site of lipases contains a characteristic GXSXG pentapeptide sequence (where X = any amino acid) which plays a major role in the lipase enzymatic activity. Orlistat is a lactone known to act as a potent inhibitor of human lipase. Therefore, in the present study, we evaluated the lipase inhibitory potential of lactones that are present in *Psidium guineense*. Homology-modelling of rice bran lipase and molecular docking studies (SWISSDOCK) were carried out to identify compounds with high affinity at the binding site. The top 20 docking poses with the lowest estimated Gibbs free energy values (ΔG) were considered from the molecular docking study. Low ΔG values of lactones show preferable binding at the binding site of *Oryza sativa* lipase. Close proximity of electrophilic carbon of lactones to the nucleophilic oxygen of the serine residue indicates the possibility of a nucleophilic attack by the oxygen of the serine residue to the electrophilic carbon of lactones leading to a covalent bond formation inhibiting the lipase enzyme. This suggests that lactones present in guava may be capable of inhibiting the lipases present in *Oryza sativa*. The in silico data were validated using lipase purified from rice bran. Rice bran lipase was purified by ion exchange chromatography followed by size exclusion chromatography. Inhibition of lipase activity was assessed using phenyl acetate assay. Percentage inhibition of lipase activity by guava leaf extract and Orlistat were 74.1% and 58.8% respectively. This indicates that guava extract contains compounds with inhibitory action towards lipase enzyme and they are more effective in inhibiting lipase than Orlistat. Even though the rice bran is one of the richest and cheapest sources of antioxidants, easy oxidative spoilage makes the shelf life of rice bran short. However, when the antioxidants stripped from rice bran re mixed with rice bran, a concentration dependent inhibition of the formation of oxidation products in rice bran was observed suggesting that bioavailability of the antioxidants present in the rice bran is low. While the docking studies provide evidence of inhibition of rice bran lipase activity, empirical evidence require analysis using purified lactones from guava on the inhibition of rice bran lipase. Our findings suggest antioxidants and lactones inhibit rancidity of rice bran during storage by inhibiting oxidation of lipids and inhibiting the lipase activity.

Keywords: "Type your keywords here, separated by semicolons ; no more than five key word items."

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The Role of Fluoride, Cadmium and Water Hardness in Drinking Water: A Critical Study of Potential Factors of Chronic Kidney Disease of Unknown Etiology (CKDu) in the Prevalence Area, Sri Lanka

W.S.M. Botheju¹, J.A. Liyanage²

Chronic Kidney Disease of unknown etiology (CKDu) is a major public health problem in North Central Region in Sri Lanka, and it is receiving global attention due to the absence of clear evidence to determine the causative factors. Although indisputable epidemiological data are lacking, high concentrations of water hardness, fluoride, cadmium, and other heavy metals in drinking water could be major causes for the prevalence of CKDu. Therefore, the present investigation was carried out to assess the role of fluoride (F), cadmium (Cd) and water hardness in drinking water sources as potential risk factors for CKDu in a prevailing area of Sri Lanka. Drinking water samples were randomly collected from 30 dug wells in Girandurukotte Grama Niladhari Division (GND), Badulla District and Buddhangala GND in Ampara District (as reference sampling site) in the dry season (June 2019), Sri Lanka. Cd and F contents of the collected drinking water samples were analyzed using Inductive Coupled Plasma Mass Spectrometry and Fluoride meter respectively according to the standard procedures. Total water hardness values were calculated based on calcium and magnesium contents which were analyzed using Atomic Absorption Spectrometry. Each analysis was performed in triplicates. Results were statistically analyzed using MINITAB 17 software. Inverse distance weight (IDW) and spatial autocorrelation (Moran's Index - MI) tools in ArcMap 10.2.2 software were used to interpolate the spatial distribution patterns of F, Cd and total hardness in collected water samples. According to the results, mean F, Cd, and total hardness values of analyzed water samples in Girandurukotte GND were 1.64 ± 0.04 mg/L, 0.124 ± 0.074 μ g/L and 83.60 ± 4.02 mg/L respectively. Mean F content of the analyzed water samples in the CKDu prevalence area exceeded the maximum permissible levels of SLS standards (SLS 614: 2013, F - 1.0 mg/L) whereas the total water hardness values indicated the 'moderately hard water' (60 to 120 mg/L). As per the results, mean Cd concentration in Girandurukotte GND consented with SLS standard limits (Cd - 3.00 μ g/L). Furthermore, mean F, Cd and total hardness values in reference sampling site were 0.504778 ± 0.076 mg/L, 0.018 ± 0.006 μ g/L and 30.76 ± 8.06 mg/L respectively and those results complied with SLS standard limits. Mean water hardness values in the reference sampling site indicated the 'soft water' (0 to 60 mg/L). According to the statistical analysis, F, Cd and total hardness values in Girandurukotte GND were significantly higher compared to the reference site ($P < 0.05$). Moran's indices of F, Cd and total hardness in Girandurukotte GND were -0.013, -0.006, and -0.011 respectively as per the Moran's Index Tool. Based on the results, it can be concluded that high concentrations of fluoride, water hardness and long term exposure to heavy metals such as cadmium can lead to the occurrence of CKDu prevalence. Therefore, utilization of treated water can be recommended as a preventive measure of CKDu in the study area and these findings can be used as a benchmark in the water supply design processes in CKDu affected areas.

Keywords: CKDu; Fluoride; Cadmium; Water hardness; Drinking water

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Germinability and Viability of Pollen of Selected Commercial *Dendrobium* Hybrids

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Dendrobium is one of the highly demanding ornamental orchid genera in Sri Lankan floriculture industry. The assessment of functional quality of the pollinium on the basis of germinability and viability is useful for the development of breeding programs for crop quality improvement and pollen storage protocols in conservation. This research was carried out to determine *in vivo* and *in vitro* pollen germinability and pollen viability of eight commercial *Dendrobium* hybrids (A-H). Percentage of pollen viability was studied by placing crushed pollinia on a cavity slide with 1% 2,3,5-triphenyltetrazolium chloride solution and incubating at dark for 12 hours. Pollinia of *Dendrobium* flowers were placed on the stigma of the same flower on the second day after opening. After three days, pollinia were stained with lacto phenol cotton blue and percentage of *in vivo* pollen germination was calculated. *In vitro* pollen germination of the *Dendrobium* hybrids was studied in three different media. Pollinia were removed from the anthers on the second day after flower opening and placed in (i) 5%, 10%, 15%, 20% and 25% sucrose solutions and (ii) a semi solid medium containing 10% sucrose, 100 mgL⁻¹ H₃BO₃, 300 mgL⁻¹ Ca(NO₃).2H₂O, 200 mgL⁻¹ MgSO₄.7H₂O, 200 mgL⁻¹ KNO₃, 8 gL⁻¹ agar and stigmatic fluid of *Dendrobium* flower and incubated at room temperature. Pollinia of *Dendrobium* hybrids A, G and H placed in a (iii) semi solid medium containing 1%, 2%, 3% sucrose, 75 mgL⁻¹ H₃BO₃ and 0.5%, 1%, 2% agar were incubated at 24 °C, 26 °C, and 28 °C. After 48 hours, percentage of *in vitro* pollen germination was calculated. Means were compared using one-way ANOVA with Tukey's pairwise comparison test in IBM SPSS Statistics 22 software. As the percentage values of pollen germination and viability were not normally distributed, the values were transformed to arcsin square root values prior to statistical analysis. There was no significant difference in pollen viability of different hybrids which varied between 94% and 77%. The highest percentage of *in vivo* pollen germination was found in *Dendrobium* cultivar D (67%) and there was a significant difference in *in vivo* pollen germination among the hybrids. Correlation analysis was performed using IBM SPSS Statistics 22 software to determine the relationship between pollen viability and *in vivo* pollen germination and found that there was no significant relationship ($r = 0.237$). The percentage of *in vitro* pollen germination was low and the highest *in vitro* pollen germination (7.2%) was observed in the semisolid medium containing 1% sucrose, 75 mgL⁻¹ H₃BO₃, 1% agar and incubated at 26 °C for *Dendrobium* cultivar H.

Keywords: *Dendrobium*; pollen germinability; pollen viability

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Calcium ion Adsorption Capacities of Potential Water Purifying Materials- Red Brick and Biochar of Glyricidia (*Glyricidia sepium*), Gadumba (*Trema orientalis*), Ipil Ipil (*Leucaena leucocephala*)

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This is a preliminary study on several locally available potential water purifying materials for their Ca²⁺ adsorption capacity. According to literature, researchers have found a number of locally available clay and biochar materials with high metal adsorption. However, these studies do not provide satisfactory information about the life span and the adsorption and retaining capacities of the filter beds as it gets gradually saturated. The main objective of this study is to further examine and modify already explored materials for the development of a cheap, simple, effective and renewable domestic water filter for the dry zone of Sri Lanka.

In this study red brick and biochar of Glyricidia (*Glyricidia sepium*), Gadumba (*Trema orientalis*), Ipil Ipil (*Leucaena leucocephala*) were considered which are commonly found in the dry zone. Plant materials were burned (~400 °C) to produce biochar in a closed vessel on fire for 2 hours. Particles in the range of 2-5.6 mm were selected for analysis. A laboratory scale filter unit was prepared with a glass column (diameter 1.8 cm) and the sample materials were packed individually and examined for Ca²⁺ adsorption by leaching a Ca²⁺ solution (400 ppm) through the column until saturation. After saturation Ca²⁺ was desorbed from the column with de-ionized water. Effluents were analyzed for Ca²⁺ by using flame photometer.

Calcium ion adsorption capacity of each material was calculated per unit bulk volume of the material. Red brick showed the highest Ca²⁺ adsorption capacity of 0.44 mg cm⁻³. Biochar of Glyricidia, Gadumba and Ipil Ipil showed Ca²⁺ adsorption capacities of 0.26, 0.26 and 0.18 mg cm⁻³, respectively. Retaining capacity of Ca²⁺ was also calculated as the difference of adsorbed and desorbed Ca²⁺ amount per unit volume. Red brick showed the highest Ca²⁺ retaining capacity of 0.26 mg cm⁻³. Biochar of Gadumba showed a Ca²⁺ retaining capacity of 0.04 mg cm⁻³ while Glyricidia and Ipil Ipil have not shown any significant retaining of Ca²⁺. Optimization of the filter bed conditions and using them in a practical set up are intended to be carried out.

Keywords: “Ca²⁺ adsorption; biochar; red brick; water filter”

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Identification and Disease Assessment of Begomovirus Infecting *Capsicum frutescens* (Kochchi) in Minuwangoda, Sri Lanka

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Leaf curl of *Capsicum frutescens* (Kochchi) is a common problem in many *Capsicum* growing regions of the country including Minuwangoda area in Gampaha. Water stress, poor soil drainage or viral infection are some of the potential causes of leaf curl. The main aim of the current study was to determine whether the leaf curl of Minuwangoda area is due to viral infection and to determine the disease severity and incidence of the region. A disease assessment key graded from 0 to 6 was developed for CLC disease of *C. frutescens*. Thirtytwo *C. frutescens* fields having more than 50 plants per field were selected. Disease symptoms, incidence and severity were recorded. Prominent symptoms of the disease were leaf curling, vein yellowing and leaf yellowing followed by severe chlorosis and stunting as the disease progressed. These symptoms were similar to the viral infection. The disease incidence varied from 0 to 100% in the selected fields and 71.88% of the fields in Minuwangoda area were affected. Disease severity in the selected fields ranged from 0 to 6, while the average disease severity of the fields in the area was 1.3. To determine whether the causal agent is a commonly reported virus of the family Begomoviridae, coat protein (CP) gene was amplified from the DNA extracted from infected leaves using CP specific primers and the sequencing was done using the Sanger sequencing method. Sequence alignment with the NCBI database showed a 95% similarity to Chilli leaf curl virus (Begomoviridae) isolate CL-14 from Nochchiyagama. Results indicates that Sri Lankan *C. frutescens* cultivation could be challenged by the viral infection and control measures should be implemented as soon as possible.

Keywords: Begomovirus, *Capsicum frutescens*, coat protein (CP) gene, Leaf curl disease

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Antioxidant Effect of Coconut Milk on Oxidative Damage in Commensal Lactobacilli in the Gastrointestinal Tract

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Coconut milk (CM) is the aqueous extract of coconut endosperm which is rich in polyphenols. Coconut milk is commonly used in culinary applications in South Asia. In this study, protective effect of phenolic antioxidants (PA) extracted from CM was tested in lactobacilli which are the prominent probiotic forms in the human gut. These commensals help to maintain the immune and metabolic homeostasis. The intestinal environment can be altered by many factors that generate reactive oxygen species (ROS) resulting in oxidative stress. Enteric bacteria have been reported to mediate redox homeostasis through the regulation of ROS production. However, oxidative damage to the gut microbiota has been suggested to contribute to several diseases including intestinal and neurodegenerative disorders. Here, the activity of phenolic antioxidants extracted from CM on oxidative damage in *Lactobacillus acedophilus*, *L. plantarum*, *L. lactis*, *L. casei* and *L. fermentum* under aerobic conditions were evaluated based on the amount of products of macromolecular damage. The total polyphenol content of aqueous extract of CM was 8.21 ± 0.13 mg/L as determined by the Folin Ciocalteu method. Bacterial cultures at optical density of 0.5 at 620 nm were incubated at 37°C under aerobic conditions to induce the oxidative damage. The cells were cultured overnight with a concentration series of PA (0, 0.4, 0.5, 0.6, 0.7, 0.8 and 0.9 mg/mL) to assess the protective effect on oxidative damage. The concentration of PA was kept below the concentration that affect cell viability as determined by 2,3,5-triphenyltetrazolium chloride assay at 620 nm. Lipid peroxide levels ($\mu\text{g/mL}$) and protein carbonyl levels (nmol/mL) were detected with thiobarbituric acid and 2,4-DNPH respectively. Growth under aerobic conditions affected the cell viability and induced significant ($P < 0.05$) damage to proteins and lipids in the lactobacilli under investigation. Treatment with increasing concentrations of PA from CM showed a corresponding increase in the cell viability and a corresponding decrease in the amount of lipid peroxides and protein carbonyls under aerobic conditions. Therefore, PA from CM protect gut microbiota from oxidative damages in lipid and proteins without affecting their viability.

Keywords: Coconut milk; Antioxidants; Lactobacilli; Oxidative stress

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Spatial Analysis of Monthly and Seasonal Rainfall in Sri Lanka

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Climate change is a critical factor that effect on the variability of environment in many countries globally. Sri Lanka being a country where agricultural sector contributes to the highest proportion of its economy, it is very crucial to identify climatic changes in the growth of the sector. Water plays a major role in agriculture as Sri Lanka face to climatic changes over the time. It is important to manage water resource and changes in precipitation should be identified as a solution for the climatic changes in Sri Lanka. In this study, dense and homogeneous monthly rainfall data over a 10 years period from 2009 to 2018 were considered which is comprised of main 22 rain-gauge stations in Sri Lanka. The main objectives of this study are examining the existence of trends in monthly and seasonal distribution, identifying regional precipitation differences by the spatial interpolation of detected monthly trends and finding the most suitable interpolation technique out of six interpolation methods that were identified from the previous literature. Trend analysis was done by using Mann Kendell test which is non-parametric statistical test and ArcGIS 10.1 software was used for spatial interpolation in geostatistical techniques. Global Polynomial Interpolation, Local Polynomial Interpolation, Inverse Direct Method, Ordinary Kriging, Universal Kriging, Complete Regularized Spline interpolation methods were used to examine the changes in magnitude of unmeasured areas using monthly rainfall data. Root mean squared error (RMSE) value in cross validation is used to compare the identified interpolation techniques. Results exhibits that the positive trends are only shown during the months February, April, May and October which indicate that they are not prominent. Seven out of twelve months show a significant negative trend for 19 stations. For seasonal analysis southwest monsoon shows both positive and negative significant trends while first inter monsoon and Northeast monsoon indicate a negative trend. In conclusion, there were no prominent trends identified in both seasonal and monthly analysis and Kriging method was identified as the optimal algorithm with a minimum RMSE value for monthly spatial interpolation.

Keywords: ArcGIS, Precipitation, Trend analysis, Interpolation

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Speciation Distribution of Analyzed Drinking Water in a CKDu Endemic Area in the Anuradhapura District

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Chronic Kidney Disease of Unknown etiology (CKDu) has been showing a spreading tendency among the agricultural zones in the North Central Province since the mid-1990s. Even though most of the studies have identified that the nephrotoxic heavy metal content in surface and ground water has not exceeded the permissible limits in the CKDu prone areas, long term exposure could influence on renal failures. The present study was attempted to study the chemical speciation of the contaminants in drinking water of CKDu endemic area in the Anuradhapura District. The areas selected for the study were Eppawala Grama-Niladhari division (GND) (8°8'33"N 80°24'10"E) in Anuradhapura District (Endemic site) and Dambethalawa GND (7°17'11.9"N 81°32'04.3"E) in Ampara District (Reference site). Nineteen drinking water samples from each sampling area were randomly collected. Basic physico-chemical parameters such as pH, conductivity, dissolved oxygen and Fluoride content were measured on-site. Concentrations of heavy metals (Cr, Mn, Fe, Cu, Zn, As, Cd, Pb) of the water samples were analyzed by ICP-MS (Agilent 7800) and counter-ion content (F⁻, Cl⁻, NO₃⁻, PO₄³⁻, SO₄²⁻) was analyzed by Ion chromatography (Methorm eco IC). Chemical speciation modeling was performed by using the Visual MINTEQ 3.1 software based on the obtained concentrations. According to the results, the average concentrations of Cr, Cu, Zn, As, Pb were complied with SLS values for drinking water while Mn and Fe concentrations from both areas have exceeded the SLS values which are 100.00 and 300.00 µg/L respectively. The Mn concentration of Eppawala and Ampara were 173.99 (10.39-485.59) µg/L and 129.27 (1.089-239.86) µg/L respectively and for Fe it was recorded as 383.14 (0.18-867.44) µg/L and 526.21 (0.85-897.25) µg/L. Since the samples were collected randomly, the presence of Mn and Fe as heavy contaminants in some sites might be the reason for having a wide concentration range. The mean F⁻ concentration of the Eppawala area was 1.80 (0.10-3.96) mg/L which exceeded the SLS maximum level (1.00 mg/L) while it was 0.45 (0.11-1.00) mg/L in Ampara which was below the SLS maximum limit. According to the speciation results, only species of Cr, Pb, Cd, Cu and Fe, namely Cr(OH)₃, CrOH²⁺, Pb²⁺, PbOH⁺, PbCl⁺, PbSO₄, Cd²⁺, CdCl⁺, CdSO₄, Cu²⁺, CuOH⁺, Fe(OH)²⁺, showed higher variations of percentage distributions under the tested pH range of 4 to 9. Higher percentage distribution values of CdCl⁺, CdSO₄, PbCl⁺, PbSO₄, ZnSO₄, MnSO₄, CuSO₄ were observed from the Eppawala area compared to Ampara area. Manganese, Cadmium, Zinc, Copper, Lead, Fluoride, Nitrate and Chloride species showed more tendency to exist as free ionic species such as Mn²⁺, Cd²⁺, Zn²⁺, Cu²⁺, Pb²⁺, F⁻, NO₃⁻, Cl⁻ at pH 7 while Chromium, Iron and Arsenic were found as Cr(OH)₃, Fe(OH)²⁺ and H₃AsO₃ at pH 7. Long-term exposure to different species formed by Cd, Pb, Cr, As and higher F⁻ concentrations may have some significant effects in causing CKDu.

Keywords: "Chronic Kidney Disease, Drinking water, Chemical Speciation, North Central Province"

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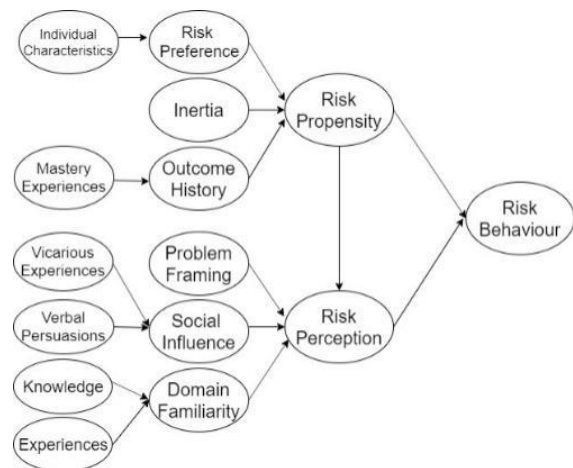
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A Behavioural Model to Assess the Risk Perception and Behaviour of Individuals in Investment Decisions

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Risk behaviour is the controlled conduct of people in contexts with uncertainty, where there is a possibility of the outcome received deviating from the outcome expected. As any kind of investment bears a certain proportion of risk, investors qualify as a competent sample in analyzing risk behaviour. Investor behaviour depends on external factors such as macro stability, expected earnings, broker recommendations, dividends paid and stock marketability, as well as internal factors such as herd behaviour, optimism and risk appetite of the investor. In developing countries like Sri Lanka, the investment markets are less informationally efficient and investor risk appetite is a less prominent factor. Therefore, the need of upgrading the investment culture of a developing country through a customized model which accurately determines the investor risk appetite has become a timely need. Although numerous studies have been carried out, use of a psychological approach to explain the investor behaviour remains relatively unexplored. The overarching goal of this study is to assess the determinants of risk behaviour and how these factors can be used in developing a comprehensive model that facilitates categorization of people according to their risk profiles. This study focuses on interpreting the individual investor behaviour through a combination of the cognitive psychological approach of perceived self-efficacy and the reconceptualized model of risk behaviour in a developing country context. Perceived self-efficacy is the concept where people’s beliefs and perceptions on their own personal abilities affect their actions taken to reach designated goals. The reconceptualized model suggests that an individual’s risk behaviour is dominated by two major characteristics, namely risk propensity and risk perception. It was further specified that risk propensity positively affects the risk-seeking behaviour while risk perception has a negative effect on it. The reconceptualized model incorporates the cognitive psychological approach of perceived self-efficacy to the risk behaviour model. The risk behaviour model has been adjusted by removing the organizational-related factors from it. The developed model is validated through expert opinion and data obtained from investors who engage in high risk investments.

Keywords: Investors; Risk Behaviour; Self-Efficacy; Behavioural Model



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Effect of Biofilm Biofertilizer on Availability of Soil Diazotrophs, Plant Endophytic Diazotrophs and Increasing of Grain Yield in Rice (*Oryza sativa*) Cultivation of Sri Lanka

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Diazotrophs are microorganisms that are able to grow without external sources of fixed nitrogen and play a vital role in the persistence of microbial communities in the soil while increasing the crop productivity. Indiscriminate use of chemical fertilizers (CFs) particularly nitrogen based fertilizers adversely affect on the nitrogen fixers and ultimately cause the declining of soil health, crop productivity and agricultural sustainability in rice cultivation of Sri Lanka. Currently, farmers tend to give their attention to the application of organic fertilizers and biofertilizers. Biofilm biofertilizer (BFBF) is a novel product which can be used effectively to increase soil fertility and crop productivity without suppressing the microbial community in soil. BFBF is consisting of microbial cells and extracellular polymeric substances (EPS), which are secreted by themselves to have structural and biochemical protection. There are no sufficient studies carried out to evaluate BFBF in rice cultivation in farmers' real field conditions with special reference to the soil and plant endophytic diazotrophs that are vital in biological nitrogen fixation and enhance the crop growth. Therefore, this study focused on the effect of BFBF to enhance the rice yield by increasing the availability of soil diazotrophs and plant endophytic diazotrophs using rice as the test plant. The study was carried out at the farmers' fields in Ampara district, a major rice growing area in Sri Lanka. Eighteen farmers' fields were selected from different locations in Ampara district. Two consecutive, uniform paddy fields (whole *liyaddas*-one acre paddy fields) were applied separately with BFBF + 50 % CF practice (90 kg/ac CF NPK + 1000 ml/ac BFBF application) and farmers' CF alone practice (180 kg/ac CF NPK application). Fertilizer applications were done in multiple applications. Rhizosphere soil and plant samples were collected by uprooting five hills as replicates from each paddy field at flowering in Maha season. Plant dry weight and leaf chlorophyll content were measured. Microbes were isolated and grown in nitrogen free Combine Carbon Media (CCM) prescribed for growing soil diazotrophs and plant endophytic diazotrophs. Rice grain yields were recorded at harvest. Results were analyzed using two sample t-test and ANOVA using R software at $\alpha = 0.05$ probability level. According to the obtained results, soil diazotrophs (the increase by 69%) and plant endophytic diazotrophs (54%) abundances, plant dry weight (49%), leaf chlorophyll content (38%) and grain yield (26%) of BFBF + 50% CF application significantly higher ($p < 0.05$) than the farmers' CF alone practice. Furthermore, correlation analysis clearly showed a significantly positive correlation between grain yield and soil diazotrophs ($r^2 = 95.7\%$, $p < 0.05$) and plant endophytic diazotrophs ($r^2 = 91.8\%$, $p < 0.05$) respectively. The study concludes that the application of BFBFs together with a reduced dosage of CFs has the potential to increase soil diazotrophs and plant endophytic diazotrophs while increasing the rice yield in comparison to CFs alone, thus showing promising potential of BFBFs in rice cultivation in Sri Lanka.

Keywords: Biofilm biofertilizer; Diazotrophs; Endophytes; Farmers' fields; Rice

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Modeling and Forecasting Selected Climatic Factors Influenced on Sustainable Cultivation Plan: A Case Study for Dompe-Gampaha District

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The agriculture is the back born of economy of the most Asian countries. Although the country is moving towards industrialization, the agricultural sector still continues to be an important sector in the economy in Sri Lanka. Cultivation is the predominant sector of the agriculture. Lack of sufficient amount of water is the main limitation factor for cultivation while flood/ deluge is causing the waste of harvest. The main water source for cultivation in Sri Lanka is rainfall. Moreover, for each crop due to its peculiarities and mainly owing to its geographical origin, there exist specific temperature limits within which these plants are able to grow and reproduce. Hence rainfall and temperature are imperative factors influenced on cultivation. More accurate forecasting of monthly rainfall and temperature is significantly important in irrigation schedule, water resources management, crop pattern design and designing of harvesting amount.

The main objective of this study is to build suitable forecasting models for two climatic factors: Temperature and Rainfall which affect sustainable cultivation plan. Monthly data of rainfall and temperature from 2009 to 2019 of Dompe-Gampaha district was considered for the study. First 80% of data was used to formulate the models and the rest 20% data was used to validate the models. The paper introduces two fundamentally different approaches for designing a model, the statistical method based on seasonal autoregressive integrated moving average (SARIMA) and decomposed ARIMA model. Mean absolute percentage error (MAPE), Root mean squared error (RMSE) was used to evaluate the performance of fitted models. Among the fitted ten models, SARIMA(0,0,0)(1,0,1)₁₂ was identified as the better model to forecast rainfall based on minimum Akaike information criterion (AIC) where MAPE and RMSE are 48.57% and 5.1339 respectively. Although Box Ljung lack of fit test prove that this model is suitable model, the errors are extremely high. Then decompose ARIMA model was used by calculating seasonal and trend component using SARIMA(0,0,0)(0,1,0)₁₂ and linear regression (Trend=14.33321-0.04884*time) models respectively. Summation of forecasted values of these two models is the forecasted value of decompose ARIMA model and it exhibits MAPE which is 20% lower than the SARIMA(0,0,0)(1,0,1)₁₂ model. Therefore, fitted decomposed ARIMA model can be recommend as a better model to forecast rainfall of Dompe-Gampaha district. Similar approach was carried out to find a suitable model to forecast temperature. SARIMA(1,0,0)(2,0,1)₁₂ was the most accurate model to forecast temperature with minimum AIC value. MAPE and RMSE of this model was 1.3938% and 0.4695 respectively. Lack of fit test and errors provide evidence to say that the fitted SARIMA(1,0,0)(2,0,1)₁₂ is suitable to forecast temperature in the study area. The forecasted values of rainfall and temperature can be used when developing sustainable cultivation plan in Dompe-Gampaha district which leads to development of agricultural sector of the country.

Keywords: Cultivation plan; ARIMA; SARIMA; AIC; MAPE; RMSE; Linear regression

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Photocatalytic Activity of Biosynthesized of Silver Nanoparticles Using Leaf Extract of *Annona glabra*

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Recently metallic nanoparticles were found to possess photocatalytic activity on organic molecules under visible radiation a phenomenon which will be useful in degrading and removing hazardous organic dyes. During this study the photocatalytic activity of *Annona glabra* - AgNPs (bare NPs) and Tween 80-stabilized *Annona glabra* – AgNPs (stabilized NPs) was studied by monitoring the degradation of methylene blue as a model dye. AgNPs were synthesized by incubating the leaf extract of *A. glabra* (2 mL) with silver nitrate (1 mM, 20.00 mL) for 3 hours. The solution was kept under dark conditions with continuous slow agitation. The solution was centrifuged at 6000 rpm for 20 minutes to separate the AgNPs and NPs were washed with water. The synthesized AgNPs were characterized using UV – Visible spectrometer, particle size analyzer, scanning electron microscope. In order to synthesize stabilized AgNPs, biofabricated AgNPs as above were ultrasonicated for 15 mins and added to a solution of Tween 80 (1% w/v, 20.0 mL) and kept stirring for 3 hours. To determine the photocatalytic activity, above prepared AgNPs (25mg/mL, 2.0 mL) were added to a Methylene blue solution (1×10^{-5} M, 50.0 mL). The suspension was stirred under dark conditions for 30 mins. It was exposed to sunlight under slow agitation. Photodegradation was monitored at 30-minute intervals by withdrawing 5 mL aliquots of AgNP added methylene blue solution. The aliquots were centrifuged, and the absorbance was measured using the UV-Visible spectrophotometer at 665nm for a period of 3 hours.

The AgNPs are spherical in shape and show a characteristic absorbance peak at 417 nm. This peak is due to the surface plasmon resonance of the AgNPs. The average size range of the nanoparticles is 10 – 190 nm. Methylene blue solution with added AgNPs became opaque overtime. Initially, the methylene blue solution with bare AgNPs showed subtle reduction of absorbance of the solution. Then the reduction of absorbance was leveled off near the end of the experiment. The absorbance decreased from 0.985 to 0.796 within a period of 3 hours which is a 19.19% reduction of the initial absorbance of the solution. The opacity of the methylene blue solution with stabilized AgNPs increased only by the end of the experiment. Stabilized AgNPs showed methylene blue degradation with higher efficiency than bare AgNPs. The absorbance of the solution reduced from 1.361 to 0.145 within a period of 3 hours which is an 89.34% reduction of the initial absorbance of the solution.

Both bare and Tween 80-stabilised AgNPs showed photocatalytic activity on the degradation of methylene blue. The Photocatalytic activity was enhanced by the stabilization of biogenic *A. glabra* AgNPs with Tween 80.

Keywords: Photocatalytic activity; silver nanoparticles; Secondary stabilization; *Annona glabra*; Biosynthesis

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A Fuzzy Linear Model Using Possibilistic Linear Regression with Least Squares Method: An Application to Dengue and Rainfall Data

A.M.C.H. Attanayake¹, S.S.N. Perera², U.P. Liyanage³

Fuzzy linear models deal with vague and imprecise phenomenon in order to represent better models. These type of models are especially suitable in modelling and predicting dengue disease as the disease associated with various unknown and uncontrollable factors. Further, modelling and predicting the dengue disease is important as it is one of the leading diseases in the world which reports higher number of deaths. This study focuses on modelling reported dengue cases in the Colombo district, Sri Lanka. Particularly, Possibilistic Linear Regression with Least Squares (PLRLS) Method was applied as the modelling procedure. This method was proposed by H. Lee and H. Tanaka in 1999 to deal with crisp inputs and fuzzy output. The rainfall as one of the leading climatic factors that associated with dengue disease included in the model as an independent variable. Data consists of weekly reported dengue cases and weekly average rainfall in the Colombo district from 46th week of 2009 to 12th week of 2015. 2009 to 2014 data were used for model development and rest of the data for model validation. Cross correlation analysis revealed that the rainfall with 10 lags was associated with the reported dengue cases. By considering dengue and rainfall data as crisp inputs, the upper approximation model and lower approximation model were obtained to reflect the fuzziness of the dengue count in the district. The developed coefficients of the fuzzy linear regression were in the form of non-symmetric triangular fuzzy numbers. The left and the right spreads of the central value determined the lower and upper boundary of the interval, respectively, where the corresponding degree of membership equals to 0. The predicted values from the fuzzy regression model and the actual values of the validation set were within the upper and lower approximation models which indicated the possibility of the dengue prediction through PLRLS method. The authors are in the process of testing additional fuzzy linear models by changing fuzzy input/output combinations with incorporating more independent variables.

Keywords: Dengue; Fuzzy Linear Model; Possibilistic Linear Regression with Least Squares Method

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Adsorption of Chromium (III) from Aqueous Solutions Using Activated Carbon Derived from Wood Waste of *Cinnamomum verum*

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Contamination of water by heavy metals has readily increased as a result of urbanization and industrialization. Among the available techniques of contaminant removal, adsorption has widely been used for the removal of various pollutants including heavy metals from water. Therefore, the present study was conducted to investigate the potential of utilizing an agricultural waste, *Cinnamomum verum* wood waste, as a precursor for the production of low-cost activated carbon (AC) to use as an adsorbent for the removal of Cr (III) from aqueous solutions. First, the effect of carbonization time on production of AC derived from wood waste of *Cinnamomum verum* and their Cr (III) removal potential was evaluated to determine the optimum carbonization time for AC production. Cleaned and dried powdered wood waste samples (20.00 g) were carbonized at 400 °C for 30-120 minutes (30 min, 60 min, 90 min, 120 min) and chemically activated by H₃PO₄. The yield of AC samples prepared at different carbonization time and their Cr removal percentages (% Cr) at pH 7 and at room temperature (30 ± 2 °C) were determined. As the highest % Cr removal (~ 90 %) was observed for the AC prepared by carbonization of wood waste at 400 °C for 60 minutes with H₃PO₄ activation, AC prepared under the given conditions were selected for batch adsorption and isotherm studies. The surface morphology and the elemental composition of the novel adsorbent was examined by Scanning Electron Microscopy & Energy Dispersive Spectroscopy (SEM/EDS). Further, the adsorbent was characterized by Fourier Transform Infrared Spectroscopy (FT-IR) and proximate analysis. The effect of initial Cr (III) concentration (1.00, 3.00, 5.00, 8.00, 9.00, 12.00 mg/L), shaking time (30, 60, 90, 120, 150, 180 min) and adsorbent dosage (0.05, 0.25, 0.50, 0.75, 1.00, 1.25 g) on adsorption of Cr onto AC was then investigated by conducting batch experiments at pH 7 and at room temperature (30 ± 2 °C). According to the results the highest % Cr removal of 92.5% was obtained at initial Cr (III) concentration of 2.00 mg L⁻¹, shaking time of 120 minutes and at adsorbent dosage of 0.05 g. The equilibrium data for the adsorption of Cr (III) on the AC derived from wood waste were tested with two adsorption isotherm models namely Freundlich isotherm and Langmuir isotherm and the results showed that the equilibrium data were better represented by the Langmuir isotherm model (R² = 0.998) with the maximum Cr adsorption capacity (q₀) of 10.75 mg g⁻¹. Therefore, the results of the study revealed that the AC derived from wood waste of *Cinnamomum verum* could be considered as a promising and environmentally friendly novel adsorbent for the removal of Cr from aqueous solutions including wastewater.

Keywords: “Activated carbon; Cr(III); *Cinnamomum verum*; Adsorption; Isotherms”

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Model to Grab the Digital Natives' Purchasing Behaviour

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Generation Z is considered to be the most puzzling consumers as they appear to behave as tech-savvy and educated users of technologies in the marketplace. These digital natives are predicted to account for around 40% of all consumer shopping by 2020. Ninety-three percent of parents of this generation agree that Generation Z offspring are going to be the significant influencer of household spend. Their cognitive power and social media networking have made them the market mavens who possess a wide range of information and consumer knowledge about many dimensions of markets. To be the leader in the market with so many options due to free trade economy, marketers have to escalate their knowhow about their customers if they want to capture the attention of this segment of the market. Though there are models to evaluate the consumer behaviour like Engel-Blackwell-Miniard model and Nicosia model of customer behaviour, the practicality in the application of them is vague due their mechanical overview of human behaviour. In order to catch the attention of the discerning Generation Z consumer, marketers have to venture the extra mile to develop a unique model that has the ability to factor the unique characteristics of this market segment. The paper proposes a conceptual model to determine the purchasing behaviour of Generation Z consumers as an extended model of Theory of Planned Behaviour (TPB). Theory of Planned behaviour is a prominent consumer behavioural model which distinctly elaborate the factors that affect consumer behavior. The model collaborates physical, psychological and sociological aspects without limiting to a single field. In TPB, attitudes, subjective norm and perceived behavioural control act as the main constructs to determine the purchasing behaviour. The proposed extended model of TPB incorporates the additional constructs of market mavenism, social identity and technology self-efficacy to capture the specific characteristics of Generation Z. Market mavenism captures the degree of influence from the consumer knowledge, social identity captures the influence of self-identity in social media and technology self-efficacy captures the efficacy in using computing technologies and the Internet by Generation Z, for product purchasing decision making. Expert opinion from selected personnel in academia and industry were used to validate the proposed model. Implications of this validated model can be utilized to assist in predicting potential consumer adoption behaviour and in designing favourable shopping environments that are compatible with these specific consumer traits.

Keywords: Generation Z; Purchasing behaviour; Theory of Planned Behaviour;

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Synthesis of Surface-Modified Graphene-Based Sand for Fluoride Removal from the Drinking Water

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Graphene and graphene-based material such as graphene oxide (GO) are materials of great interest for potential applications in nanoelectronics, nanoelectromechanical systems, sensors, polymer composites, catalysis. As graphene does not possess its native oxide, GO is routinely obtained via the chemical treatment of either graphene or widely available regular graphite. Chemically exfoliated graphene with various oxygenated functional groups bound to sp² basal plane and edges of graphene sheet is called graphene oxide (GO). The surface sites on commercial sand used in water treatment are dominantly negative (pH = 2.7), and chemically inert. Therefore, they show a low affinity for most of the contaminants present in drinking water. However, conventional sand filters are used in water turbidity removal. Graphene oxide (GO) was synthesized using the modified Hammer's method and purified sand was coated with GO dispersion to make super sand which can be used for many purposes including water purification. Single GO coated super sand (GO1) and multiple coated super sand (GO2, GO3, GO4, GO5) were prepared. Optimization studies were done for the fluoride removal process by super sand. Multiple coated super sand and fluoride adsorbed super sand were characterized using Scanning Electron Microscopy (SEM), energy dispersive X-ray absorption (EDXA) spectra, Fourier Transform Infrared Spectroscopy (FTIR), X-Ray Diffraction (XRD). When increasing the coating times, the Enhancement of the GO coatings on the sand surface was clearly depicted by the SEM images and later by later coatings of the GO were observed on the sand surface. Respective EDXA spectra were also taken from both samples which show higher carbon content for sand/GO5 sample than sand/GO1. EDXA spectra of the Fluoride adsorbed five times coated sand show a small percentage of F in addition to the C, O and Si in the spectrum. The FT-IR spectrum for graphite oxide shows major peaks at wavenumbers of 3427, 1744, 1630, 1186, and 875 and 576 cm⁻¹ due to the functional groups such as –OH, C=O, C-O. More or less similar peak patterns were observed on GO coated sand and peak intensities have been decreased when increasing the coatings. A noticeable decrease of the intensity of the peak at 1070 cm⁻¹, which is assigned to be originating from sand, is a clear indication of the formation of layers of GO covering the sand. A noticeable peak of the FT-IR spectrum of Fluoride adsorbed 3 times coated sand observed around 3500 cm⁻¹. It may be due to the Fluoride bond with Hydrogen in the GO. The highest performance of fluoride removal is shown at pH 3.22 and 7.21 for Sand-GO-1 and Sand-GO-5, respectively. In both instances, the fluoride removal efficiency is around 70 % when 3 ppm initial fluoride was used. So finally it can be concluded that five times coated Sand-GO is most suitable for fluoride removal from the contaminated drinking water.

Keywords: Sand; Graphite; Graphene oxide; Fluoride; surface modification

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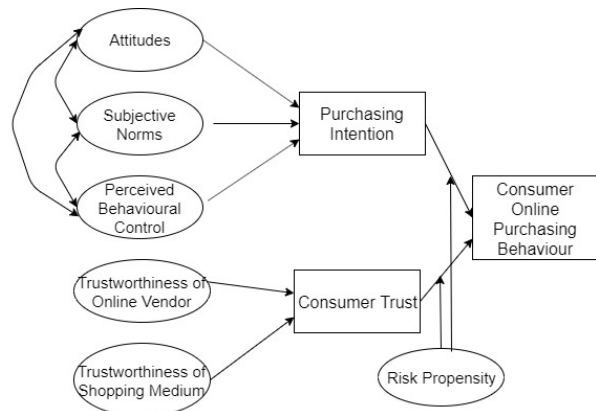
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A Model To Determine Factors Influencing the Decision-Making Process of Consumer Online Purchasing in Sri Lanka

D.M. Wickramasinghe¹, Suren Peter², Hiruni Niwunhella³

There are a wide range of products and services available online where the consumers can conveniently shop anytime from anywhere in the world. Despite the steady growth in e-commerce over the past few years, the rate of penetration of online shopping in Sri Lanka remains low. The available literature contains evidence that advocate that there is consumer reluctance, resistance and hesitation to engage in online shopping, due to diverse reasons. Inarguably, online and offline channels present different shopping experiences, even in instances where the same product is purchased. It is therefore, vital to investigate the consumer behaviour related to online shopping. According to well established literature, negative attitudes and motivation of the consumer, lack of trust and less propensity to take risks impedes the consumer-online vendor relationship. Consequently, a conceptual framework has been developed integrating perspectives from consumer behaviour, trust and risk propensity as a significant step towards a better understanding of the consumer. It has been developed primarily based on the theory of planned behaviour, Mayer’s trust model, and the risk propensity from Pablo and Sitkin Model. The conceptual model investigates the main antecedents which influences consumers to engage in online shopping through the identified predictors. A systematic set of hypotheses are formulated on the basis of the conceptual model and a methodology is developed for testing and analysing such behaviour. While the constructs from theory of planned behaviour and consumer trust have an impact on the purchasing behaviour, the risk propensity of the consumer has a moderating effecting on the antecedents. The conceptual model has been initially validated by expert opinion. The conceptual model will be tested subsequently, through an empirical study. The final model would be of use to the marketing practitioners, academic researchers and the industry.

Keywords: Online Shopping; Consumer Behaviour; Theory of Planned Behaviour; Trust Models; Risk Propensity



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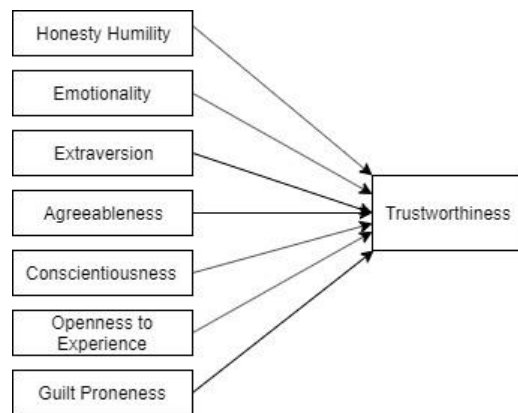
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Personality Trait Model to Assess Creditworthiness

M.R.T.D. Mawela¹, Suren Peter², Hiruni Niwunhella³

Despite the fact that financial institutions evaluate the creditworthiness of loan applicants a significant number of them fail or fall behind on their promised payments. While in some cases, this could be due to unforeseen external circumstances, inherent internal characteristics of the applicant also contributes towards this delinquency. A non-performing loan (NPL) is an amount of borrowed money upon which the borrower has failed to meet the scheduled payment, generally 90 or more days. The NPLs of financial institutions over the last few years have been rising, despite even stringent requirements enforced by the regulatory authorities. This rising proportion of non-performing loans, if left unchecked could lead to a systematic failure of the banking system and could have a catastrophic impact on the economy. Therefore, there is a need for a model that could filter applicants who could potentially default. Lending takes place when trust is developed between lender and the borrower. Studies carried out previously have put forward various quantitative and qualitative models upon broad microeconomic and demographic factors to assess lender borrower trust. However, the impact of personality characteristics of the borrower has not been sufficiently exploited in this regard. Trust is a complicated behaviour which has been defined from different perspectives in numerous disciplines. Literature depicts that trustworthiness of the trustee is a key antecedent of trust. The study proposes an integrated model to assess the trustworthiness of the borrower based on their personality characteristics. The study modifies the HEXACO personality model by including guilt proneness as the seventh dimension to the model. A systematic set of hypotheses are formulated on the basis of the conceptual model and a framework is developed to analyse the impact of personality traits on trustworthiness. The developed model has been initially validated through expert opinion and is validated through an empirical study using a survey questionnaire intended to capture personality traits using modified HEXACO model and trustworthiness using David Maister's trust equation administered to a sample of loan eligible people. Furthermore, data obtained from financial institutes engaged in lending business will also be used in the validation process.

Keywords: “Non performing loans, Trust, Trustworthiness, HEXACO Model, Guilt proneness”



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Efficiency of Biofilm Biofertilizer in Increasing Plant Growth Parameters of Rice Cultivation In Sri Lanka

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Agricultural land per unit area needed to obtain the highest productivity and quality products, in order to win the challenging need for food products to feed a growing world population. For that, excessive chemical fertilizers (CF) are used for a long period of time for the agricultural lands which affect adversely on soil health and plant production. Application of CFs on cultivated lands suppresses the soil microbial activities and leading to develop poor microbial communities with low biomass. Microbial biofertilizers, a viable substitute for CFs are reported to increase diversity and abundance of soil microbes by introducing beneficial microbes which are depleted in agroecosystems. They consist of live beneficial microbes such as fungi, bacteria and algae which may include single or multiple combinations to enhance microbial activities. Among biofertilizers, more efficient biofilm biofertilizers (BFBF) which consist of developed microbial communities and extra polymeric substances play a crucial role in plant growth and soil processes. BFBFs are observed to produce various plant hormones, hydrogen cyanide and siderophore like exudates and amelioration of plants from stress. Moreover, they are involved in activities like nitrogenase activity, antagonistic activity defense against plant pathogens and solubilization and mineralization of soil nutrients such as phosphorus. BFBFs which ensure the sustainability of agroecosystem help for plant growth and development. Thus, the present study focused on the effect of BFBF on plant growth parameters under CF reduction in the conventional agriculture using rice as the test plant. A rice field experiment was conducted with four treatments viz: 100% CF DOA recommendation (DCF, 136 kg NPK per acre), NIFS CF recommendation for BFBF practice (NCF, 90 kg NPK per acre), NIFS CF recommendation for BFBF practice + BFBF (NCF + BFBF, 1000 ml BFBF per acre), and the control (without CF and BFBF), each having three replicates. Plant samples were collected randomly from all four treatments and leaf chlorophyll content was measured in the field using SPAD-502-Chlorophyll meter. Furthermore, total dry weight per hill, total number of tillers per hill, circumference of plant shoot, thousand seed weight and chaff content were measured. The data were analyzed using Minitab statistical package. There were significant increases in total dry weight of the plant (increase by, with respect to DCF: 89%, NCF: 98%, control: 98%), total number of tillers per hill (with respect to DCF: 93%, NCF: 73%, control: 86%) and circumference of the plant shoot (with respect to DCF: 52%, NCF: 35%, control: 40%) ($p < 0.05$) in the NCF + BFBF treatment over the other three treatments. NCF + BFBF showed the higher leaf chlorophyll content (with respect to DCF: 6%, NCF: 1%, control: 33%), thousand seed weight (with respect to DCF: 3%, NCF: 1%, control: 9%) and the lower chaff content (decrease by, with respect to DCF: 33%, NCF: 8%, control: 33%) than those of other three treatments. The study concludes that the BFBF application together with a reduced dosage of CFs improves the plant growth and grain yield in conventional rice cultivation.

Keywords: Biofilm Biofertilizer; Chemical fertilizer; Grain yield; Plant growth; Rice

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Antifungal Activity of Methanolic Extracts of Ceylon Green Tea and Black Tea against *Candida tropicalis*, *Candida albicans* and *Candida parapsilosis*

Camilaa Navaratnasingham¹, Chandrani Wijeyaratne², Deepthi K. Gunasena³

‘Ceylon’ tea is one of the popular beverages around the world. Its wide range of organoleptic and chemical characteristics is partly due to the topographic differences in the cultivating regions. In this research antifungal property of ceylon green tea and black tea were investigated by comparing different grades of *Camellia sinensis* grown at different elevations to find out whether topography has an influence on antifungal activity due to its high amino acid and low total polyphenol contents in higher elevations. High grown (elevation >1200m) green tea grade Gun powder (GP); high grown black tea grades Orange Pekoe (OP), Broken Orange Pekoe (BOP) and mid grown (elevation 600- 1200m) black tea grades Orange Pekoe, Broken Orange Pekoe were used in this investigation. Methanolic extracts of tea samples were prepared by macerating 20.0g of each sample in 200ml of 85% methanol at 800rpm in a magnetic stirrer for 6 hours at constant temperature of 50° C. Extracts were filtered with Whatman No 1 filter paper, dried at 45o C and stored in refrigerator. A concentration gradient (1%, 2%, 4%, 6% and 8% w/v) of crude extract was prepared from 10% w/v in 85% methanol and were tested five times (n=5) against three human pathogenic fungal species *Candida tropicalis* (NCYC 2699), *Candida parapsilosis* (ATCC 22019) and *Candida albicans* (ATCC 10231) which are resistant to many antifungal agents. 0.25ml of the above concentrations was tested against 0.2ml of fungal suspension which was standardized with 0.5 McFarland standards. Agar well- diffusion method was used with Mueller- Hinton agar plates and diameters of inhibition zones were measured after incubating the cultures at 25° C for 48 hours. Diameters of inhibition zones were categorized as susceptible (≥ 20 mm), intermediate (15- 19mm) and as resistant (≤ 14 mm) based on CLSI standards and the mean diameters of the inhibition zones were used to identify the statistical significance using Minitab15. Mean diameters of inhibition zones for high grown GP were 23.2mm (SD ± 0.84), 21.4mm (SD ± 0.55), 21.2mm (SD ± 0.84) for 10%, 8%, 6% concentrations against *C. parapsilosis* and 20.0mm (SD ± 1.00) for 8% against *C. albicans*. Statistically significant differences among mean diameters of inhibition zones were high between high grown GP and BOP where 83% of p- values were ≤ 0.05 . High grown black tea grades, mean diameter for BOP were 21.2mm (SD ± 0.84), 21.2mm (SD ± 0.45) for 10% and 8% concentrations against *C. parapsilosis* where it was higher than OP in 54.7%, 44.2% respectively. However mean diameters of inhibition zones for mid grown black tea grades were not statistically significant where 60% of p- values ≥ 0.05 . Thus, it could be concluded that the topographical differences have influence on antifungal property of Sri Lankan tea.

Keywords: Green tea; Black tea; Antifungal activity; Candida; Agar- well diffusion

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Study on Hepatitis B immunization and Antibody Level in Health Care Workers, District Base Hospital, Wathupitiwala

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Introduction

Hepatitis B virus (HBV) is a blood born pathogen leading to cirrhosis and hepatocellular carcinoma. It is transmitted mainly through contaminated blood or blood products from an infected person. It has the highest potential to transmit through prick injuries as one in three infected punctures. Therefore, health care workers (HCWs) are at great risk of contracting the infection during patient care. Hence, HBV immunization and having protective antibody levels are mandatory for HCWs.

Objective

To find out the immunization status and antibody levels of healthcare workers in a single health care center.

Methodology

A descriptive cross-sectional study was conducted prospectively involving sixty HCWs at District Base Hospital, Wathupitiwala from 01.08.2019 to 30.10.2019. The HCWs were selected as per hospital units/wards considering the risk of exposure since limited availability of laboratory testing facility for hepatitis B surface antibody. The demographic and immunization data of HCWs were obtained using a questionnaire. All HCWs who have not been checked the HBV antibody levels were subjected to HBV antibody testing using enzyme-linked immunosorbent assay (ELISA). Having hepatitis B surface antibody level of ≥ 10 mIU/ml were considered as immune against HBV infection.

Results

Of the total HCWs of 60, 33 nursing officers, 13 doctors, seven health care attendants, six medical laboratory technologists and one midwife were included for the study. The study population consisted of 48 females and 12 males. Amongst the study subjects, three doses of HBV vaccine were completed in 48, only two doses were received in seven and only one dose was received by five HCWs. Of the 48 HCWs who had completed three doses of HBV vaccination, none had checked their antibody levels. Yet, of the 48 who completed full course three doses of vaccine, 46 have developed sufficient antibody levels. Of the seven HCWs who had two HBV vaccine doses, four developed sufficient antibody levels whereas of the five who received only a single dose of vaccine, two developed sufficient antibody levels. Of the sixty health HCWs, 52 were immune against HBV.

Conclusion

In the investigated cohort of HCWs, all had the prior HBV vaccine. However, only 80% have completed the full course of HBV vaccination and none had checked antibody levels following vaccination. Nonetheless, the majority (86.6%) of the HCWs were immune against hepatitis B. The development of HBV antibodies was 95.8% following immunization with the complete regime (three doses), 57.1% following only two doses and 40% following a single dose of vaccination.

Keywords: “Hepatitis B immunization; Healthcare workers; Hepatitis B antibody level”

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Comparative study on Proximate and Mineral composition in *Vernonia cinerea*

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Vernonia cinerea is a herb having several medicinal properties such as antidiabetic, antioxidant, antimicrobial, antiinflammatory and anticarcinogenic. This work investigated the proximate and mineral composition in different parts (leaves, roots, stem and flowers) of *V. cinerea* using standard procedures. Collected data of proximate and mineral analysis were analyzed using one-way ANOVA. The results of the proximate composition were found to be as follows; ash content ranged between 10.00 ± 1.32 % w/w and 20.17 ± 6.74 % w/w while both leaves and roots had the highest and flower had the least ash content which was significantly different ($P < 0.05$). The moisture content ranged between 61.24 ± 2.17 % - 75.45 ± 4.74 % w/w in the different parts of the plant. The mean nitrogen content ranged between 1.91 ± 0.23 % w/w and 4.80 ± 0.18 % w/w. The protein content in flower, leaf, stem and roots of *V. cinerea* were significantly different ($P < 0.05$) and the values ranged between 9.19 ± 1.08 % w/w - 23.07 ± 0.85 % w/w. The plant parts were also analyzed for mineral elements such as Zn and Cu metal ions using Atomic Absorption Spectroscopy (AAS). The levels of these elements found were; Zn: 5.58 ± 0.14 - 51.27 ± 0.81 mg/kg and Cu 3.29 ± 0.06 - 8.57 ± 0.10 mg/kg with few exceptions. The mineral content of flower, roots, stem and leaves were significantly different ($P < 0.05$). Therefore, *V. cinerea* as a therapeutically beneficial herb has a significant amount of proximate and mineral ion composition that can be specified.

Keywords: “Proximate analysis; Metal ion analysis; *Vernonia cinerea*”

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Assessment of the Heavy Metals in Rice Grains Grown in Paddy Soil in CKDu Endemic Area in Eppawala, Anuradhapura

W.P.R.T. Perera¹, D.M.U.C. Dissanayake, Amila T. Kannangara², Janitha A. Liyanage

Global public health attention is being focused on Chronic kidney disease due to significant prevalence and the enormous cost of the treatment process. It was revealed that longterm consumption of bioavailable metals in grains causes CKD in humans. Therefore, the present study was planned to assess the levels of heavy metals in rice grains grown in paddy soil in CKDu endemic area in Eppawala, Anuradhapura. The soil samples (n=30) were collected from paddy fields in Eppawala GN division. Rice plants with rice grains (n=30) were also collected from the same fields. Collected samples (soil, rice roots and rice grains) were digested using the microwave digester (MDS-6G). Concentrations of heavy metals (Cr, Fe, Cu, Zn, As, Cd, Pb) of the paddy soil, rice roots and rice grain samples were analyzed by ICP-MS (Agilent 7800). Based on the analyzed concentrations, Geo accumulation indices were calculated to evaluate the heavy metal contamination conditions in the agricultural soil. The results indicated that the average concentrations of Cr, Cd, As and Pb in soil were 49.918 mg/kg, 0.107 mg/kg, 5.033 mg/kg and 9.882 mg/kg respectively and they were 1.709 mg/kg, 0.027 mg/kg, 0.217 mg/kg, 0.566 mg/kg respectively in roots. Nevertheless, the lowest levels of metals were observed from rice grains (Cr, Cd, As and Pb were recorded as 0.342 mg/kg, 0.011 mg/kg, 0.035 mg/kg, 0.112 mg/kg respectively). According to the Igeo calculations, agricultural paddy soil in the Eppawala area has been moderately contaminated with Pb, As, Zn, and Cu. (Class 2). Nevertheless, Cd and Cr levels were between near to moderate contamination level. (Class 1). Although the levels of metals in rice grains were low, long term consumption of metal contaminated rice may contribute to chronic failure.

Keywords: Heavy metals; CKDu; Soil; Contamination; Igeo

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Culture-Dependent Characterization of Marine Bacteria from Ussangoda Coast, Sri Lanka

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Marine bacteria play a vital role in marine ecosystem structure and ocean biogeochemistry. Ussangoda has identified as a serpentinite site, situated along the Southern coastal zone of Sri Lanka. In the past, few studies have focused on biodiversity and soil chemistry of this unique habitat. However, marine bacterial diversity in the Ussangoda coast is largely unexplored. Thus, the present study was conducted to isolate and identify marine bacteria in Ussangoda coast. Water, sand and soil samples were collected from 14 sites of the beach which were located approximately 1 m distance representing foreshore, shore line, backshore and upland. Bacteria were isolated by inoculating a 10 µl of each water sample, soil and sand suspension into tryptone soya agar, nutrient agar (NA), and seawater nutrient agar (SNA) and were incubated at 27 ± 2 °C for 3 days. Pure cultures were obtained after 1-2 consecutive sub-culturing on to fresh media plates by streaking. In order to obtain halophilic bacteria, isolates were inoculated into saline nutrient agar media with the concentrations of 10% and 20% of NaCl for moderate halophiles and extreme halophiles respectively and were incubated at 27 ± 2 °C for 7 days. 198 bacterial pure cultures were initially isolated and among them 152 were Gram-positive bacteria (76.8%). Based on colony morphology and Gram's staining, bacterial isolates were identified as *Bacillus*, *Staphylococcus*, *Micrococcus*, *Pseudomonas*, *Klebsiella*, *Escherichia coli* and *Stenotrophomonas*, which have been previously reported in coastal zones of other countries. Among the tested 102 isolates, 35 isolates (34%) were reported as moderately halophilic and 14 isolates (13%) were reported as extremely halophilic bacteria. Halophilic bacteria were recorded from shoreline as well as in the upland soil and it may be due to the soil chemistry of the area. Bacterial isolates should be further confirmed by the 16S rDNA sequencing to confirm their identity. This study provides foundational data on the microbial diversity of the Ussangoda coast and further studies are needed to identify the association of microbial community structure with the environmental factors in this region.

Keywords: Marine bacteria; Ussangoda coast; Moderately halophilic bacteria; Extremely halophilic bacteria; Gram's staining

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Evaluation of Nutritional Potential and Composition of Peel of Pomegranate (*Punica granatum* L.) Cultivars Grown in Sri Lanka

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Pomegranate peel is a valuable waste rich with diverse range of bioactive compounds, which possesses antioxidant, cardio preventive, antimutagenic, antibacterial and antiviral activities. Apart from that, peel is believed to contain a significant level of nutritive ingredients such as minerals, organic acids, fat, protein, dietary fiber and vitamins. If the nutrient contents are significantly high that will open up a new avenue to develop a value added food product with high therapeutic and nutritional value. Nutritional composition of fruit peel can be varied depending on the cultivar, geographical and climatic factors. Hence, the study was aimed on the nutritional composition of the pomegranate peel (PP) of three Sri Lankan cultivars, named as *Nayana*, *Kalpitiya red* and *Nimali*. Fresh peels were dried in shade for 3 days, powdered and used for the analysis. Moisture content was measured by leaving the peel powder in hot air oven at 105 °C until get a constant weight. Crude proteins, crude fibers, lipids and total ash were analyzed according to the methods outlined in AOAC (2000) and carbohydrates content was determined according to FAO (1982) by difference method. Caloric value of each cultivar was calculated by the percentage sum of carbohydrates and proteins multiplied by a factor of 4 (kcal/g) and total lipids multiplied by a factor of 9 (kcal/g). All the experiments were performed in triplicate. The results showed that the crude protein, lipid, carbohydrate contents and caloric values were ranged from 3.35 ± 0.29 to $4.73 \pm 0.20\%$, from 0.67 ± 0.01 to $1.01 \pm 0.02\%$, from 68.66 ± 0.17 to $70.33 \pm 0.92\%$ and from 297.13 to 304.59 kcal/100 g dry weight, respectively. The moisture, total ash and crude fiber contents were varied from 6.02 ± 0.01 to 6.82 ± 0.02 , from 3.74 ± 0.04 to $4.55 \pm 0.06\%$ and from 13.60 ± 0.61 to $16.44 \pm 0.29\%$ respectively. The highest ash and carbohydrate contents were in the peel of *Kalpitiya red* whereas the highest crude fiber and fat contents were recorded in the peel of *Nimali*. The peel of *Nayana* cultivar had the highest protein content (4.75%), followed by the peels of *Kalpitiya red* and *Nimali* cultivars. According to the results, peels of all three cultivars, are rich with crude protein, crude fiber and total ash and carbohydrate contents and serve as a good source of energy. High amounts of total ash in peels indicate high values for mineral composition. According to the statistical analysis, all the parameters except carbohydrate content were significantly different ($p < 0.05$) among the cultivars. All these findings revealed that the PP exhibits higher nutritional potential and can be used as good ingredients in formulation of food products with numerous health benefits. Moreover, utilization of these low cost wastes may provide considerable economic benefits to food processors.

Keywords: Pomegranate peel; nutritional composition; crude fiber; total ash; crude protein

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Potential Antibacterial Secondary Metabolites from an Endolichenic Fungus Inhabiting a Lichen Collected from Negombo Lagoon, Sri Lanka

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G. Weerakoon⁵, P.A. Paranagama⁶

With the revelation of intriguing bioactive properties from natural sources, the thirst to investigate more into the mysteries of nature has immensely expanded. Endolichenic fungi (ELF) became an interesting source during the recent past in this search for novel bioactive compounds and literature sources provide evidence of many such bioactive compounds isolated from these interesting organisms. These ELF asymptotically live inside the lichen thallus which is formed by the symbiotic relationship of fungi with an algae or a cyanobacteria. A total of 31 lichens were collected from mangrove plants in Negombo lagoon and their molecular identification revealed that they belonged 10 different species. Healthy lichen thalli were surface sterilized and were cut into small segments and plated on 2% Malt Extract Agar (MEA) medium supplemented with 0.01% streptomycin in order to obtain ELF. The obtained pure cultures of ELF were identified using molecular techniques. DNA was extracted using CTAB method and its quality and quantity were determined by agarose gel electrophoresis. DNA was diluted accordingly and was subjected to Polymerase Chain Reaction (PCR) to amplify fungal ITS rDNA region using universal primers. PCR amplification was tested using agarose gel electrophoresis and the full sequences were obtained. Ethyl acetate crude extracts of 18 such identified ELF strains were subjected to anti-bacterial assay against *Escherichia coli* and *Staphylococcus aureus* using agar well diffusion method. The species *Xylaria feejeensis* isolated from the lichen *Graphis librata* showed remarkable activity against the two bacterial strains on par with the positive control Azithromycin. The assay was carried out using 100 µl of the extract and the positive control (5 mg/ml). The inhibition zone diameters (in cm) against *E. coli* and *S. aureus* for the fungal crude were 1.9 and 2.2 respectively and for Azithromycin was 2.2 against both. In order to isolate the active compounds, a larger crude of the same was obtained and partitioned into Hexane, Chloroform and Methanol fractions based on polarity. The assay results for the three fractions revealed that only Hexane and Chloroform fractions possessed anti-bacterial potentiality. Subsequently, silica gel normal phase column chromatography was performed for further fractionation. Collected 6 fractions from the column for Chloroform fraction showed inhibition diameters of 1.9, 1.9, 1.5, 1.2, 1.3, 1.1 against *E. coli* comparable with 2.2 of Azithromycin and 2.4, 2.2, 1.4, 0.0, 0.7, 0.0 against *S. aureus* comparable with 2.5 of Azithromycin. The fraction 1 and 2 showed highest activity against both bacterial strains and fraction 4 and 6 showed lowest activity against *E. coli* and none against *S. aureus*. Further isolation is being carried out for active fractions and the structures of obtaining active compounds will be elucidated using spectroscopic methods.

Keywords: Endolichenic fungi, Lichens, Mangrove ecosystem, Negombo lagoon

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Production, Optimization and Characterization of Thermostable, Halotolerant, Detergent Compatible Cellulase from a *Bacillus* sp using Agricultural Residues

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Lignocellulose biomass is considered to be the most copious and renewable organic material on the planet. Agricultural residues are a great source of lignocellulose biomass which is inexpensive, renewable and environmentally friendly. Cellulose is the predominant constituent, while hemicellulose, pectin, and lignin are present as minor components. Cellulase is the key to achieve economically valuable high-energy molecules via effective enzymatic hydrolysis. Cellulases are adaptive enzymes which are synthesized by microorganisms during their growth in the media when cellulosic substrates are present. The current study was focused on optimizing the production conditions of cellulase-producing bacteria isolated from garden soil using inexpensive agro wastes as the sole carbon source. Furthermore, the cellulase enzyme was partially purified and characterized under different parameters. Bacterial strain, *Bacillus clausii* was manifested to produce extracellular thermostable, halotolerant and detergent stable cellulase. The culture conditions for the growth of the enzyme producer were optimized with respect to incubation time, pH, temperature, carbon sources and nitrogen sources. Cellulase production was instigated at 12 hours as soon as the bacterium entered the exponential phase and reached its maximum at 48 hours. The production of cellulase was active in a significant range of pH from pH 7 to 11. Optimal pH was recorded to be pH 11. The maximal cellulase activity was obtained between 30°C to 40°C. The yield of cellulase was enhanced nearly by 45% in the presence of agricultural residues including 1% of corn husks and jack fruit peel powder. Cellulase was partially purified by 60% of ammonium sulfate precipitation method followed by the dialysis. Partially purified cellulase was subjected to characterization. Maximum enzyme activity was recorded at pH 5 and 50°C. The enzyme was thermostable perpetuating 100% original activity at 60°C for 1 hour. The enzyme was active over a broad spectrum of sodium chloride of 2 % to 14% and the enzyme activity was induced by 8% of Sodium Chloride (NaCl). Cellulase activity was significantly inhibited by the presence of mercury (ii) ion. Detergent compatibility was varied with different types of commercially available laundry detergents. Cellulase depicted its apex of stability with respect to Surf Excel. In addition, cellulase rendered its stability in the presence of 1% Sodium Dodecyl Sulphate (SDS) and it might give an indication to be used as a potential additive in the detergent industry. We believe that the utilization of garden soil bacteria upon cellulosic waste is an inexpensive approach to reduce the enzyme production cost. And also, indirectly it helps to reduce environmental pollution. Besides, the production of cellulases that can actively participate in harsh environmental conditions is considered to be an important application from the industrial perspective.

Keywords: *Bacillus clausii*, Cellulase, Agricultural residues, Thermostable, Detergent stability, Halotolerant

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Determination of Heavy Metal Contamination of Some Aquatic Plants and Assessment of Health Risk

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Heavy metal contamination has become a crucial health matter to public health as they cannot be destroyed or degraded and persist in the environment for long time. People who live in North Central Province of Sri Lanka are victims of many health issues related to heavy metal consumption with their food and water. During last few decades, the soil and water in Sri Lanka are contaminated by heavy metals such as Arsenic, Cadmium, Mercury and Lead. Aquatic plants which grow in these contaminated water sources can absorb heavy metals through their roots, stems, leaves and store in plant body. This study was carried out to assess the toxicity levels of some aquatic food plants due to Cadmium and Arsenic. In this study, heavy metal contamination of some aquatic plant parts was assessed by Atomic Absorption Spectrometry (AAS). Forty two samples of three different aquatic food plants, leaves of Joyweed (Mugunuwenna, *Alternanthera sessilis*, n = 15), seeds of Water lily (Olu, *Nymphaeapubescens*, n = 12) and tubes of Lotus (Nelum, *Nelumbonucifera*, n=15) were obtained from Madawachchiya area of Anuradhapura district of North Central province of Sri Lanka. The samples were digested by microwave accelerated digestion system and analyzed for Cadmium (Cd) and Arsenic (As) by AAS. The highest and the lowest Cd levels, 51.17 and 19.55 µg/kg, were reported in Lotus roots and joyweed respectively, while the highest and lowest levels of As, 420.57 and 121.54 µg/kg, were reported in joyweed and Lotus roots respectively. The Provisional Tolerable Weekly Intake (PTWI) of Cd, calculated based on standard value of 7 µg/Kg body weight, for extreme exposure of these plants were recorded as 8.21 Kg (lotus tubes), 17.60 Kg (water lily seeds) and 21.48 Kg (joyweed) per week of 60 Kg for body weight. However, the average vegetable consumption of a Sri Lankan is nearly 2.5 Kg/ week, thus not posing any health risk due to Cd. The PTWI values calculated for As, based on standard value of 15 µg/Kg body weight, were recorded as 2.14 Kg (joyweed), 3.36 Kg (water lily seeds) and 7.41 Kg (lotus tubes), thus contamination levels of As may cause health risk over long term consumption of joyweed and water lily seeds.

Keywords: Arsenic, Cadmium, Aquatic food plants, Atomic Absorption Spectroscopy

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An Investigation of Ground Water Quality in Ja-Ela Area in Sri Lanka

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Ground water plays major role in human life. It is the most important source of water supply for drinking, agricultural and industrial purposes. Groundwater quality has become crucial for water resources issues due to rapid increase of population, rapid industrialization, heavy use of fertilizers and pesticides in agriculture. Hydrochemical parameters of groundwater play a significant role in classifying and evaluating water quality.

An investigation was carried out to analyze the ground water quality in Ja-Ela area in Sri Lanka for 10 drinking water well samples between 7° 07' 99" to 7° 09' 13" North latitude and 79° 89' 30" to 79° 90' 61" East longitude for a period of six months from December 2018 to May 2019. The physicochemical parameters studied were pH, conductivity, COD, hardness, and metals including Fe, Mn, Cd and Zn. The observed physicochemical parameters of ground water were compared with World Health Organization (WHO) standards. According to the observations, some ground water samples from Ja-Ela area were appeared brownish color with odor. The observed pH values of all fresh water samples ranged within the acceptable pH range (6.5-8.5) of WHO for drinking water, while pH values after boiling of those well water samples ranged from 8.5 to 9.0. According to the experimental results highest conductivity observed for fresh well water samples is 308.8 $\mu\text{S cm}^{-1}$ which is lower than recommended value (750-3500 $\mu\text{S cm}^{-1}$). All the well water samples in studied area have high COD values and high total magnesium and calcium content above the recommended values of WHO. Total magnesium and calcium contents were ranged from 184 to 329 as $\text{CaCO}_3 \text{ mg L}^{-1}$. The cadmium content of the well water samples was not in the detection limits ($< 0.003 \text{ mg L}^{-1}$). The maximum iron content observed was 5.07 mg L^{-1} . The maximum manganese content and zinc content were 0.06 mg L^{-1} and 0.14 mg L^{-1} which are lower than the recommended values of WHO standards. Experimental data revealed that groundwater in the studied area is not in the limit of COD, total magnesium and calcium content and iron content of WHO guidelines for drinking water.

Keywords: Groundwater; physicochemical paramerts; Ja–Ela area; World Health Organization (WHO)

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Assessment of Proximate and Mineral Element Content of Crude Methanolic Extract of *Clausena indica* (Dals) Oliver Leaves in Sri Lanka

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Clausena indica (Dals.) Oliver commonly known as “mee-gon-karapincha” plant in Sinhala, belongs to family Rutaceae. In comparison to the other members of Rutaceae family in Sri Lanka, *C. indica* is a less common plant which is usually associated with rain forests. However, *C. indica* is frequently used in traditional medical practices in Sri Lanka, especially in fixing bone fractures and joint dislocations. It is rich in essential photochemical constituents and minerals. In the current study, proximate and mineral content of a crude methanol extract of *C. indica* were analyzed following the standard methods. Moisture content was analyzed by oven drying method and the value was $54.67 \pm 0.00\%$. Total ash content was determined to be $3.00 \pm 0.07\%$ by AOAC methods. Rose-Gottlieb method was used to determine the total fat content, which was $1.32 \pm 0.38\%$. The protein content determined by Kjeldahl method was $18.93\% \pm 0.73$ and the total carbohydrate content was 22.08% . Mineral elements were analyzed according to AOAC official methods and Fe, Zn, Na, K contents were 9.08 ± 0.23 mg/100g, 1.99 ± 1.14 mg/100g, 0.15 ± 0.025 mg/100g, and 0.19 ± 0.04 mg/100g respectively. These findings revealed that the *C. indica* plant leaves are a rich source of Fe and Zn, which also has a significant amount of proximate composition.

Keywords: *Clausena indica*; proximate analysis; Mineral element analysis

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Green Synthesis and Characterization of Zirconia Nanoparticles Using *Averrhoa bilimbi*

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Nanostructured materials have numerous breakthrough applications in the field of engineering, medicine and science due to their exceptional physical and chemical properties. These nanoparticles are interesting not only for their wide variety of physical and chemical properties, but also for their antibacterial activity. Zirconia (ZrO₂) nanoparticle is a ceramic material, which has attracted widespread scientific and industrial attention due to its interesting and useful properties such as higher strength, higher fracture, toughness, nonmagnetic, low thermal conductivity, wear resistance and corrosion resistance in acids and alkali. Synthesizing of nanoparticles from natural resources such as plant extracts or fruit juices have drawn significant attention due to many issues encounter from conventional methods of making nanoparticles.

The present investigation is a biogenic green synthesis of zirconia nanoparticles (ZrNPs) using the fruit juice of *Averrhoa bilimbi* as nontoxic and ecofriendly reducing material. This work focused on a facile, ecofriendly and sustainable method to synthesize zirconia nanoparticles by bilimbi juice extraction. Bilimbi juice is known to have a high content of oxalic, citric and ascorbic acids. The synthesized ZrNPs were characterized using mass spectrometry (MS), X-Ray diffraction spectroscopy (XRD), scanning electron microscopy (SEM), and transmission electron microscopy (TEM) and used to evaluate their antibacterial activity. MS results confirmed the presence of oxalic acid, ascorbic acid and citric acid in the *Averrhoa bilimbi* juice. The XRD pattern was used to characterize the structure of ZrO₂ nano particles which showed that nanoparticles are tetrahedral. The size range of synthesized ZrO₂ nano particles was found to be 10 to 50 nm from the SEM images and the energy dispersive X-ray spectroscopy (EDX) confirmed the presence of elements, zirconium and oxygen in the nanoparticles. According to the antibacterial evaluation, the nanoparticle did not show any bactericidal or bacteriostatic activities. Therefore, the synthesized nanoparticles are more suitable for the dermatological preparation as an additive.

Keywords: zirconia; nanoparticles; averrhoa bilimbi; green synthesis; antibacterial activity

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Humanities

Vocabulary Learning Strategies of Engineering Students

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This synopsis presents the results of a study which investigated the vocabulary learning strategies (VLSs) of engineering students at the University of Moratuwa. How the students learned technical terms, why they did not use VLSs and whether they used the VLSs in the vocabulary learning strategy inventory (VLSI) of Schmitt (1997) were part of the research problem while the classification of the VLSs, enumerating the number of VLSs used, assessment of the most used VLSs, evaluating the most widely used digital strategies and comparing the most widely used VLSs were the objectives. The students' use of technical VLSs and their beliefs on the importance of learning technical terms too were investigated. The sample included two hundred and eighty-six (286) engineering students between the ages 20-23 from all the provinces of Sri Lanka reading for their first degree in engineering. The data were collected through three data collection instruments. Qualitative analyses and quantitative analyses were used to describe and count the type of VLSs. A pretest and midtest were used to collect data. A modified version of Schmitt's (1997) VLSI was used as the primary data collection instrument which was administered after the pretest and midtest. Findings reported that the students used electronic devices to learn technical terms. Male and female students used digital strategies with average frequencies of 3.50 (SD=.49) and 2.87 (SD=.61) respectively. Female students used digital strategies with a mean of 3.50 (SD=.49) followed by a mean of 2.87 (SD=.61) respectively for male students. In digital strategies, female students used digital strategies more than male students. Metacognitive strategies are the least frequently used type of VLSs by the female as well as male students. Digital strategies were the most commonly used VLSs while the second most widely used strategies were the determination strategies. A statistical analysis confirmed the differences between female and male students in the frequency of use of VLSs. The results revealed that the difference between female and male was significant ($p < .05$) in favour of females in the use of digital VLSs. The findings indicated that the students used a variety of technical VLSs and the traditional paper dictionary was no longer preferred as digital devices are convenient and mobile. Findings further reported that digital strategies are more frequently used than other traditional strategies.

Keywords: Digital, inventory, learn, memory, metacognitive, strategies, terminology

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A Study on The Writing Errors among the Beginner level Chinese Language Learners in Secondary Schools in Sri Lanka

Sammanie Upadya Kandambi¹

“One belt one road initiative” concept caused to strengthening China – Sri Lanka bilateral relations considerably during last years and as a result of it a vast number of Sri Lankan students are motivated to learn Chinese language based on its significant impact on Contemporary Sri Lankan society. In order to promote the Chinese language learning, Sri Lanka general education system, Sri Lanka has designed a Chinese language curriculum including Chinese character writing and composition as a complementary part of it, focusing on the successful achievements of local students in source language environment. Chinese writing and composition is one of the main language skills that Chinese language learners need to acquire. There are certain standards and requirements for writing Chinese in terms of characters, grammar and discourse. At present, the writing competency of the beginner Chinese language learner in schools (G.C.E. Advance level classes) is not up to the standard. This study mainly focuses on exploring the writing errors done by the Chinese language learner, the factors which may influence Chinese language writing errors and the countermeasures to develop the communication competency of learner. This research is designed to be a quantitative research study and the research sample consisted of 50 students engaged in Chinese language learning as G.C.E Advance level learners. The research methods used were the questionnaire research method and the classroom observation method. The questionnaire is based on the theories related to foreign language writing and influencing factors for Chinese language writing errors in foreign language classroom. Data analysis revealed that, the main cause for the Chinese writing error is the negative influence of the mother tongue, also the learner is not acquired the writing regulations of the target language systematically and scientifically. The study while looking into an overall scenario of the research findings related to the students writing errors of the Chinese language, the conclusion concerns that, the teacher should regulate teaching methods according to the learning requirements of students while enhancing the students’ interest towards guided writing and composition in Chinese. Similarly, the teacher should let the learner acquire the uniqueness of Chinese writing style without relying on the learner’s source language or the second language writing systems. Finally, this research work looks forward to develop and promote the Chinese language writing, learning and teaching by providing reference to the future research carrier in order to enhance the Chinese language secondary education in Sri Lanka.

Keywords: “Beginner level ; Chinese language ; Error analysis ; Guided writing ; Secondary education ”

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Difficulties Faced by G.C.E. (A/L) Students When Learning English as a Second Language in Sammanthurai

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This study aims to examine the difficulties encountered in written tasks of General English subject when learning English as a second language by the first-year students of G.C.E. (A/L) in the academic year 2018 - 2020 at KM/ST/ Dharussalam Maha Vidyalaya, Sammanthurai. The specific objectives of the study are to identify the grammatical difficulties made by the students when accomplishing written tasks; to provide the language teachers with new techniques and methodologies of language teaching by analyzing the students' difficulties and to make the students aware about their syntactic errors. The Research samples were 30 monolingual students who learn English as their second language. These students were selected randomly. A pre-test and post-test which comprise grammatical and paragraph typed questions based on the General English subject were administered. A quantitative data analysis approach was implemented to analyze the pre and post test scores of the experimental and controlled group. EA method was deployed to analyze the grammatical errors. The findings of the study show that many students face difficulties in the grammatical components such as parts of the speech, syntactic structures and vocabularies due to lack of exposure to English language, mother tongue interference, incompetence in English grammar, incomplete application of rules, omission, addition, bad formation of sentences and redundant lexical choice. The study suggests assigning the students with plenty of written tasks continuously, using effective syntactic strategy in the authentic classroom to get the interests of the students, improving the skills on the grammatical components by using visual aids, strengthening teachers with smart classroom facilities to carry out the teaching process and building up the culture of using the second language in the learning and teaching process. These efforts as remedies are used to solve the difficulties faced in written tasks by G.C.E. (A/L) students when learning English as a second language in Sammanthurai. The study hopes to help the ESL teachers and educators to be familiar with the most frequent difficulties faced by L2 learners and to adopt appropriate strategy in preparing learning teaching activities.

Keywords: “Second Language; ESL; Syntactic Analysis; Grammatical Components; EA”

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The Verb Nucleus Concept as an Improved Method for Teaching English as a Second Language

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The current study examined the efficacy of an innovative method of teaching English sentence construction. It was felt that this novel method would be useful for teaching English as a second language at the technical and vocational training level. This method centers on the hypothesis that the verb forms the nucleus of a sentence. This differs from the existing view that verb is a part of the sentence predicate. It is believed that application of this method would enable learners to easily process single, phrasal and clausal units surrounding the verb, as well as transformations such as questions, imperatives and passives. In Sri Lanka, the curricula adopted in technical institutes specify communicative language teaching. The lack of teacher proficiency, excessive use of the mother language, a dominant teacher approach and the lack of pupil centered activities have hindered its success. Although reading and writing skills are deemed important at the examination level, the teaching materials prescribed do not enhance correct or meaningful sentence construction. As a consequence, excessive the students are unable to construct sentences on their own. As a result, a large number of students fail the final written part of the evaluation. Hence, an innovative approach to teaching sentence construction is urgently needed. The data gathered in this research study was analyzed in relation to the ability of the students to construct sentences with single, phrasal and clausal units surrounding the verb nucleus using jumbled sentences. In addition, transformations were also studied. The theoretical foundation for sentence analysis was the prescriptive model, but modified by the introduction of the verb nucleus concept. The prescriptive model, classifies sentences as simple, compound, complex and compound complex. This classification was used for testing as it covers a fair representative sample of the total syntactic knowledge. Students following NVQ Level 5 courses were selected as subjects for this study. Out of the 6 groups selected for the study, 3 were control groups who learnt the verb as a part of the predicate. The 3 experimental groups were taught the new method, via a 10 lesson course specially designed by the researcher. The 3 experimental groups were then post tested against the 3 control groups in regard to their proficiency in sentence construction. There were no significant differences between the groups regarding overall performance. This could be attributed to many limitations due to unavoidable constraints imposed by the technical institutions where the research was conducted, such as allocation of time, insufficient sample size and the rush to complete the course in the stipulated period of time. Inability to conduct revision or remedial teaching programs including effective error correction was a severe drawback. However, certain insights could be formed. Among these, the impact of the verb nucleus concept on constructing simple sentences among the experimental groups was notable. The study implied the need to improve English Sentence construction in student groups with compromised second language skills using innovative methods. Another important finding was the inability to construct complex syntax especially with complex modification in contrast to mere combination of single units.

Keywords: “verb nucleus; sentence construction; predicate; writing skill; innovative method”

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Improvisation of Ethno-Musicological Aspects in Sri Lankan Film Music (Study based on *Abā* and *Agnidāhaya* Sinhala Movies)

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The focus of this study is to identify the Ethno Musicological aspects and its improvisation in Sri Lankan film music industry. The origin of the term ‘ethnomusicology’ is attributed to the Dutch scholar Jaap Kunst (1950), who used it, in the subtitle of his book *musicologia*. It is the anthropology of music, the study of music in its cultural, historical, economic and linguistic context. In this paper, the question of how ethnomusicologist and scholars might treat music composed to accompany film is explored in a cultural context by analysing the music applied in the renowned Sri Lankan films *Abā* and *Agnidāhaya* directed by Jackson Anthony and Jayantha Chandrasiri respectively. In the particular context of film that often times utilizes and applies the technology and its subsidiary tools to innovate a unique cultural demonstration through its art work, nurtures its authenticity by various aspects; choreography, costume, make-up and obviously using music as a cultural tool. In the films *Abā*, and *Agnidāhaya*, this aspect has been demonstrated at a significant level. Thus, they portrayed certain characteristics that necessarily promoted and propagated the Sri Lankan culture among other pieces of art work. In an overall, observation, *Abā* and *Agnidāhaya*, and its film music can be identified as a prelude to the Sri Lankan film industry in terms representing the ethno-musicological aspects which presenting the cultural norms and values of the selected community. The materials used to examine this concept include the literary survey, audio-video records and characteristic phrases as well as field survey conducted by the candidate.

Keywords: Anthropology, Cultural context, Ethnomusicology, Improvisation, Sri Lankan film music

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වර්ග අක්‍රමිකතා සහිත යෞවනයින්ගේ ගැටලු අවම කිරීම සඳහා ප්‍රතිකාර විධි ක්‍රමයක් ලෙස නාට්‍ය විකිත්සාව

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උක්ත මාතෘකාව යටතේ සිදු වූ මෙම පර්යේෂණ අධ්‍යයනය , නාට්‍යමය ප්‍රතිකර්ම තුළ ඇති වර්ග අක්‍රමිකතා අවම කිරීමේ හැකියාව තහවුරු කර දී එමගින් කළහකාරී යෞවනයන්ගෙන් සමාජයට සිදුවන අහිතකර බලපෑම් අවම කිරීම සහ නාට්‍ය විකිත්සා විෂය ශ්‍රී ලංකාවේ වඩාත් විධිමත්ව ස්ථාපිත කිරීමට අවශ්‍ය අත්වැලක් සැපයීම යන මූලික අරමුණු වෙනුවෙන් සිදු විය. මෙම මූලික අරමුණු මුදුන්පත් කර ගැනීම යෙහුවෙන් වූ පර්යේෂණ ක්‍රියාවලියේ දී විවිධ මානසික රෝග සුවපත් කර ගැනීම සඳහා මනෝවිද්‍යාත්මක පසුබිමක් තුළ භාවිතා කරන ලද දේශීය හා විදේශීය වශයෙන් වූ සුවිශේෂ ප්‍රතිකර්ම විධික්‍රම පිළිබඳව සොයා බැලීම සහ නාට්‍ය විකිත්සා ප්‍රතිකර්ම තුළ ඇති මනෝවිද්‍යාත්මක වැදගත්කම තහවුරු කර ගැනීම, වර්ග අක්‍රමිකතා සහිත යෞවනයන්ගේ රෝග විනිශ්චය ක්‍රමවේදයන් පිළිබඳව සොයා බලා එම යෞවනයින්ගේ චිත්තවේග ස්වභාවයන් හඳුනාගනිමින් රෝග නිධානවල ස්වභාවයන් ගවේෂණය කිරීම, වර්ග අක්‍රමිකතා හා සහසම්බන්ධතා රෝග සඳහා දේශීය විදේශීය වශයෙන් භාවිතා කර ඇති නාට්‍ය විකිත්සා ප්‍රතිකර්ම පිළිබඳව අධ්‍යයනය කිරීම, තෝරාගත් වර්ගාබාධ සහිත යෞවන නියැදියේ ගැටලු සඳහා සුදුසු නාට්‍ය විකිත්සා මෙවලම් හඳුනා ගනිමින් එම නාට්‍ය විකිත්සා ප්‍රතිකර්ම ඵලදායී ලෙස භාවිතා කිරීම යන සුවිශේෂ උප අරමුණු ඔස්සේ පර්යේෂණ ක්‍රියාවලිය සිදු විය.

ඇමෙරිකානු මනෝවිද්‍යා සංගමයේ මානසික රෝග වර්ගීකරණයේ පස්වන වෙළුමේ විග්‍රහයට අනුව වයසට නොගැලපෙන හැසිරීම් ප්‍රකට කරමින් සමාජ සාරධර්ම උල්ලංඝනය වන ලෙස අනවරතයෙන් හැසිරීම වර්ගාබාධ (Conduct Disorder) ලෙස හඳුනාගන්නා අතර අවුරුදු 11 න් 18 න් අතර යෞවන වියේ පසුවන්නන් මෙම මානසික ආබාධයේ වයස් සීමාව ලෙස සැලකේ. යොවුන් වියේ මෙම ගැටලුව ඇති යෞවනයා අවුරුදු 18 න් පසු සමාජ විරෝධී පෞරුෂ අක්‍රමිකතාවයෙන් පෙළෙන්නන් ලෙස සමාජ ගත වන බව පර්යේෂකයෝ පෙන්වා දෙති.

ප්‍රතිකාරාත්මක අරමුණක් තුළ නාට්‍ය හා රංග කලා ශිල්ප ක්‍රම භාවිතා කිරීම නාට්‍ය විකිත්සාව ලෙස හැඳින්වේ. භූමිකා රංග, ධනාත්මක පරිකල්පන අභ්‍යාස, සංවාද අභ්‍යාස, වැලි තැටි හා දර්ශනානල ක්‍රමවේදය, වෙස් මුහුණු, භාව විශෝධන ක්‍රමවේද, මනෝරංග විකිත්සාව, මනස් සෘෂ්ටි අභ්‍යාස, පුනර්රංග විකිත්සාව, ස්ටැනිස්ලාව්ස්කි රූපන විධික්‍රම, රංග ක්‍රීඩා හා රංග අභ්‍යාස වැනි ක්‍රමශිල්ප මානසික රෝග සුවපත් කිරීම වෙනුවෙන් ලොව පුරා බහුලව භාවිතා වේ.

ගුණාත්මක පර්යේෂණ ක්‍රමවේදය තුළ බහුල වශයෙන් ගමන් කෙරෙන මෙම පර්යේෂණය සඳහා ප්‍රමාණාත්මක මෙවලම් ද අවම වශයෙන් භාවිතා කර ඇත. මේ අනුව මිශ්‍ර පර්යේෂණ ක්‍රම වේදය යටතේ ප්‍රත්‍යයක අධ්‍යයන රටාව තුළ පර්යේෂණය දියත් විය. මේ සඳහා වරදට හසුව උසාවි මගින් පරිවාස ගත කළ වයස අවුරුදු 11 න් 18 න් අතර වූ යෞවනයින් තෝරා ගන්නා ලද අතර බස්නාහිර පරිවාස දෙපාර්තුමේන්තුවට අයත් මාකොළ පුනරුත්ථාපන අයතනය තුළ සිටින නව යෞවනයින් 35 දෙනෙකුගෙන් වර්ග අක්‍රමිකතා ඇති බවට හඳුනා ගත් යෞවනයින් 15 දෙනාගෙන් යුත් නියැදියට පමණක් අධ්‍යයනය සීමා විය. පැය දෙක බැගින් සතියකට දින දෙකක් මාස 10 ක් පුරාවට විකිත්සාමය මැදිහත් වීම සිදු කරන ලදී. විකිත්සාමය මැදිහත් වීමට පෙර සහ පසු දත්ත විශ්ලේශණය සඳහා තේමාංගකරණ විශ්ලේෂණ ක්‍රමය භාවිතා කරන ලද අතර ඒ අනුව පරීක්ෂිතයින් 15 දෙනාගෙන් 9 දෙනෙකු තුළ ගැටලු අවම වීම අනාවරණය විය. ඇබ්බැහි වීමේ ලක්ෂණ බහුල සහ අනවධානී අධික්‍රියාශීලී ලක්ෂණ බහුල පරීක්ෂිතයින් හය දෙනෙකු තුළ කැපී පෙනෙන ස්ථාවර වෙනසක් විද්‍යමාන නොවුණි.

මූලපද: වර්ග අක්‍රමිකතා , නාට්‍ය විකිත්සාව , සහසබඳතා රෝග, චිත්තවේග , නව යොවුන් විය

¹නාට්‍ය හා රංග කලා අධ්‍යයනාංශය , මානව ශාස්ත්‍ර පීඨය, කැලණිය විශ්ව විද්‍යාලය

Effectiveness of Using Task-based Teaching Method in Improving English Writing Skills of Undergraduates

D.M.T.C. Dissanayake¹

A most commonly seen hurdle faced by Sri Lankan undergraduates today is their incompetence in English communication. Even though there are many underlining causes that contribute to this major issue, out-dated teaching methods play a vital role as they demotivate the students and diminish their enthusiasm in learning English. According to a number of research studies done by scholars all over the globe, Task-based teaching method has been successful in supporting L2 learners to learn English effectively, contrary to what is achieved through traditional teaching methods. For the present study the researcher has chosen English writing skills; one aspect of English communication, as she identified visible errors done by the undergraduates in examination papers and in their routine classroom activities. The main objective of this study was to find out the effectiveness of the task-based teaching method in improving English writing skills of undergraduates by minimizing their L1 interference. As for the study sample, 46 second year undergraduates (2014/2015) who were following the degree, Tourism and Hospitality Management, Faculty of Management Studies, Rajarata University of Sri Lanka were selected. The researcher chose this particular sample because they should be able to equip with English and to communicate effectively using English related to their career path, yet this requirement was not sufficiently portrayed when their examination papers and classroom activities were closely analyzed. As for the methodology of the study, the researcher has used a pre-test and a post-test by subjecting the students to write movie reviews of two different movies which were screened for them before the pre-test and the post-test. These tests were marked following a standard criterion which carried 50 marks for areas grammaticality, relevance, vocabulary, organization and coherence by allotting 10 marks for each aspect. These tests were given to compare their improvement; through an analysis of the marks they scored, after applying task-based teaching method for three months. The reviews written for the pre-test displayed various errors made by the subjects due to their L1 interference such as incorrect use, redundancy and absence of articles, incorrect use of prepositions, semiotic errors due to direct translations from L1 to English, inability to comprehend nuances in English, errors of duplication, errors in pluralization, errors due to wrong word order, errors in subject-verb agreement, omission of “Be” verbs, incorrect usage of the forms of “have” etc. After the application of task-based teaching method for three months, the post-test explicitly substantiated that many of these errors had been reduced, and thus their English writing had been conspicuously improved.

Keywords: Task-based teaching, L1 interference, English writing skills, errors, undergraduates

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Use of Eclecticism by Teachers in Teaching English Vocabulary

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Eclecticism is a multi-sensory language approach which involves different language learning methods rather than sticking into one approach. This research is based on teachers' use of Eclecticism in teaching English vocabulary. Main aim of this study was to investigate how Eclecticism affects to develop vocabulary of students learning English as a second language. It was hoped to provide a rationale for employing Eclecticism in teaching vocabulary for second language learners and investigate whether the English teachers use Eclecticism in teaching vocabulary in the North Central Province in Sri Lanka. Moreover, it was anticipated to find the attitudes of English teachers in the North Central Province regarding Eclecticism and to bring out the reasons behind the effectiveness of Eclecticism regarding teaching vocabulary. Another objective was to find the language development rate of Experimental group vs Controlled group. Learning vocabulary is a universal problem in second language learning. As the learners are of different learning styles, forgetting and unlearning methods, the effectiveness of Eclecticism was experimented in the research. Through trial and error, the people have realized that there is no single method or approach of language learning which is universally accepted as the best. As a remedy Eclecticism was introduced to the field of language learning. The investigation was implemented with 100 students and 20 teachers in the North Central province. Teachers' lessons were observed under a criterion with ten techniques. Quantitative data were gathered from pre-test, post-test and O/L results of the same students and qualitative data were gathered from questionnaire given to the teachers and lesson observation. Quantitative, qualitative data together with primary and secondary data helped to derive the conclusion. In the research, the vocabulary development was measured under memorizing, rate of learning, contextual use of vocabulary and number of words learnt within given period. Data were analyzed with the use of descriptive statistics. In conclusion it was proved that Eclecticism helps the second language learners to improve their vocabulary knowledge other than one traditional method. The research revealed that most of the teachers in the North Central province do not use Eclecticism to teach vocabulary. Most popular techniques used by the teachers to teach vocabulary were translation and visual aids in both Experimental and Controlled groups. The positive attitudes of teachers regarding Eclecticism were brought out by the research. This research introduces a method to teach English vocabulary in an effective way and gives guidance to teach and learn vocabulary. It was proved that the vocabulary learning rate was accelerated in the Experimental group. Finally, it was found that the main reasons behind the effectiveness of Eclecticism are its various capabilities of multi-sensory approach followed by motivation. Therefore, it is recommended that the Education authority of second/foreign language teaching should pay more attention to introduce this approach to English teachers and provide a training regarding effective use of Eclecticism in teaching English.

Keywords: Eclecticism; Vocabulary; second language learners; motivation; multi-sensory learning

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The Development of the Writing Skill in English as a Second Language (A Study Based on the Rural Formees of Priests and Nuns of the Roman Catholic Church in Sri Lanka)

Althea Celine D' Rosairo¹¹

Language is for communication. It is in the spoken and written form. Today, the main streams of education in Sri Lanka are Sinhala and Tamil with English as the 2nd language. In reality, many adolescents and adults struggle to acquire the English language. This was not so at a time when the medium of primary education was English. The acquisition of the second language is a great toil to the youth who aspire to commit themselves to service in the Catholic Church in Sri Lanka as Priests and Nuns. They need the English language skills in order to transmit their knowledge and communicate the message in the right context. During the Portuguese period, a number of missionary Congregations of European origin began to settle in the island. They recruited natives for the continuity of service of the Church. As a policy, the religious and seminary formation was conducted in the language of the missionaries. With the arrival of the British, the medium of instruction became English. Today, the majority of priestly and religious vocations in the Church come mainly from the rural areas where schools are run in Sinhala and Tamil. Hence, this research is meant to explore the difficulties of priestly and religious formees of rural origin, in acquiring English, with a view to developing the right understanding of verbs, tenses and modals, similarly, to design an apt syllabus and methodology for more effective results. This study was conducted on a sample of fifty formees – twenty-five young women and twenty-five young men between the ages of twenty and thirty. They came from eleven administrative districts with different backgrounds. Forty four have been educated in the Sinhala medium while six in the Tamil. Qualitative data was collected through a questionnaire. Pre-Tests and Post-Tests on verb forms, tenses and modals were conducted for analysis. The Pre-Test revealed that the level of the English writing skills of most of these candidates is below average, especially in the perfect forms. Thus, their formation programme invariably has to be complemented with additional lessons. Lack of exposure to English has resulted in rural formees not obtaining the required proficiency. They can express their thoughts verbally to some extent yet, they do not speak complete grammatical sentences with precise words and accurate verbs. Therefore, they are not as successful in writing. Today, many houses of religious formation of the Catholic Church do not have a well proven methodology to instill the English writing skill in their formees. Hence, at the end of this research religious formation houses hope to have a methodology and syllabus to help their formees use verbs in the right context.

Keywords: Formees; Communication; Verbs; Writing skill; Second language proficiency

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Developing a Validated Assessment for Consonant Production in Children with Cleft Lip and Palate-for Sinhala Spoken Language

S.M.S. Jayathilake¹

Cleft Lip and Palate (CLP) is the most common congenital craniofacial deformity which occurs in 6- 12 weeks of gestation in embryological development. Cleft lip occurs when there is a failure in the fusion of the parts of the lip. Cleft Palate occurs when there is a failure in the mechanism of the elevation and fusion of the palatal shelves in the mid line of the oral cavity. As a result of abnormal structural issues, the children will develop breathing difficulties, swallowing difficulties and abnormal development in speech production with distorted patterns of manner and place of articulation. Therefore, the children with CLP develop unclear speech introduced as speech with cleft type characteristics. It is essential to assess their speech consonant production by Speech and Language therapists (SLTs). Speech diagnosis is important to find out whether it is correctable by SLT or not. If not, refer them back to other medical professionals to plan further investigations and surgery procedures. There is no validated or applicable consonant assessment for the children with CLP, in Sinhala language. The aim of the study is, to have a validated assessment to identify the nature of speech consonant production in children with CLP considering both place and manner of articulation. The identified research problem is how to develop a standardized or a validated speech consonant production assessment for the children with CLP in Sinhala spoken Language? Considered to methodology, collected all the available cleft speech assessments in Sri Lanka and international assessments and international guidelines for cleft speech assessment. Distributed collected assessment sentences among ten SLTs to select and comment on each with the consideration of the independent variables; Culture specific, Age Appropriateness, Linguistically acceptable according to the universal guidelines for cleft speech assessment, Overall view on cleft speech consonant assessment. The assessment sentences have been altered until could develop an applicable assessment with the reflection of the received comments from SLTs and the collected international assessments, linguistics rules and international guidelines. Assess 50 children with repaired CLP and 50 without CLP. Audio and video recordings were done with parent's consent. Validate the Developed assessment according to assessment of face and content validity and assessment of criterion validity and acceptability to be done. Develop assessments with single word level and simple phrases for the children below five years to be done. Analyzed data by using SPSS windows 21 for reliability test. Found the Cronbach's Alfa value for each consonant. According to the results, the new assessment sentences are created according to the international guidelines and linguistic rules. It is easy to perceive all the cleft type characteristics, nasality in the cleft speech than from the previously used sentences. It has been developed according to the cultural values and age appropriately than the used sentences. The newly developed assessment sentences are fulfilled all the aspects including all the independent and dependent variables and scored Cronbach's Alfa value more than 0.6 or more values than the used sentences.

Keywords: "cleft lip and palate; cleft type characteristics; speech consonants; manner of articulation; place of articulation"

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Strategies to Minimize Learner Anxiety in Speaking English as a Second Language

Savithri Karunanayake¹

Speaking is considered to be the most anxiety provoking aspect in a Second Language learning situation. This nervousness or anxiety seems to be triggering when the students are asked to speak in the second language in class. Through the preliminary investigations done, it was noticed that, in the context of the Faculty of Social Sciences & Languages, Sabaragamuwa University of Sri Lanka, there are surprising number of students who insist that they are anxious language learners. The students do not show any enthusiasm in speaking in the target language for any active practical purposes. In this backdrop, feelings of anxiety and nervousness are depicted by most of the learners when attempting to learn English Language. Therefore, this research aims at investigating the strategies that can be employed to minimize learner anxiety in speaking English as a Second Language. The study also attempts to shed light on the significance of the lecturer's role in creating a friendly and productive learning environment to stimulate students to use second language in the class room. To accomplish the objectives of this study, a total of 60 students learning for Bachelor of Arts degree at the Faculty of Social Sciences and Languages, Sabaragamuwa University of Sri Lanka were selected. The sample selected for the study was two first year classes, each consisting of thirty students and the study took place in the academic year 2017/2018. Questionnaires, semi-structured interviews, direct observations, pre-test and post-test were utilized as the primary sources of data collection. Secondary data were gathered from books, related internet sources and journal articles. The research findings denoted that the main sources of speaking anxiety are stemming from certain teacher related factors, instructional practices, fear of negative evaluation and linguistic difficulties. In relation to this, several strategies have been explored in mitigating the learner anxiety in speaking English as a Second Language. It is proven that anxiety in speaking English could be treated efficaciously through less anxiety provoking pedagogic strategies such as group work, role plays, simulations, brainstorming sessions, games and some teacher related behaviours. That is, incorporating the communicative approach of language teaching in a strategic and prioritized way with a blend of digital technologies could succeed in tackling the speaking anxiety and making learning collaborative and interactive. Hence, it was apparent from the study that the implementation of the suggested strategies could make a significant difference in the speaking proficiency of the students, their patterns of behaviour and the classroom atmosphere, enabling them to produce real and natural language within the said context.

Keywords: English as a Second Language (ESL); Learner Anxiety; Speaking Anxiety; Speaking Proficiency; Strategies

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Impact of Utilizing Videos to Enhance the Students' Communication Competence in German as a Foreign Language

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Learning foreign languages has become a new trend among undergraduates at the University of Kelaniya during past few years. Most of the students wish to learn a foreign language as an asset for their future career. The number of German language learners at the university is increasing year by year. Today the main aim of learning a language is the communication. Therefore the communicative competence of language learners plays a vital role. Appropriate communicating skills by using target language is a major challenge for foreign language learners. Moreover, students often find it challenging to adapt to the creativity, fluency and flexibility of target language. At the same time teachers face the challenge of enhancing the oral competence of the learners in the target language. Thus, teachers need to integrate digital support i.e. videos, dialogues, short films to enhance the oral skills of the students. This paper focuses on the impact of utilizing videos in the German as a Foreign Language classroom to enhance the communicative competence of target group. The main objective of this paper is to analyze the impact of using video materials parallel to the reading text to enhance speaking skills in the target language. Data were collected from 20 undergraduates who are studying German as a foreign language in their third year at the University of Kelaniya. Classroom observations, discussions with students and lecturers who are teaching German as a foreign language and author's own experience were considered in gathering further data. At the final stage of the lecture, students should to do a productive exercise activity such as role-playing, debate, dialogues, spontaneous presentation etc. from what they have learned through video and the printed text. Such activities are regularly integrated and results of the study reflect that application of relevant videos for a text is an effective teaching method to arouse interest of the students. At the same time through this interest it increased interaction among students was observed. The result was appropriate fluency and communicative ability. There should be a correspondence between printed text and video material to obtain a better results. Furthermore, it is recommended that this strategy is adopted in other foreign language classrooms to enhance communicative competence of learners in target language.

Keywords: “German as a foreign language; communication; oral competency; utilizing videos”

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A Study of the Development of the Concept of Social Justice in the Social Encyclicals 1891-1991

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In an inquiry into the social dimension of justice, what is noticed in the Social Encyclicals which appeared since 1891 onwards is the traditional Aristotelico-Thomistic concepts of Distributive and Commutative Justice as well as Luigi Taparelli D' Azaegllio's neo-Thomistic notion of Social Justice. The main focus of the present research is the development of the concept of Social Justice in the Catholic Social Encyclicals.

The period envisaged stretches from the issuance of Leo XIII's *Rerum Novarum* (1891) to that of John Paul II's *Centesimus Annus* which commemorated the former's centenary in 1991; the social encyclicals of this period are analyzed according to the method of literary criticism.

Though David Hollenbach and Charles E. Curran mentions only the occurrences of various forms of Justice in the encyclicals, they have not traced the development of the concept of Social Justice in an elaborated detailed study. Neither has anyone else made a study of Social Justice in the encyclicals nor employed the technique of literary criticism. Hence this research fills in that twofold lacuna.

Keywords: Social Encyclicals, Thomas Aquinas, Neo-Thomism, Luigi Taparelli D' Azaegllio, Social Justice.

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ශ්‍රී ලංකාවේ දේශීය කැටයම් කලාව සහ මතවාද අධ්‍යයනය කිරීමේ වැදගත්කම

මියුරු පබසර දිසානායක¹

ශ්‍රී ලංකාවේ කැටයම් ශිල්පයට අදාළ මුල්කාලීන නිදර්ශන හමු වන ප්‍රධාන ස්ථානයක් ලෙස ඉසුරුමුණ විහාරය සැලකිය හැකි ය. දේවානම්පියතිස්ස රජ දවස ඉසුරුමුණ විහාරය ඉදි වූ බවට පොදු පිළිගැනීමක් තිබුණ මුත් එහි ඇති කැටයම් විහාරය ගොඩනැංවූ කාලයට අයත් නොවේ. මහාවාර්ය සෙනරත් පරණවිතානායන් දක්වන පරිදි එම කැටයම් අතරින් ඇත් රූප හා පෙම් යුවළ යන කැටයම් ද්විත්වය පැරණි ම නිර්මාණයන් වේ. එසේ ම මිනිසා සහ අශ්ව හිස කැටයම ක්‍රිස්තු වර්ෂ හත්වන සියවසට පමණ අයත් වන බවත්, රජ පවුල කැටයම ක්‍රිස්තු වර්ෂ අටවන සියවසට පමණ අයත් වන බවත් දළ වශයෙන් අනුමාන කර ඇත. රජ පවුල දක්වන කැටයම හා පෙම් යුවළ දක්වන කැටයම රන්මසු උයනෙහි හෝ වෙනත් තැනෙක තිබී මෙම විහාරයට ගෙන එන ලද පුවරු දෙකක් වේ. මීට අමතර ව පිහිටි ගලෙහි ම නෙළුන ලද කැටයම් දෙකක් ලෙස ඇත් රූප දක්වන කැටයම හා මිනිසා සහ අශ්ව හිස සහිත කැටයම දක්විය හැකි යි. මේවායින් නිරූපිත වන්නේ කිනම් තේමාවක් ද යන වග ලිඛිත මූලාශ්‍රවලින් නිශ්චිත ව ම තහවුරු කරගත නොහැකි අතර විද්වතුන් අතර ද එකඟතාවයක් ඇති වී නැත. මේ සම්බන්ධයෙන් සෙනරත් පරණවිතාන, ඒ. ඩී. සුරවීර, මාර්ටින් වික්‍රමසිංහ, වන්දා වික්‍රමගමගේ සහ හෝගල් යන විද්වතුන් අතර පරස්පර මතවාද ගොඩනැගී ඇත. මේ පිළිබඳ ව එකඟතාවයකට පැමිණීමට තවත් අසීරු වී ඇත්තේ මෙවැනි කැටයම් සමකාලීන යුගයේ වෙනත් තැනකින් හමු නොවීම යි. මෙම කැටයම් සඳහා බෝධිසත්ත්ව සංකල්පය, දේව සංකල්පය මෙන් ම චීන බෝධිසත්ත්ව මූර්ති (Kuan-yin) කලාවේ ආභාසය ලැබී ඇති බව කිව හැකි ය. මෙම කැටයම් එකිනෙක අතර සම්බන්ධතාවයක් ගොඩනැගීම ද අසීරු ය. මේ නිසා උක්ත නිර්මාණ සමූහය සම්බන්ධයෙන් ඉදිරිපත් වී ඇති විද්වත් මතවාද තර්කානුකූල ව විමසමින් යම් යම් නිගමනවලට පැමිණීමට සිදු ව තිබේ. ඒ කෙසේ වෙතත් අනුරාධපුර යුගයේ මුල්කාලීන කැටයම් හා මූර්ති අතර ඉසුරුමුණ විහාරයෙන් හමු වන නිර්මාණ සුවිශේෂී වන්නේ වෙනස් ම ආකෘතියක් ගන්නා බැවිනි.

ප්‍රමුඛ පද : අනුරාධපුරය; ඉසුරුමුණයම්; විද්වත් මතවාද

¹ ලලිත කලා අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, දලුගම, ශ්‍රී ලංකාව, miyurumc@gmail.com

යටත් විජිත යුගයේ බලපෑම සහ ශ්‍රී ලාංකීය වාස්තු විද්‍යාවේ සැරසිලි සහ මෝස්තර අංග

එම්. පාලිනිද රසාංගිත් මැදගේ¹

ක්‍රි.ව. 1505 දී ශ්‍රී ලංකාවෙහි පාලන බලය පෘතුගීසීන් ට නතු වීමෙන් පසුව ඔවුන්ගේ පාලන බලය වෙරළබඩ තීරය පුරා ක්‍රියාත්මක විය. පෘතුගීසීන් බලයෙන් පහකර දමා ලන්දේසීන් හෙවත් ඕලන්ද ජාතිකයින් වෙරළබඩ තීරයේ බලය ක්‍රි.ව. 1640 දී තහවුරු කර ගන්නා ලදී. ඉන්පසු ලන්දේසීන් විසින් මෙරට නීති මධ්‍යස්ථාන, ආගමික මධ්‍යස්ථාන, රෝහල්, පාසල්, පාලකවරුන්ගේ නිල නිවාස, ආහාර ගබඩා, යුධ අවි ගබඩා, සිර කඳවුරු ආදී බොහෝ ගොඩනැගිලි ලන්දේසි ගෘහ නිර්මාණ ලක්ෂණවලට අනුව ඉදිකරනු ලැබීය. ඉන් වසර 156 කට පසු එනම් ක්‍රි.ව. 1796 දී ඉංග්‍රීසි ජාතිකයින් විසින් ලන්දේසීන් සතුව පැවති වෙරළ තීරයේ බලය තමන් සතුකර ගැනීමෙන් පසු මුළු දිවයිනෙහි ම බලය අත්පත් කර ගන්නා ලදී. මෙලෙස පාලන බලය විවිධ අවස්ථා වලදී බටහිර ජාතීන් ට නතු වූ අතර පාලන කටයුතු සඳහා විවිධ ගොඩනැගිලි නිර්මාණය කරන ලදී. එහිදී ඔවුන් තම මව් භූමියෙහි වූ ගෘහ නිර්මාණ කලාවට අනුව මෙරට ගොඩනැගිලි නිර්මාණය කිරීමට පෙළඹුණි. මේ නිසා විවිධ වූ ගෘහ නිර්මාණ අංග දේශීය වාස්තු විද්‍යාවට එකතු වීම සිදුවිය. පෙර නොමැති වූ නව අංග මෙරට කලාවට එක් වූ කාලයක් ලෙස මෙම යටත් විජිත යුගය දැක්විය හැකිය. ප්‍රධාන වශයෙන් නව ගොඩනැගිලි වර්ග මෙරටට ගෘහ නිර්මාණ කලාවට එකතු වීම සිදු වූ අතර ඊට අමතරව විවිධ වූ ගොඩනැගිලි අංග ද එක් වීම සිදුවිය. ප්‍රධාන වශයෙන් ආගමික ගෘහ නිර්මාණ මෙන් ම පරිපාලන අවශ්‍යතා වෙනුවෙන් නිර්මිත ගෘහ නිර්මාණ ද නිර්මාණය කරනු ලැබීය. එහි දී අවශ්‍යතාව පදනම් කරගෙන අලංකාරය සඳහා ද, මෙම අංග එක් විය. මුල් කාලීන ව යුරෝපීයන් විසින් ගොඩනගන ලද ගෘහ නිර්මාණ වල පමණක් මෙම අංග දැකගත හැකි අතර පසුකාලීනව නිර්මාණය වූ දේශීය ගොඩනැගිලි වලට මෙම අංග එකතු වීම සිදුවිය. මෙම පර්යේෂණ පත්‍රිකාව මගින් එම ගෘහ නිර්මාණ අංග පිළිබඳ ව අධ්‍යයනය කරන අතර දේශීය ගෘහ නිර්මාණ කලාව කෙරෙහි එම ලක්ෂණ කිනම් ආකාරයකින් බලපෑමක් සිදු කර තිබෙන ආකාරය අධ්‍යයනය කරනු ලබයි.

ප්‍රමුඛ පද: "යටත් විජිත යුගය, ආගමික ගෘහ නිර්මාණ, පරිපාලන ගෘහ නිර්මාණ, යුරෝපීයන්, බලය

¹ ලලිත කලා අධ්‍යයන අංශය, මානව ශාස්ත්‍ර පීඨය, කැලණිය විශ්වවිද්‍යාලය, Palindarasangith1992@gmail.com

කටිනා බලිය පාවා දීම හා තොටයක් සමයම අතර ඇති සමානතාව පිළිබඳ විමර්ශනයක්

සී. එම්. රමිත් ප්‍රේමාල් වන්දසේකර¹

කාන්තා පාර්ශවය කෙරෙහි තොට යක්ෂයා මගින් ඇතිවන උපද්‍රව දුරු කිරීමෙහිලා පවත්වනු ලබන ශාන්තිකර්ම ලෙසට කටිනා බලිය පාවා දීම හා තොටයක් සමයම දැක්විය හැකිය. සබරගමු පළාතේ කටිනා බලි ශාන්තිය යනුවෙන් මෙම ශාන්තිකර්මය හැඳින්වේ. සබරගමු පළාතේ එම ශාන්තිකර්මයට අයත් වන කටිනා බලියේ නාමයෙන්ම මෙම ශාන්තිකර්මය හඳුන්වනු දැකිය හැකිය. උභව පළාතේ ව්‍යාප්ත තොටයක් සමයමෙහිද කටිනා බලිය පාවා දීමේ වාර්තා ඇතුළත්ව ඇත. නමුත් එම ශාන්තිකර්මය බලියේ නාමයෙන් හඳුන්වනු නොලබන අතර මෙම ශාන්තිකර්මයේ පුද ලබන ප්‍රධාන යක්ෂයාගේ නාමයෙන් හැඳින්වේ. උභව හා සබරගමු යන පළාත් දෙකෙහි නාමයන් දෙකක් මගින් හඳුන්වා දෙනු ලබන්නේ එකම ශාන්තිකර්මයක් ද යන්න මෙම පර්යේෂණයේ ගැටළුව වේ. මෙහිදී මෙම ශාන්තිකර්මයට අයත් තොටයක් උපත, තොටයක් බලි පද්‍යය, කටිනා බලි පද්‍යය හා ආශීර්වාද පද්‍යය යන සාහිත්‍ය විමර්ශනය මගින් මෙම ගැටළුවට පිළිතුරු සොයා ගත හැකිය. සබරගමු පළාතේ කටිනා බලිය පාවා දීම සිදු කරනු ලබන්නේ තොට යක්ෂයා මූලික කරය. උභව පළාතේ ද එම පෙළ එලෙසට භාවිත වනු දැකගත හැකි වේ. මහසම්මත තුන්වෙනි බිසවට තොට යක්ෂයා විසින් සිදු කරන ලද උපද්‍රව දුරු කිරීම උදෙසා සිදු කරන ලද ශාන්තිකර්මය මූලික කර ගනිමින් මෙම පද්‍ය සාහිත්‍ය ගොඩනැගී ඇත. ඊට අමතරව තොටයක් උපත සම්බන්ධ යාදිනි, පද්‍යය ද පළාත් දෙකෙහිම සමාන වන බව දැකිය හැකිවේ. සබරගමු පළාතේ කටිනා බලිය ආශ්‍රිතව භාවිතා නොවන වාර්තා රාශියක් උභව පළාතේ තොටයක් සමයමේ දක්නට ඇත. නානුමුරය, කපු කැටීම, දරු වැදුම, දරු නැළවීම, ගිරි යකිනි කවි හා තොටයක් බලිය පාවා දීම එම වාර්තා වේ. එම වාර්තා උභව පළාතට පමණක් විශේෂිත වේ. මෙම පර්යේෂණ ක්‍රියාවලියේ දී ප්‍රාථමික හා ද්විතීක මූලාශ්‍රය යටතේ සබරගමු පළාතේ හා උභව පළාතේ ඇඳුරන් සතුව පවතින කටිනා බලිය හා තොටයක් සමයමට සම්බන්ධ අත් පිටපත් හා පද්‍ය පන්ති ඇතුළත් පොත් පත් විමර්ශනය කරන ලදී. උභව පළාතේ හල්පේ, ගෝඬුන්න, නාමල්මය, මල්ලැහැව යන ප්‍රදේශ හා සබරගමු පළාතේ කුරුවිට, හුණුවල, මොරහැල, ගලගම යන ප්‍රදේශයන් හි ව්‍යාප්ත පාරම්පරික ශිල්පීන් සමඟ සම්මුඛ සාකච්ඡා පැවැත්වීම මගින්ද තොරතුරු රැස් කරන ලදී. සබරගමු පළාතේ පරකඩුව, කුරුවිට, හුණුවල, මොරහැල, වැලිගෙපොළ, ගලගම, බෙලිනුල්මය යන ප්‍රදේශ ආශ්‍රිතව පැවති කටිනා බලි ශාන්තිකර්ම හා උභව පළාතේ හල්පේ, ගෝඬුන්න, ඇකිරියන් කුඹුර, මල්ලැහැව, දෙහිගම, නාමල්මය, සේරන්කඩ, බුක්තල හා ලුණුගල යන ප්‍රදේශ ආශ්‍රිතව පැවති තොටයක් සමයම යන ශාන්තිකර්මය සහභාගිත්ව නිරීක්ෂණ මගින් තොරතුරු රැස් කර ගන්නා ලදී. ඒ අනුව එළඹිය හැකි නිගමනය වනුයේ එකම ශාන්තිකර්ම සාහිත්‍යයක් පළාත් දෙකෙහි නාමයන් දෙකකින් හඳුන්වන බවත් එම ශාන්තිකර්මය පැවැත්වීමේ මූලික අරමුණ එකක් බවත්ය. ඒ අනුව කටිනා බලිය හා තොටයක් සමයම යනු එකම සාහිත්‍යයක් පවතින ශාන්තිකර්මයක් බව මෙහිදී නිගමනය කළ හැකිවේ.

ප්‍රමුඛ පද: "තොට යක්ෂයා; කටිනා බලිය; සබරගමු පළාත; උභව පළාත; සාහිත්‍යය"

¹ සබරගමු අධ්‍යානාංශය, සෞන්දර්ය කලා විශ්වවිද්‍යාලය, කොළඹ 07, ශ්‍රී ලංකාව

ස්වභාවික ව්‍යාසන අවම ධර්මභාරය පිළිබඳ බෞද්ධ මූලාශ්‍රයාගත විමර්ශනාත්මක අධ්‍යයනයක්

ප්‍රසාදි අධිකාරම්¹

වර්තමාන ලෝකය මුහුණ දී ඇති භයානකම ගැටලුව නම් ලොව පුරා සිදුවන පාරිසරික විපත්ය. ගංවතුර, නායයාම්, නියග, සුනාමි ආදී ව්‍යාසන මේ අතුරින් කිහිපයකි. මෙම ව්‍යාසනයන් ඇතිවීම සඳහා බලපාන ප්‍රධානම හේතුවක් වශයෙන් මිනිසාගේ අසීමිත භෞතික ආශාවන් තෘප්ත කරගැනීමට දරන උත්සාහය හේතුවෙන් සිදුවන අප්‍රමාණ පරිසර හා ස්වභාවික සම්පත් විනාශය දැක්විය හැකිය. සොබාදහම අහිඟවා ආර්ථික හා භෞතික සම්පත් දිනාගැනීමට දරන අශීලාවාර උත්සාහයන් ද මෙයට හේතුවී ඇත. මිනිසාගේ අනුකූලික දියුණුවත් සමග ස්වභාවික පරිසරය සමග ගැටෙන ප්‍රමාණය වැඩි වූ බව කාර්මික විප්ලවය නිසා ඇති වූ පාරිසරික අර්බුදයන් මගින් පැහැදිලි වේ. මිනිසා පරිසරයේ ම ජෛවීය අංගයක් වූව ද, තමාට සෙවන දුන් හා තමා රැක දුන් ජීවී පරිසරය විනාශ කිරීම හේතුවෙන් පරිසර විනාශය සිදුවීම පැහැදිලිව දැකිය හැකිය. පරිසරය සහ මිනිසා අතර පවතින අන්තර් සම්බන්ධතාවය කාලයාගේ ඇවෑමෙන් පළුදු වී ගොස් එය ලෝක පරිසර අර්බුදයක් බවට පත්වූ බව බුදුදහමෙහි සඳහන් වේ. මුල් කාලයේ පටන් මිනිසා තෘෂ්ණාව හේතුවෙන් ක්‍රමානුකූලව පරිසරය විනාශ කරමින් ඉදිරියට ඇදෙන ආකාරය බුදුදහමේ දැක්වෙයි. තෘෂ්ණාධික මිනිසුන් අසම්මත හැසිරීම් වලට හුරුවීමත් වස්තුව ගබඩා කරගැනීමත් තරගකාරීත්වයත් හේතුවෙන් දුශ්චරිතයන් සමාජයේ ව්‍යාප්තිය හේතුවෙන් පෘථිවියේ ස්වභාවික විපර්යාස වැඩි වූ බව අග්ගඤ්ඤ සූත්‍රයෙන් පැහැදිලි වේ. ස්වභාවික සහ මානව ක්‍රියාවන්හි ප්‍රතිඵලයක් ලෙස අතීතයේ සිට මේ දක්වා විවිධ ස්වභාවික ව්‍යාසන ඇති වී තිබේ. මිනිසා විසින් සිදු කරන වන විනාශය, වායු දූෂණය, භූමි භායනය ආදී අතීතකර බලපෑම් හේතුකොට ගෙන ගංවතුර, නායයාම, සුනාමි වැනි ස්වභාවික ව්‍යාසන හටගනී.

ස්වභාවික ව්‍යාසන ඇතිවීමට හේතුවන මානව ක්‍රියාකාරකම් වළක්වා ගැනීමට බුදුදහමෙන් උපදෙස් රැසක් දෙනු ලැබේ. බුදුදහමේ ශික්‍ෂණය ආභාසයෙන් විද්‍යාමාන වන පරිසර සංරක්‍ෂණ ආචාරධර්ම රැසකි. පරිසර සංරක්‍ෂණයෙහි මූලික අඩිතාලම පංචශීලයෙන් ඇරඹෙයි. ත්‍රිපිටකයේ පරිසරය කෙරෙහි ඇති මානව හිතවාදී ලක්‍ෂණ රැසක් මෙන්ම සම්පත් පරිභෝජනයේ දී පිළිපැදිය යුතු ආචාරධර්ම රැසක් ද අන්තර්ගත වේ. ස්වභාවධර්මයේ වෙනස්කම් හේතුවෙන් මිනිසාට විපත් ගෙන දීම නොවැළැක්විය හැකි බැවින් ඊට බිය වී සහ එහි පාලනයට සම්පූර්ණයෙන් යටත් ව දීනව ජීවත් වීම ද සුදුසු නැත. එසේම එහි පාලනයට එරෙහිව කටයුතු කරමින් ජීවත් වීම ද යුක්ති සහගත නොවේ. සාහිත්‍ය විචාරය (Literary Criticism) යන ක්‍රමවේදයට අනුගතව සිදුකෙරෙන්නා වූ මෙම පර්යේෂණයේ මූලික අරමුණ වනුයේ බෞද්ධ මූලාශ්‍රයානුගතව ප්‍රඥාව මුල් කොට ගෙන පරිසරයට හානිදායක නොවන අයුරින් ධර්මය සංවර්ධනය සිදුකිරීම සහ ස්වභාවික ආපදා ඇතිවීම සුක්‍ෂමව පාලනය කරමින් ජීවත් වන අයුරු ඉදිරිපත් කිරීමයි. මේ අනුව ස්වභාවික ව්‍යාසන අවම කිරීමෙහිලා පුද්ගල කාර්යභාරය පිළිබඳ බෞද්ධ මූලාශ්‍රයාගත විමර්ශනාත්මක අධ්‍යයනයක් යන්න වර්තමානයට සහ අනාගතයට වැදගත් වන ඓතිහාසික උපයෝගීතාවලින් පරිශීෂ්ට අධ්‍යයනයකට භාජනය කළ යුත්තකි.

ප්‍රමුඛ පද : ආපදාව, පරිසර සංරක්‍ෂණය, ආචාරධර්ම, මානව ක්‍රියාකාරකම්, පාරිසරික අර්බුදයන්

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Integrating Computer Assisted Language Teaching to Enhance the Oral Skills of Learners in German as a Foreign Language

Lakshika S. Gurusingha¹

Foreign language acquisition became an essential component in the modern society. The University of Kelaniya plays a major role in enhancing foreign languages for both local and international students willing to study Japanese, French, German, Chinese, Korean and Russian. This article reviews the results of a study conducted on an online learning platform to develop the communication skills of German language learners. The objective of this paper is to examine the improvement of the oral skills of the General Degree second year German learning students at the University of Kelaniya through computer-assisted language learning. Online learning platforms were used over a period of time in several departments at the University. The present study broadens the oral skills of learners by using online learning platform as they have lack of time in the lectures to enhance their oral skills. Furthermore most of the students don't prefer to speak in German during learning sessions as they have got used to the teacher centered learning at the school, where they have given less opportunity to engage in the learning progress actively. The research is executed through interviews with the General Degree second year German learning students and in addition to that, a pretest and posttest were conducted to investigate the improvement of the communication skills of the learners. The learners were given oral exercises based on selected topics from the textbook and they are expected to speak five minutes on each given topic and submit it to the online platform. The learner's oral skills were evaluated through a guideline, which tests the learner's pronunciation skills, and marks were given for grammar, coherence, content and the use of vocabulary. The students were given a feedback on their communication errors with instructions to improve their oral skills. Through the pretest, it was revealed that the students make most of the errors due to pronunciations and grammar mistakes and due to lack of vocabulary. Apart from that, the students have difficulties in expressing their opinions. After utilizing the online platform, the results of the posttest conveyed that they have made less error, improved their communication skills, and got used to language without any fear.

Keywords: “foreign Language; German teaching; computer-assisted Language teaching; learner centered teaching; communication skills”

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Requirement of Developing Digitization for Tacit Knowledge Transfer in Buddhist Culture and Practices

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Purpose – The purpose of this research is to identify the requirement of tacit knowledge transfer and develop a framework which enhances it. Further this presents the role of tacit knowledge transfer and how digitization could be used for utilizing it regarding continuation of Buddhist culture and practices.

Method – Exploratory and qualitative research methods has been taken in this study. Due to the chosen approach, an abductive research strategy paved the way for a successful performance of this research. The data collection was conducted through 12 semi-structured interviews, where 10 of them consisted of interviews with their subordinates. Since qualitative research method had followed, thematic analysis method has been used for data analysis purpose.

Results – The results consist of an in depth understanding regarding how tacit knowledge transfer can improve and utilize it. Enhancement of this process is benefited for the digitization as well. The conducted data lead to the development of a framework that include guidelines and next steps for implementing more digital solutions for improved tacit knowledge transfer.

Theoretical contribution – The theoretical contribution of this study is addressing the gap of the research on certain segments of the society such as continuation of Buddhist culture and practices. In the modern society; innovations, development of businesses are followed by tacit knowledge transfer concepts instead of using those for establishment of cultural practices. By connecting assets of tacit knowledge with tacit knowledge transfer processes to the eminent phenomenon, digitalization, this study also contributes to the inadequate research area of how society can utilize the benefits of a higher implementation of digital solutions especially in the area of Buddhist culture and practices.

Practical implications – The findings are based on identified assets of tacit knowledge within the area of Buddhist culture and practices. Hence, the findings are intended to be general guidelines how digitalization can be beneficial for all society. The overall findings present how successful assimilation of knowledge is enabled through utilization of digital solutions, routines of knowledge transfer and that each participant is granted enough resources.

Keywords: “Tacit Knowledge, Tacit Knowledge transfer, Buddhist culture and practices, Digitization, Knowledge discontinuation”

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A Comparative Study on Technical Translation Output and Literary Translation Output of Google Translate

Sachini Athapattu¹

Machine Translation, with the advance of technology and the growing need for translation, has become very popular all over the world. Google Translate (GT) is an online neural machine translation service, which supports over 100 languages and has more than 200 million users daily. However, the translation quality of some texts that have been translated by GT still remains controversial. Therefore, this paper aims to identify the area Google Translate performs better, in translating literary or technical text from English to Sinhalese. Three literary texts: the poem *Daffodils* by William Wordsworth, an extract from Ernest Hemingway's, *Indian Camp*, and an extract from Garcia Lorca's drama *House of Bernarda Alba*, and three technical texts: a tender notice, an abstract and a paragraph from an informative article were selected as source texts to be translated. After these texts were translated by GT the outputs were compared with their original texts. The presentable quality of the translations was evaluated based on the faithfulness to the content and style. Further, the quality of the target language was also measured with regard to syntactic, morphological and semantic aspects. The result shows that from the translations of the given texts, the technical documents were observed to be more faithful to the original texts and of presentable quality, while the literary translations demonstrated several inaccurate outputs, thus require a considerable amount of post editing. Especially the translation of the poem has many errors since the sentence structure in poetry differs from other texts and it is written in figurative language including numerous connotations. Compared to the translation of the poem, the other two literary translations do not show a drastic difference semantically. Findings reveal that GT is more applicable for technical translations rather than literary translations which require post editing.

Keywords: Google Translate; faithfulness; presentability; technical translation; literary translation

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The Importance of Foreign Language Skill in Business Communication

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The travel and tourism sector being one of the world's largest industries, is exposed to the forces of change that are being brought about by ongoing developments in communication. Good communication in foreign language becomes important in today's world due to the impact of globalization. The objective of this research is to examine the roles of foreign language in business communication and importance of foreign language skill. Interviews were done to collect the data in an effective way. The collected data were thematically analysed by focusing on the qualitative data. This study is based on the data collected from interviews with a sample of 10 employees in tourist offices related to French market in the region of Colombo. Thus, for this study, tourist offices of the French market were selected. The results indicate that there is a great demand for foreign language competencies in business communication and a successful employee should speak at least one foreign language. This study also suggests that the foreign language communication and the intercultural proficiency of those working in tourism should be developed. This requires trained professional teachers who have good language competencies at the same time. As the conclusion, this research pinpoints the fact that foreign language plays an important role both inside and outside the company.

Keywords: Business communication; foreign language; tourism industry, Importance

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The Influence of Sinhalese Dative Case suffix /-tə/ in Learning Tamil as a Second Language in Sri Lanka: A Case Study

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Sri Lanka is a multi-lingual and multi-ethnic society. Sinhalese and Tamil Languages are regarded as national languages by the two major linguistics communities: Sinhalese and Tamils. Teaching of Second National Language in secondary school curriculum was introduced by the Sri Lankan Government as compulsory subject in grades 6 to 9 and as an optional subject in grades 10 to 11 also it is taught as compulsory and optional unit in some universities of Sri Lanka which is also one important way to promote national unity in Sri Lanka. The role of First Language [L1] has been recognized as major linguistic activity in Second language [L2] learning. Particularly due to the interference of L1, learners of L2 find it difficult at the initial stage of learning the Language. Furthermore, when constructing sentences the learners have the tendency to translate literally following the syntactic rules of their L1. The aim of this study is to identify the influence of Sinhalese dative case suffix /-tə/ in learning Tamil as a second Language. when the attention is focused on learning case inflection in Tamil by Sinhalese native speakers as a beginner in the first year at the Department of Linguistics, University of Kelaniya, it has been observed that the learners faced certain difficulties to structure and comprehend the sentences with case inflected nouns due to the multiple usage of dative case marker /-tə/ in their L1. The comparative analysis of Sinhalese and Tamil Language says that, the Sinhalese dative case suffix /-tə/ is equal to /-kku/ in Tamil. Therefore the students who are studying Tamil as a second Language are interfered with this grammatical aspect. When the suffix /-tə/ occurs in Sinhalese sentences, they try to translate it by applying the suffix /-kku-/ in Tamil without considering the multiple usage of /-tə/. According to this research, influence of Sinhalese dative case suffix /-tə/ had been identified on the following L2 cases: Instrumental, Accusative, ablative case with the Significance meaning of motion from (an animate object) and locative case with the Significance meaning of on the person of (animate). This study is intended only for the spoken variety of Tamil and Sinhalese. The Tamil data represent the Jaffna Tamil and the Sinhalese data represent the western dialect of Sinhalese. Research sample of this study limited to 30 students at beginner level of Department of Linguistics, University of Kelaniya. The data was collected by reviewing the questionnaire, analyzing the students' performance and classroom observation were also done in order to gather data. In conclusion, the knowledge of contrastive features of case inflection of the two languages and identifies the interference of First Language are very essential for effective learning and teaching a Second Language.

Keywords: Dative case, First Language, Interference, Second Language, Sinhalese Language, Tamil

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The Impact of Group Work and Pair Work Teaching Techniques on the Development of Speech in English Language

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Peer interactions play a dominant and inherent role in developing learners' speaking skills in the context of English as a second language. The effects of peer interactions have been widely studied by several researchers and the results have shown that the group work and the pair work teaching techniques provide more chances for developing spoken interactions which contribute to the development of speech in English. In light of that, the purpose of this study was to examine which of the two teaching techniques develops more spoken interactions and contributes more in speech development in the English language focusing on the development of spoken interactions in response to the publication of the Common European Framework of Reference for English Language (CEFR, Council of Europe). The setting for this study was the Department of English Language Teaching at the University of Kelaniya. The study was conducted as an experimental mixed method research. The sample of 25 was selected from 620 undergraduates following the compulsory course "English for Humanities" from the first year using convenient, purposive and random sampling methods. Two classes of the same lecturer were selected using the above sampling methods where a pre-test and a University Test for English Language (UTEL) band mark were given to each undergraduate using the UTEL bench marking scheme. In order to identify and remove potential outliers, a thorough inspection of histograms and boxplots was made. Accordingly, 12 and 13 undergraduates were selected from the pair work class and the group work class respectively. In order to keep the number of participants equal in both the classes, one participant was removed randomly from the group work class. Data was collected through non-participatory observations covering 16 activities with 32 observation sessions in the two classes using a checklist adapted from the CEFR scale. A descriptive analysis was performed using SPSS to analyze the data and Excel was also used to represent the data. As the average number of interactions achieved in pair work class were more than the group work class and the distribution of the differences in the number of interactions achieved in the first and the last activity in the pair work class were more than the group work class; it can be concluded that the pair work class contributes in developing more spoken interactions in response to the CEFR scale and contributes more in developing speech in the English Language.

Keywords: "Teaching techniques; Group work; Pair work; UTEL bench marking; CEFR scale"

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The Influence of Computer Technology on Sinhala Lexicon

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Many domains such as computer technology, science and technology and management have influenced the Sinhala language. Sinhala language has a very long tradition in lexicon building in various domains. Computer technology has become a significant domain due to its extensive use for various tasks in the modern world. The part played by computer technology in the evolution of language is noteworthy. The objective of this study is to examine whether the computer technology has affected Sinhala lexicon and ways it has affected. This is a less researched area and needs extensive studying since computer technology continues to be a field of paramount importance which influences not only Sinhala, but also many languages in the world. IT glossaries were referred to find out the technical terms related to computer technology. Moreover, fifty students were selected from the Faculty of Computing and Technology, University of Kelaniya and they were given twenty terms related to computer technology to write the term that is used. Accordingly, it was found out that computer technology has made a considerable impact to the Sinhala lexicon. Words related to computer technology have been added to Sinhala lexicon as loan words, loan blends and neologisms. From these three ways, loan words and loan blends have become more popular whereas neologisms could gain currency only to some extent.

Keywords: computer technology; loan blends; loan words; neologisms; sinhala lexicon

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Anxiety Experienced by Adult ESL Learners in Sri Lanka: A Case of First Year Undergraduates of University of Peradeniya

J.C.Ratnayake¹, E.M.P.E. Ekanayake²

According to theorists like R. C. Gardner and Stephen Krashen, extra-linguistic factors with socio-psychological overtones play as much a critical role as linguistic factors in teaching/learning ESL/EFL. Anxiety has been identified as one of the aforementioned affective factors that can have a significantly negative impact on language acquisition/learning process of students. As such, the current study investigates the nature and scale of anxiety experienced by first year undergraduates of Faculty of Arts, University of Peradeniya, belonging to groups of basic level competence in English. The study was exploratory in nature and both quantitative and qualitative data were collected for the purpose of the research. Questionnaires were distributed using the purposive sampling method i.e. 25 questionnaires were distributed among undergraduates whose L1 was Sinhala while another 25 were distributed among undergraduates whose L1 was Tamil. Also, interviews were conducted with 10 instructors that teach undergraduates of basic level competence in English. The quantitative and qualitative data collected through questionnaires were analyzed using descriptive and inferential analysis. The qualitative data gathered through interviews were analyzed using the discourse and thematic analysis methods and then the data triangulation method was deployed. The analysis of data from the questionnaires revealed that students whose L1 is Tamil face significantly higher levels of anxiety (88%) compared to students whose L1 is Sinhala (48%). The students faced anxiety in the form of communication apprehension/ anxiety, test anxiety, anxiety regarding negative evaluation and anxiety in the ESL classroom environment. These findings were corroborated through findings from the interviews with the instructors. While the study provides insight into the intensity and scale of anxiety experienced by adult ESL learners of tertiary level education, it also highlights on the role of the student L1 as a defining factor in ESL learner anxiety.

Keywords: ESL, ELT/L, L1, Affective Factors, Anxiety

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Understanding the Relevance and Implications of the “English-Only Policy” in ELT/L in Tertiary Level Education in Sri Lanka

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Researchers such as Phillipson claim that the ELT/L pedagogy promoted by inner-circle English-speaking countries in the postcolonial age was founded on five fallacies: the monolingual fallacy, the native speaker fallacy, the early start fallacy, the maximum exposure fallacy, and the subtractive fallacy. Based on these arguments made by Phillipson on the linguistic imperialism of English, others like Canagarajah point out that the “English-only policy” has become part and stock of many ELT practices of periphery countries where English is not considered “native”. The current study attempts to contextualize these theories by investigating how educators and learners negotiate between the “English-only policy” and the use of the vernacular in teaching/ learning ESL in tertiary level education in Sri Lanka. The study was analytical in nature and both quantitative and qualitative data were collected. 100 questionnaires were distributed among second year undergraduates of University of Peradeniya using the purposive sampling method to collect data from students belonging to all levels of competence in English. Also, data was gathered through formal interviews (18) and casual conversations (07) with ESL educators from the ELTUs of University of Peradeniya, SLIIT (Malabe) and ACBT (Kandy). The quantitative data was analyzed using descriptive/ inferential analysis while the qualitative data was analyzed using discourse/ thematic analysis methods. The analysis of data collected from questionnaires distributed among students revealed that there is a correlation between high competence in English with preference towards “English-only policy” and conversely, low competence in English with preference towards the use of the vernacular in learning ESL. The data from formal interviews and casual conversations revealed that 19 out of 25 educators subscribed to the “English-only policy” due to institutional standards/ requirements, certain (sub) conscious reasons of socio-economico-educational nature. The study highlights on the paradox/ discrepancy between student/ teacher attitudes towards “English-only policy” and complex dynamics that resist the use of the vernacular in teaching/ learning which could potentially shed light into student militancy against ELT/L in tertiary education in Sri Lanka.

Keywords: ESL; ELT/L; L1; “English-Only Policy”; Linguistic Imperialism

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සිංහල නාම පදයේ අර්ථ පරිණාමය පිළිබඳ වාග්විද්‍යාත්මක අධ්‍යයනයක් (සිබවළඳ හා සිබවළඳ විනිස ඇසුරින්)

කුරුපිට අස්සපිතිස්ස හිමි¹

සිංහල භාෂාව පැරණි ලේඛන වාර්තා සහිත නූතන ඉන්දු ආර්ය භාෂාවකි. එහි ඓතිහාසික පරිණාමය අධ්‍යයනය කිරීම සඳහා විශාල මූලාශ්‍රය ප්‍රමාණයක් පවතී. ඉන් සාහිත්‍ය මූලාශ්‍රය සිංහල භාෂාවේ පරිණාමය සඳහා තොරතුරු රැසක් ප්‍රකට කරයි. මෙම පර්යේෂණයේ දී සිදු වනුයේ සිංහල භාෂාවේ නාම පදයේ අර්ථ පරිණාමය අධ්‍යයනය කිරීමයි. එහිදී ප්‍රධාන මූලාශ්‍රය වශයෙන් භාවිත වනුයේ අනුරාධපුර සාහිත්‍ය යුගයේ සංගෘහිත සිබවළඳ හා සිබවළඳ විනිස නම් කෘතියයි. ඓතිහාසික වාග්විද්‍යාවේ දී අවධානයට ලක් වන ප්‍රධාන ක්ෂේත්‍රයක් නම් ඓතිහාසික අර්ථ විචාරයයි. ඓතිහාසික අර්ථ විචාරයේ දී අවධානයට යොමු වනුයේ අර්ථ පරිණාමයයි. එහිදී අර්ථ පරිණාම සිද්ධි හා සාධක පිළිබඳ අධ්‍යයනය කෙරේ. මෙහි දී උක්ත කෘතිය ඇසුරින් සිංහල නාම පදයේ අර්ථ පරිණාමය සිදුව ඇති ආකාරය එනම් අර්ථ පරිණාම සිද්ධි පිළිබඳ අධ්‍යයනය කෙරේ. සිංහල නාම පදයේ අර්ථය පරිණාමයට පත් වී තිබේ ද යනු මෙම පර්යේෂණයේ ගැටලුව වෙයි. මෙම පර්යේෂණය ඓතිහාසික අර්ථ විචාර සිද්ධාන්ත අනුගත වූවකි. දත්ත සම්පාදනයේ දී සිබවළඳ හා සිබවළඳ විනිස කෘතිය පමණක් පරිශීලනය කෙරෙයි. එසේ මූලාශ්‍රය අධ්‍යයනයෙන් හඳුනා ගැනෙන දත්ත අර්ථ පරිණාම සිද්ධි යටතේ සාකච්ඡා කෙරේ. එහිදී ප්‍රස්තුත රූපයක් මූල අර්ථය හා පශ්චාත්තන අර්ථ ස්වරූප තුලනය කිරීමෙන් අර්ථ පරිණාමයේ ස්වරූපය හඳුනා ගැනෙයි. අධ්‍යයනයේ දී සිංහල නාම පදයේ අර්ථය විධි කිහිපයක් යටතේ පරිණාමයට පත් ව ඇති ආකාරය හඳුනා ගත හැකිය. ඒ අර්ථ විස්තාරය, අර්ථ සංකෝචනය, අර්ථ පරිවර්තනය, අර්ථෝත්තනය, අර්ථාවනතිය, අර්ථ විරෝධය, අර්ථ පිරිහීම, රූපක, උපවාර, අංශවාවනය, අතිශයෝක්තිය යන විධි යටතේ සිංහල භාෂාවේ අර්ථ පරිණාමයට පත් ව ඇති ආකාරය හඳුනා ගත හැකිය. මෙම විධි සඳහා වන නිදර්ශන සිබවළඳ හා සිබවළඳ විනිස කෘතියෙහි දක්නට ඇත. මේ අනුව නිගමනය කළ හැකි වනුයේ සිංහල භාෂාවේ නාම පදයේ අර්ථය විවිධ විධි යටතේ පරිණාමයට පත් වී ඇති බවයි.

ප්‍රමුඛ පද; සිංහල භාෂාව, නාම පදය, අර්ථ පරිණාමය, ඓතිහාසික අර්ථවිචාරය, අර්ථ පරිණාම විධි

¹ වාග්විද්‍යා අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, කැලණිය

කතරගම ඇසළ පෙරහැර හා බැඳී වාරිඟු තුල ගැබ් වී ඇති අභිවාරාත්මක ලක්ෂණ

ජේ.ඒ.ටී.සී. ජයසිංහ¹

රුහුණු කතරගම නගරයේ පිහිටා ඇති කතරගම දෙවියන් වෙනුවෙන් ඉදි වූ කතරගම දේවාලයෙහි වාර්ෂිකව පවත්වනු ලබන ඇසළ පෙරහැර හා බැඳී වාරිඟු තුල ගැබ් වී ඇති අභිවාරාත්මක ලක්ෂණ පිළිබඳ අධ්‍යයනය කිරීම මෙම පර්යේෂණ පත්‍රිකාවේ ප්‍රධාන අරමුණ වේ. වල්ලි අම්මාගේත් කඳ කුමරුගේත් විවාහ මංගල්‍යය සිහිපත් කරමින් වාර්ෂිකව පවත්වනු ලබන කතරගම ඇසළ පෙරහැර මංගල්‍යය ශ්‍රී ලංකාවේ පැවැත්වෙන පෙරහැර මංගල්‍ය අතුරින් පැරණිත ම පෙරහැර ලෙස හැඳින්විය හැකිය. මෙම පෙරහැර මංගල්‍යය පැවැත්වීමට දින 45කට ප්‍රථමව කප් සිටුවීමේ වාරිඟු සිදු කිරීමෙන් අනතුරුව නැකැත් යෙදීම අනුව ඇසළ පෙරහර මංගල්‍යය දින 15ක් පුරා පැවැත්වේ. පෙරහැර මංගල්‍යයට සමගාමීව දැකගත හැකි අභිවාරාත්මක ලක්ෂණ සහිත වාරිඟු ලෙස කණු කපන මංගල්‍යය, කප් සිටු වීම, ඇන්දුන් හේවිසිය, සඵ වැඩමවීම, වන බැඳීම, දෙවියන් වැඩමවීම, දේව කරඬුව පසුපස ඇත් පහන ගමන් කිරීම, වැද්දන් විසින් පෙරහැර නැවැත්වීම, නඩත්තු පොලවල්හි පූජා පැවැත්වීම, වල්ලි අම්මා දේවාලය වෙත දෙවියන් වැඩමවීම, දුවන පෙරහැර, අතුපන්දල දැමීම, බුලත් හැපීමේ වාරිඟුය, ගිනි පැඟීම හඳුනා ගත හැකිය. මෙම මංගල්‍යයේ අවසාන දින තුනේදී තේවැනි අම්මාට හොරෙන් කතරගම දෙවියන් වල්ලි අම්මා දේවාලය වෙත වැඩමවීම විශේෂ වාරිඟුයකි. මැණික් ගඟේ ජීවමාලි තොටුපළේ දී දිය කැපීමේ වාරිඟුය ඉටු කිරීමෙන් පසු ඇසළ මංගල්‍යය නිමාවට පත්වනු ලබයි. මෙහිදී දැනට ලියවී ඇති මූලාශ්‍ර සාධක, ක්ෂේත්‍ර ගවේෂණ, සම්මුඛ සාකච්ඡා පදනම් කරගෙන ලබා ගත් දත්ත ඉහත අරමුණ විශ්ලේෂණය කිරීම සඳහා උපයෝගී කොට ගෙන ඇත. මෙම පර්යේෂණය සිදුකරගෙන යාමේදී ඇසළ පෙරහැර මංගල්‍යය පවත්වන කාලය තුළ විශේෂිත වූ දිනයන්ට හා නැකැත් වලට අනුව දෙවියන් වෙනුවෙන් ඉටුකෙරෙනා පාරම්පරික වාරිඟු විධි සැලකිය යුතු ප්‍රමාණයක් හඳුනාගත හැකි වූ අතර ඒවායෙහි අභිවාරාත්මක ලක්ෂණ ගැබ් වී ඇති බව ද දැකගත හැකි විය. අතීතයේ පැවති අභිවාරාත්මක ලක්ෂණ ඒ ආකාරයෙන්ම වර්තමානය වනවිට පවතිනවාද? නැතිනම් ඊට නව ලක්ෂණ මුසු වී ඇත්දැයි යන්න මෙම පර්යේෂණ කාර්යහිදී මතු වූ ප්‍රධාන ගැටලුවයි. මෙම පර්යේෂණයේදී ලද දත්ත හා තොරතුරු විශ්ලේෂණය කිරීමේදී කතරගම ඇසළ පෙරහැර හා බැඳී වාරිඟු තුල අභිවාරාත්මක ලක්ෂණ මැනවින් අන්තර්ගත වන බවත්, අතීතයේ පැවති අභිවාරාත්මක ලක්ෂණ ඒ ආකාරයෙන්ම වර්තමානය වනවිට රුහුණු කතරගම ඇසළ පෙරහැර මංගල්‍යයෙහි දැකගත හැකි බවත් නිගමනය කළ හැක.

මුඛ්‍යපද: කතරගම දේවාල, ඇසළ පෙරහැර මංගල්‍යය, අභිවාර, කතරගම දෙවි, වල්ලි අම්මා

¹ ලලිත කලා අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව

තබ්ලා ශාස්ත්‍රයෙහි භාවිත කායදා පිළිබඳ විමර්ශනාත්මක අධ්‍යයනයක්

කේ.පී. දිනෙන් කල්ප ජයසූරිය¹

තබ්ලා ශාස්ත්‍රයෙහි භාවිතා වන මූලික පද වර්ගය වන කායදාවේ ආකෘතිය හඳුනාගනිමින් නව කායදා නිර්මාණය කරන ආකාරය අවබෝධ කරගැනීම සහ ගුරුකුල අනුව කායදාවේ සිදුවන වෙනස්කම් අධ්‍යයනය කිරීම මෙම පර්යේෂණයේ අරමුණ යි. ගුණාත්මක පර්යේෂණ ක්‍රමවේදය භාවිතා කරමින් සිදුකරන මෙම පර්යේෂණයේ දී දත්ත විශ්ලේෂණය සඳහා සම්මුඛ සාකච්ඡා, විෂය සම්බන්ධ ව දැනට ලියැවී ඇති මූලාශ්‍ර සාධක, ක්ෂේත්‍ර අධ්‍යයනය උපයෝගී කරගනු ලබයි. තබ්ලාව නැමති අවනද්ධ වාද්‍ය භාණ්ඩය මුලින් ම ශාස්ත්‍රානුකූල ව වාදනය කළා යැ යි සැලකෙන 18 වන සියවසේ උස්තාද් සිධාර් බාන්ගේ පටන් අද දක්වා ම තබ්ලා ශාස්ත්‍රයෙහි භාවිතා වන ප්‍රධානතම පද විශේෂය වන කායදා යන්නෙන් ක්‍රියා පිළිවෙල, රීතිය වැනි අර්ථයක් විද්‍යාමාන වේ. කායදා පිළිබඳ ව අවබෝධ කරගැනීමේ දී මූලිකව ම කායදාවේ ආකෘතිය අවබෝධ කරගත යුතු ය. කායදා නිර්මාණය කිරීමේ නීති රීති සමුදායක් පවතී. තබ්ලා වාදන ගුරුකුල 6 තුළ භාවිතා වන කායදා, එම ශෛලීන්ට සාපේක්ෂ ව, ඒ ඒ ශෛලියට අනුකූල ව සුළු සුළු වෙනස්කම් සහිත ව නිර්මාණය වේ. එසේ ගුරුකුල අනුව කායදාවෙහි සිදුවන වෙනස්කම් මෙම පර්යේෂණයේ දී ගැඹුරින් අධ්‍යයනය කරනු ඇත. වර්තමානයේ දී බොහෝ නවක වාදකයින් නව කායදා නිර්මාණය කිරීමට නොපෙළඹෙති. එයට හේතුව වන, ඔවුන් සතු ව කායදා පිළිබඳ නිවැරදි අවබෝධයක් නොමැති වීම මෙම පර්යේෂණය සිදුකිරීම සඳහා හඳුනාගත් ගැටළුව යි. කායදා හි ආකෘතිය කෙබඳු වේ ද, නීති රීතින්ට අනුකූල ව නිවැරදි කායදාවක් නිර්මාණය කරගන්නේ කෙසේ ද යන්න පිළිබඳ ව අධ්‍යයනය කළ හැකි වීම මෙම පර්යේෂණයේ වැදගත්කමයි. කායදා පිළිබඳ නිවැරදි අවබෝධයක් ලබාගතහොත් නවක වාදකයන්ට පවා කායදා නිර්මාණය කළ හැකි බව නිගමනය කළ හැකිය.

මුඛ්‍ය පද: කායදා; උස්තාද්; ගුරුකුල

¹ ලලිත කලා අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, කැලණිය, ශ්‍රී ලංකාව

Voice and Vocality in Opera

Hasari B. Bulathsinhala

The Opera, which was born in 16th century in Italy, is considered to be the peak point of human voice. Singing is the major component of Opera, and actors who act in the opera are special group of people who have trained their voices by using special voice techniques. “*Bel canto*” is one of its special voice techniques developed in Italy. Once the Opera became popular in Italy, it was spread to other adjacent countries like France, Germany, England and it was recognized and developed as a separate entity of western music. In the beginning of 20th century, some of the music creations in Sri Lanka, was also influenced by Opera, and during its early stages, it was called “*Geetha Nataka*.” It was recognized as Opera by Sri Lankan audience because of the immense effort made by musicians ie: Maestro Premasiri Kemadasa. However, in the Sri Lankan context, the contribution of real operatic singers is questionable when a creative work is defined as and “Opera” due to the simple fact: the lack of proper voice techniques. This arises the question; Are there operatic singers in Sri Lanka? If so, are they really contributing to Sri Lankan Opera. These are the questions which seek answers by the present study. Data was collected through interviews with Opera composers, Singers and archival materials referencing to Opera compositions. Maestro Kemadasa and Darshana Ruwan Dissanayake are two main musicians who were involved in composing Sri Lankan Opera. There are several singers who trained were under them, but only few of them have gained higher operatic skills. Only very few of them are engaged in Sri Lankan opera music as industry practitioners. The survey results portrayed that the trained and successful singers are required to compose Opera and establish opera as a recognized music medium in Sri Lanka. The present study followed the qualitative research approach in order to investigate the present status of Opera industry in Sri Lanka.

Keywords: Voice, Opera, Singers, Musician

The Effect on Repetitive Listening to Pirith Blessing Sounds on Human Brain (Healthy Individuals) by Using EEG and Functional MRI

C.Abeywardana, Udaya Ranaaka¹¹, Chandrasiri Palliyaguru²²

Back ground- A number of Sri Lankan and foreign studies have been done on Sri Lankan rituals earlier, including Buddhist rituals. Many studies have been done regarding Buddhist pirith chanting, sound therapy, music therapy, drumming etc. No studies have been done on the effect of repetitive listening to pirith on human brain

Sri Lankan Buddhist rituals (Chanting of pirith, Bodhi Pooja, sethkavi,) are believed to promote health and well being and are widely practice in Sri Lanka.

From among the 24 paritta sutta described in the Pirith Potha, five parittas viz Girimananda Sutta, Isigili Sutta, Maha Kassapa Thera/ Maha Moggallana Thera/ Maha Cunda Thera Bhojjhanga by Buddha is said to be specifically discoursed to cure illnesses.

Objectives -

1. to find out the effects of pirith on brain activity that will be measured by EEG changes.
2. to find out the effects of pirith on brain activity that will be measured functional MRI changes.

Methodology- This will be an observation study. Study subjects are healthy volunteers university students, Between age range of 20-30 , Male/female in equal composition, Ethnicity and religion are not considered.

Input indicators: literature review was done. In foreign studies describe the effects of various levels of sound on brain using EEG. Those experiments focused mainly on two types of brain waves. Alpha wave is important as stress indicator,. Some Sri Lankan studies have shown the effects of pirith on human biological parameters (heart sounds were regulated).

process indicators:. Planning to exposé to study subjects (low frequency (40-70 Hz) pirith blessing sounds for a period of ten minutes and measured by EEG changes will be recorded

All study subject Expose to vowel sound (40-70 Hz) for a period of ten minutes and measured by EEG. there will be three repetitive sessions (beginning, 1 month, 3 month) in same time (morning), same environment (auditorium)

Output indicators: changing the patterns of waves and levels of alpha and theta waves in subjects during exposure to pirith and vowel sounds

Ethical review will be taken from university of Kelaniya (faculty of medicine)

Keywords:., Sri Lankan Buddhist Rituals; pirith; repetitive sounds; EEG; functional MRI

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Applicability of Google Translate in Sinhalese Diglossic Contexts

Jayamal de Silva¹

Diglossia is the co-occurrence of two different varieties of a language, for distinct functions, throughout a speech community. Sinhalese is one of the languages which depict this phenomenon, with standard written Sinhalese and spoken Sinhalese as the two varieties. Nevertheless, the necessity of employing both varieties occur in certain contexts, for example, in the translation of prose work into Sinhalese, in which narrative is generally translated into standard written Sinhalese and dialogues are translated into spoken Sinhalese, unless the necessity of foreignizing or classicizing occurs. The aim of this study has been to examine the response of Google Translate in the translation of prose work from English into Sinhalese, in which the diglossic nature of Sinhalese language should be taken into consideration. Accordingly, the study is based on Sinhalese translations of selected parts of English prose texts, produced by Google Translate. The selected parts of source texts consisted of both narratives and dialogues, and pertained to different social and cultural backgrounds. The Sinhalese translations were compared with relevant source texts and an analysis was conducted in order to determine their appropriateness. The findings of this study indicate that the diglossic nature of Sinhalese language is not given consideration in Google Translate and both written and spoken varieties are employed inconsistently in producing a translation. This inconsistently is identified to occur in both sentence level and paragraph level, with a blend of morphological and syntactic attributes of standard written Sinhalese and spoken Sinhalese. Incompatibility with diglossic languages can be adjudged a significant weakness of Google Translate, which stands parallel to the failure of producing natural output consistently. Developing the option for the user to select the required variety is identified as the measure to solve this issue.

Keywords: dialogues; Google Translate; narrative; prose translation; Sinhalese diglossia

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Immortal Online: A Study of Digital Storytelling on Deceased Subjects

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Langellier (2011) has argued that the telling of a story is a performance. Such emphasis on storytelling as performance conceptualizes the “narrative as act, event and discourse-a site for understanding and intervening in the ways culture produces, maintains and transforms relations of identity and difference” (p.3). When the digital sphere is brought into the equation, the possibility of multiple and contesting narratives with varying relations to structures of power and visibility are inevitable. The digital space enables the production and dissemination of individualized alternative narratives from multiple subject positions that may challenge dominant narratives. Further, the personal and the ordinary may metamorphose in digital spaces, challenging and changing the ways in which individuals interact with and respond to lived reality. Drawing on the premise that the digital is an agentive space and the interactions on the digital sphere involve intervention and transformation, this paper critically reads the multiple narratives surrounding the tragic death of a young Sri Lankan woman as represented in multiple digital platforms. The paper attempts to explore the subject positions of storytelling and consumption, ethics of storytelling, structure and interaction of users with the deceased subject’s social media presence, and concepts of virtual body, digital remains, and grieving through drawing on intersecting theoretical readings on discourse (Foucault, in Hall, 1997), liminality (Lister et al, 2009), gaze (Mulvey,1999), storytelling and power (Plummer, 1995; Cohen-Cruz, 2006) in the digital platform. A critical content analysis of meta-narratives and numerous alternative narratives made viable on digital spaces suggests that the liminality of digital spaces allows multiple subject positions and subversive ‘truths’ that blur the boundaries between seeming binaries; in this particular instance, those of life and death and public and private.

Keywords: Immortal online; Digital storytelling; Deceased subjects; Performance; Digital Sphere/ Space; Lived reality; Subject position

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An Analysis on Common Errors Made by German Language Learners Working in the Travel and Tourism Sector

B.Madhupali Sugandhika Cooray¹

Being a global industry, tourism involves cross-cultural encounters where Foreign Languages play a crucial role. Mastering a Foreign Language proficiency is considered essential for employees working in the tourism sector, as it provides many benefits for employees to enhance their interpersonal relationships between customers from different cultures and to engage in successful communications with overseas clients. The tourist arrival data, published by the Sri Lanka Tourism Development Authority (SLTDA) for February 2019 shows that India, the United Kingdom, China, France and Germany are the five most important international tourist markets in Sri Lanka in February this year. (Gamini Gunaratna, S.2019)² Due to the increasing tourist arrivals in the recent years, many employment opportunities are being created for qualified graduates with a foreign language speaking background. Yet, the lack of practical knowledge and experience of graduates in the travel and tourism sector was questioned by many experts during the past few years. The main objective of this research is to do an analysis on the common errors made by the German language learnt Graduates in the travel and tourism sector to identify how the errors could be minimized through professional training oriented teaching activities during their undergraduate period. Expert interview data collection method, which uses to collect data from experts in a particular subject field was used to collect data from the tour guides. When selecting the research sample, purposeful sampling method was used and priority was given for individuals with the most experience in the German market. This research is beneficial for the professional purposes course unit, conducted by the Department of Modern Languages for German, Russian, Korean, French, Chinese and for Japanese Language learners focusing professional training in the travel and tourism sector, to identify the pitfalls in their current teaching methods. The findings of the research revealed that the errors made by foreign language learning graduates, in the tourism sector, can be mainly divided in to two categories, which are errors made due to lack of knowledge and experience and errors made due to lack of cultural competency. Through the data analysis it was revealed that the graduates receive more theoretical knowledge than practical training during their teaching sessions at the university. Furthermore, it was identified that although the culture teaching activities used to enhance the learner's cultural knowledge about the target language country are at a satisfactory level, the graduates find it difficult to interact with tourists representing different cultural backgrounds when they enter in to the professional working environment. Therefore it was suggested, that there is the necessity to introduce teaching activities not only to enhance the learner's knowledge about the target language culture but also about common cultural themes such as cultural conflicts, stereotypes, discriminations and about prejudices. In addition to that, it was highlighted that the learners should be given more opportunities to participate for overseas training programs, workshops, internships and field visits which enhance both their theoretical and practical knowledge about the future working environment.

Keywords: “common errors; German language learners; Travel and Tourism; cultural competency”

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² Gamini Gunaratna, S. (2019). *Sri Lanka: Sri Lanka tourist arrivals up by 7.0 percent in February 2019* [online] Colombopage.com.

The Effects of Podcasting on Speaking Skills: An Investigation on Upper Intermediate ESL Learners in a Local University

U.C. Wickramage¹

In contemporary English as a Second Language (ESL) classroom, technology and language learning are two interrelated components. Language learning is encountering a shift in research area from CALL, to Mobile Assisted Language Learning (MALL) which is defined by Moura and Carvalho (2012) as any type of language learning that takes place anywhere and anytime, supported by mobile devices (Moura & Carvalho, 2012). Podcasting is one of the mobile technologies which is increasingly used by language teachers as a tool for delivering language related resources and encouraging the learners to learn outside the traditional classroom. The primary aim of this study is to investigate the effects of podcasting in improving students' speaking skills in the ESL classroom. A total of 40 upper intermediate first year undergraduates of a local university have been investigated by assigning them into experimented and control groups. 20 students have been assigned for each group based on the random sampling method. Communicative Language Teaching (CLT) approach was used for the control group. The treatment meetings comprised podcasts to assist the learners in addition to the given activities in their lessons. Moreover, the learners produced podcasts of their own as pairs and uploaded them into podcasting service with the intention of sharing their podcasts with the peers and refer to them throughout the treatment process. A quantitative data analysis approach was used where the analysis of the pre and post-test scores of the experimental and control groups were conducted using SPSS software with statistical techniques including mean, standard deviation, frequencies and paired sample t-tests. Both Pre and post-tests comprised an oral presentation on a given topic. The analysis of the post-test scores of the control and experimental group indicates a statistically significant difference; $t(19) = -5.327$, $p = 0.000$. The statistical analysis of the pre and post-test scores of experimental group (within-group) depicts a statistically significant difference; $t(19) = 9.718$, $p = 0.000$. The statistical analysis of pre and post-test scores of control group shows a slight statistically significant difference; $t(19) = -3.688$, $p = 0.002$. Thus, the study affirms that the podcasting enhances the speaking skills of the ESL learners and the use of podcasting is identified as one of the effective MALL technologies that can be incorporated into the ESL classroom.

Keywords: Podcasting; Speaking skills; ESL learners; MALL; Technology

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සබරගමු පහන්මඩු ශාන්තිකර්මයෙහි විද්‍යාමාන බෞද්ධ සංස්කෘතික ලක්ෂණ

ටී.පී.එන්. සෞභාග්‍යා¹, එච්.පී. අරුණි සුලෝචනා²

පහන්මඩුවෙහි අන්තර්ගත බෞද්ධ සංස්කෘතික ලක්ෂණ අධ්‍යයනය කිරීම මෙම පර්යේෂණයේ මූලික අරමුණ වේ. ශ්‍රී ලංකාවේ ව්‍යාප්ත ව ඇති ශාන්තිකර්ම ත්‍රිත්වය අතුරින්, සබරගමු උපසංස්කෘතියට ආබද්ධ ව ගොඩනැගුණු සබරගමු ශාන්තිකර්ම පද්ධතියට හිමිවනුයේ සුවිශේෂී ස්ථානයකි. ඒ අතුරින් මඩු ශාන්තිකර්ම යටතට ගැනෙන පහන්මඩු ශාන්තිකර්මය සබරගමු උපසංස්කෘතික ලක්ෂණවලින් පැවත එන්නකි. තෙරුවන් නැමදීම, ආමිස පුජා, පිරිත් මංගල්‍යය, විහාර දේවාල මංගල්‍යය, බෞද්ධ ජාතක කතා හා බෞද්ධ ඉගැන්වීම් යන බෞද්ධ සංස්කෘතික අංග පහන්මඩු ශාන්තිකර්මයට සෘජු ව ම ආභාස වූ අවස්ථා ලෙස හඳුනා ගත හැකි විය. තෙරුවන් නැමදීමෙන් ආරම්භ කරනු ලබන පහන්මඩුවෙහි අන්තර්ගත නර්තන අංග, වාදනාංග, ගායන හා වාරිතූ පිළිබඳ විමර්ශනාත්මක ව අධ්‍යයනය කිරීමෙන් මේ බව පැහැදිලි වේ. එසේ ම සබරගමුවේ විශේෂයෙන් පුද ලබන සමන් දෙවියන් බුදුදහම සමඟ වන සම්බන්ධය සබරගමු පහන්මඩු ශාන්තිකර්මය සඳහා ප්‍රබල ව බලපා ඇති බව ද මෙම අධ්‍යයනයේ දී තහවුරු වූ කරුණකි. පත්තිනි දේවිය මූලික කරගනිමින් පවත්වන මෙම ශාන්තිකර්මය බෞද්ධාගමික පසුබිමක් තුළ ගොඩනැගුනේ ද යන්න හඳුනාගැනීම මෙහි අධ්‍යයන ගැටලුව වේ. මානවවංශ පර්යේෂණ යටතට ගැනෙන මෙම පර්යේෂණය සඳහා ගුණාත්මක පර්යේෂණ ක්‍රමවේදය භාවිතා කළ අතර උද්ගාමී තර්කන ක්‍රමය යටතේ නිගමනවලට එළැඹිණි. රත්නපුර දිස්ත්‍රික්කයට පමණක් පර්යේෂණය සීමාව වූ අතර දත්ත එක්රැස් කිරීම උදෙසා පුස්තකාලීය අධ්‍යයනය හා ක්ෂේත්‍ර අධ්‍යයනය යන ක්‍රම උපයෝගී කර ගනු ලැබිණි. ප්‍රාථමික හා ද්විතීයික මූලාශ්‍රය ඔස්සේ පුස්තකාල අධ්‍යයනයෙන් ද, සෘජු නිරීක්ෂණ හා සම්මුඛ සාකච්ඡා ඔස්සේ ක්ෂේත්‍ර අධ්‍යයනයෙන් ද දත්ත එක්රැස් කරන ලදී. ඒ අනුව සබරගමු පහන්මඩුව බෞද්ධ ආභාසයෙන් යුතුව නිර්මාණය වී ඇති බවත්, බෞද්ධ සංස්කෘතික ලක්ෂණ ඔස්සේ සාරධර්ම, විනය, සමාජානුයෝජනය, උපදේශනය ආදී වැදගත් කාර්යයන් රාශියක් සිදු වී ඇති බවත් නිගමනය විය.

මුඛ්‍ය පද : බෞද්ධ සංස්කෘතිය, පහන්මඩුව, සමන් දෙවියෝ, ගැමි ආගම, සබරගමු උපසංස්කෘතිය

¹ ලලිත කලා අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය
² සංස්කෘතික හා ප්‍රාසංගික කලා අධ්‍යයනාංශය, ශ්‍රී ජයවර්ධනපුර විශ්වවිද්‍යාලය

A Study into the Attitude of L2 Learners towards Vocabulary Learning

W.A.S. Nirmani¹, W.G.S. Maithripala²

Vocabulary learning is of paramount importance in the process of second language learning. Learning vocabulary helps the learner to enhance the competence and knowledge in English language. Thus it is very much essential for the teachers as well as the learners to understand the importance of vocabulary learning in the second language classroom in order to develop in their language skills as their attitude towards vocabulary learning will determine the effort the learners put forth to acquire new vocabulary. The present study explores the attitudes of L2 learners in the tertiary level towards the importance of vocabulary in learning English. It investigates the differences of attitude of 52 participants who are in the Basic level of English proficiency in the first year of the Faculty of Arts. A structured questionnaire was used to collect data which consists of two sections: Part A is comprised of 6 questions on the participant's demographic data when Part B contains 7 close-ended statements on the attitude of the students towards the importance given to vocabulary in learning English. The study used descriptive analysis by using IBM SPSS 20 software. The results of the study revealed that the majority of the students have admitted that they can understand the sentences which are even grammatically wrong as they place importance in the vocabulary rather than in the accuracy of the sentence. Moreover they have placed more importance in expressive vocabulary which includes speaking and writing skills than on the receptive vocabulary that consists of reading and listening skills. In conclusion, the students showed a positive attitude towards the importance of vocabulary in English language learning. The findings of the present study conclude with the pedagogical implications that instructors can design vocabulary activities targeting expressive vocabulary to promote positive attitude in vocabulary acquisition and thus boost learners' interest in the study of second language.

Keywords: Vocabulary learning; Attitude; L2 learners; English language teaching

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A Study on the Difficulties of Subtitling from English to Sinhalese

Amaya Nanayakkara¹

Subtitling is the process of translating spoken dialogues into written text on the screen. Subtitling consists of the production of snippets of written text to be superimposed on visual footage near the bottom of the frame while an audiovisual text is projected. Subtitle translation for screen is considered to be difficult due to certain limitations such as dialogue speed, screen width and text length. This study aims to analyse the difficulties bound with subtitle translation and the strategies that are employed to overcome them with reference to the language transfer from English to Sinhalese. A qualitative methodology is employed in carrying out the research where the English source script and the translated Sinhalese script of the movie “Harry Potter and the Philosopher’s Stone” is compared. Through the analysis of the gathered data, it could be identified that the difficulties that occur in subtitle translation can be divided into two categories; linguistic and cultural. As far as the linguistic difficulties that are evident in subtitling are concerned, lengthy and complex sentences which have the components of the sentence (subject, verb and object) distributed among several video frames for longer time durations and short and simple sentences which have semantically deeper meanings that cannot be conveyed in Sinhalese through a sentence with an equivalent length within the respective time duration make the task of subtitle translation challenging. As far as the cultural difficulties that are evident in subtitling are concerned, translating the cultural terms related to the fantasy wizarding world including the terms that are related to ecology, material and social culture, gestures, customs and concepts appear to be challenging to translate. It could be observed that the translator has employed several strategies in overcoming the above challenges of translation. The lengthy sentences are translated phrase by phrase sticking to the source language sentence structure; SVO, disregarding the target language sentence structure; SOV to keep up with the dialogue speed. This measure, which has been successful in most instances, at times sound unnatural in Sinhalese as well. The meanings of short sentences with deeper semantical value that cannot be described in a sentence with an equivalent length in Sinhalese are generalized in order to make them fit in with the time duration of the source utterance. This measure delivers a rather distant sense of source idea in Sinhalese without being completely unfaithful to the Source. As for the strategies of rendering culture bound terms, new Sinhalese equivalent terms are created for specific cultural items. For the terms that are too difficult to be recreated in Sinhalese, the original English term is used with additional descriptive subtitles presented within brackets in a different colour as a measure to make the ideas closer to the audience. By following the above strategies, the linguistic and cultural difficulties that had occurred during the process of subtitle translation are adequately addressed.

Keywords: Audiovisual translation; English; Film translation; Sinhalese; Subtitling

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(Trans)formations in Wikipedia: A Critical Review of “2014 Anti-Muslim Riots in Sri Lanka”

J.S. Niles¹

Wurth, Espi & van de Ven (2013) commenting on the material structure of the book *Only Revolutions* by Mark Danielewski (2006), suggest that the text should be approached as a “road novel” that “must be steered, manually navigated” and “thus performed” which “makes the reader an integral element of the functioning of the text” (p. 978). The approach to the study is informed by this engagement of the user or editor with the site and its content, a “mutually constitutive process” (Lister et al., 2009 p. 24) that is enabled by the structure or form of Wikipedia. The core concept of the study, “(trans)formations”, centralises the “radically open architecture” (Goode, 2010, p. 533), structure or form of Wikipedia which is “the world’s largest most used repository of user-generated content” (Graham, Straumann & Hogan, 2015, p.1). In order to assess this phenomenon, the research critically reviews the processes of writing and editing material in Wikipedia through a study of the article “2014 anti-Muslim riots in Sri Lanka”. The research thus engages with a politically contentious issue that has garnered national and global interest over the past few years, especially with the escalation of anti-Muslim sentiments following the recent incidents related to the Easter Attacks in 2019. As such, the selected Wikipedia article is set against dominant narratives of post-war Sri Lanka in which “there emerged several Sinhala Buddhist nationalist groups who saw the favoured “other” no longer primarily as Tamil, but as Muslim as well” (Hannifa, Amarasuriya, Wijenayake, & Gunatilleke, 2014, p. 1). This study then utilises an intersection of postcolonial, national and digital theoretical frameworks to assess areas related to selective censorship and self-censorship, modifying of “editor behaviour” (Goldpsink, 2010, p. 652) through self-regulatory and self-reflexive practices, silences and gaps in the representation of the Muslim community in Sri Lanka, shaping national memory on the digital sphere and the potential for cyber-activism through the democratisation and decentralisation of power. Accordingly, the study focuses on how the structure of the Wikipedia site and the engagement of users with this digital space not only makes provision for changes in the text, but extends to transforming traditional definitions of concepts from non-violent activism to communal engagement.

Keywords: (Trans)formations; Wikipedia; 2014 Anti-Muslim Riots; Structure/ Form; User

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Attitude of Officer Cadets at SLMA towards English Language Acquisition

N.G.J.P. Bandara¹

Second Language Acquisition (SLA) of the trainee Officer Cadets at Sri Lanka Military Academy (SLMA) has become rather a challenging task as they are expected to involve in language learning process while undergoing their military training which has been designed to produce military commanders. The study mainly focused on investigating attitude of the Officer Cadets who follow the Bachelors Science Degree in Military Studies at SLMA. The quantitative and qualitative investigation gathered the required data through a self administrated questionnaire distributing among 50 participants, conducting unstructured interviews with the target group, respective academic and military staff while incorporating researcher's own experiences and observations. The data presentation has been graphically displayed in percentage. The study analyzed cadets' attitude towards English by using ABCs (Affective, Behavioral, Cognitive) components and discussed key areas like use of English, students' mental preparedness, English difficulty level, confidence, intrinsic motivation, support of military training environment, orientation and their perception on the role of English and its significance in military domain having incorporated educational theories such as Knowles' Adults Learning (Andragogy), Krashen's Second Language Acquisition and the concept of Culture Shock. The findings revealed that though the Cadets were intrinsically motivated to learn English at the initial stage of their training. However, their interest seemed to gradually diminish due to some extrinsic and intrinsic reasons such as restlessness, physical exhaustion and health issues (physical), ESL teaching methods and evaluation methods (methodological), culture shock, military command and control system, (environmental), language phobia, anxiety, low self-esteem, linguistic problems, prioritization of military and routine activities, self biased schema, personal backgrounds and perception towards English learning (cognitive). In order to uplift their attitudinal state, the study suggests to implement some improvements/adjustments to the ongoing teaching and learning process, cognitive development of the Officer Cadets and to the military environment.

Keywords: "Type your keywords here, separated by semicolons ; no more than five key word items."

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Social Sciences

A Study on Machine Readable Cataloguing Standards for Library Automation in Selected University Libraries in Sri Lanka

Dhammika Rathnayaka¹, W.M.T.A.P. Wasala²

Machine Readable Catalogue (MARC) is not only a cataloguing function but, a method of cataloguing based on a computer or machine and it is a scientific format for creating and identifying bibliographical information in LMS. From 1965 to 1966, MARC I was published under the project named “Pilot Project” eventually MARC II in 1967. MARC 21 was published after IFLA - UNESCO conference in 1972. UNIMARC, CANMARC, UKMARC, INDOMARC are some of the MARC standards which were introduced later.

KOHA Open Source Library Management system was used twelve out of fifteen university libraries, three universities used Commercial Library Management systems for the library automation in Sri Lanka. Using MARC 21 bibliographic fields in OPACs of selected university libraries was different from each other and that was identified as a problem. Usage of MARC 21 fields are different from each other; it will be a problem to build a union or centralized catalogue among the university library management systems in the future. Investigating how the selected university libraries use MARC 21 fields for the library automation and gathering data about the knowledge of MARC 21 were the objectives of the research.

Quantitative and qualitative research methods were used in this research. Five university libraries were selected using purposive sampling. Two structured questionnaires were distributed among selected library staff members. Four out of selected five university libraries have used MARC 21 fields in their automated library management systems which are LIBSYS and KOHA. Another library was used Alice for Windows to automate the library. MARC 21 standard had not been used normally in Alice for Windows. The 8 of MARC fields have been commonly used in their automated library management. Those MARC 21 fields were, LEADER (000), FIXED-LENGTH DATA ELEMENTS--GENERAL INFORMATION (008), LANGUAGE CODE (041), MAIN ENTRY--PERSONAL NAME (100), TITLE STATEMENT (245), PHYSICAL DESCRIPTION (300), PUBLICATION, DISTRIBUTION, (IMPRINT) (260) and BARCODE (952\$p).

They pointed out a major problem which was the creation of a union catalogue or a centralized catalogue among the university libraries. Difficulty of implementation of the corporate cataloguing, difficulty of interchanging bibliographical data among the university libraries, duplicating bibliographical data and authority controlling in a union catalogue will be difficult tasks, etc. They identified these as problems that they have to face in the future due to not having a common set of MARC 21 fields in their LMS.

As the solutions to overcome the above issues, training and awareness programs should be conducted for the library staff, to make them aware of the cataloguing practices. The majority of the library staff endorsed that a proper MARC standard system should be introduced for the university libraries.

Keywords: Standards, Library Standards, Library Cataloguing Standards, Machine Readable Cataloguing, Library Automation

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Dressing of Sri Lankan Female School Teachers and Their Job Performance

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Scrupulous attention is paid to the details of clothing at the workplace, where many organizations have strict rules and regulations regarding the dress codes of the employees. Previous studies show that the dress codes of the employees have an impact on professionalism, efficiency, productivity at work, communication, social distance, safety, economy and self-satisfaction. Nonetheless, the majority of these studies have been conducted in the western populations, whereas data in Asian countries, which have contrasting cultural norms to the western world, are sparse. Therefore, this study was catered to examine how clothing of Sri Lankan female school teachers affects their job performances. A mixed method integrating qualitative interviews and secondary data analysis along with quantitative data derived from a self-administrated questionnaire were used for the study. Quantitative data were obtained from 100 female school teachers from Kandy and Colombo districts in Sri Lanka while 15 in-depth interviews were conducted to obtain qualitative data. Results revealed that evolution and current practice of the dress of females were more into promote nationalism and culture. Though the current dress of Sri Lankan school teachers is the Saree/Abaya, the majority preferred to wear casual dresses (54%). Wilcoxon Signed Rank test showed that casual dress is significantly comfortable compared to their traditional dress ($p < 0.05$). There was a significant difference between efficiency in performing given four tasks wearing casual attire over traditional attire as per Wilcoxon Signed Rank test statistics ($p < 0.05$). Thirty percent of teachers in the sample have faced accidents due to their current dress. They suggested that they would be more productive in teaching and performing extra-curricular activities if they wear casual dresses. Hence, the findings of this study suggest that a change in the current dress of female school teachers into a more relaxing and a convenient one which is easy to maintain, wear and handle would help the teachers enliven their dynamic role while creating avenues for positive changes in the education sector in Sri Lanka.

Keywords: Dress code; Job performances; female school teachers

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An Analytical Study on the Role of the Ministry of Public Administration and Management and Law and Order with Regard to the Population Right to Information Act

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The communication is conveying information and ideas. It is a featured inheritance for all beings including human. As a result of this the information access, transparency, responsibility, of the existing government and the participation of the community are expected through this act. The information act, No: 12 was established in Sri Lanka on 3rd of August in 2016. One of such government institutions is Ministry of Public Administration & Management and Law and order Sri Lanka. In this study, the issues which affect the effectiveness of the information act will be identified and the solutions will be presented. The steps which have been taken by the Ministry of Public Administration & Management and Law and order to enhance the community right to get the information of the secondary data are not in a satisfactory level. Therefore the main objective of this study was to examine the community awareness, operations of the Authorities, challenges faced by them. The primary data and secondary data was collected. As a whole, although the awareness on information act was in a satisfactory level, the usage was not satisfactory. Hence, the awareness programs should be conducted through schools, universities, libraries, press media and social media. Both human and physical resources should be enhanced to promote the dissemination of information within the given community.

Keyword: Information, Information Act, Free Access, Information Access, Government Administration

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Recreational Drug Use & Night Life: Special Reference to Night Club Events in Colombo

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Substance abuse as a social phenomenon, is varies from different settings and sub groups. Nigh club culture is being emerging in urban and coastal area in the country and recreational drug use is also being emerging associating with night club events. Many youths tend to be use substances in their teen age and societal and environmental factors have been influenced for the initiation of drug use. Research problem of this study was what is the combination between substance abuse and night life and the main objective of this research is to identify the nature and current trends of recreational drug use in night clubs in Colombo district. Survey method and case study method was used as research methods and Colombo district selected as study area. Snowball sampling technique was used to select the sample of 50 club drug users. Major findings of this research are as follows, 54% of the sample have initiated drug use at the age range of 15-17 and their curiosity have led them to use. The people, who attend to the party events, were desired to different music types and lighting patterns which feel with effects of drugs. Out of the total sample 90% were used LSD and they may face two kind of experiences which are “good trip” and “bad trip”, further LSD users are using different images which can enhance drug effects. Ecstasy users (49 persons) are using ecstasy party events for feeling euphoria, increase energy, empathy and mild hallucinations. There were two types of party events which are “night party” and “after party” that includes different characteristics and drug use appear as common in both events. Both legal and illegal drugs peddlers were present within the club and 62% (31) of the sample used to buy drugs from them. Further identified that majority of them were not daily clubbing and 32 (64%) of them used to go only in weekends. These people believe drug use in a night club is not a problematic as they used to go once in a week. However, because of the drug use 62% of them have ever been experienced to problematic situations in their life. Social media like Facebook was used to promote the party events Majority, 98%, of the sample have started clubbing when they were less than 30 years. People who attend to party events were multiple drug users. Cannabis (84%), heroin (42%), hashish (44%), pharmaceutical drugs (52%), cocaine (56%) and methamphetamine (56%) are the other popular drugs among them. Subcultural terms were used to communicate within the club such as, the term “phill” used for ecstasy, “acid”, ”stamp” for LSD, “white bair” for cocaine and “ice”, “mendi” for methamphetamine. Persons who attend to night club events consider drug use is a highly socially oriented action. Recreational drug use and the night life are the combined factors in night club settings.

Keywords: recreational drug use, clubbing, club drugs

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A Study on a Practical Approach to Enhance Computer Literacy of the Non-Academic Library Staff, University of Kelaniya

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A qualified and well – trained library staff is a major factor facilitating effective library services. As a result of the rapid growth of the computer and technology, the role of the library profession, functions and its image were eventually changed. At present, the majority of non-academic staff attached to the library, university of Kelaniya are digital immigrants who have to fulfill the library requirements of the digital natives. This seems to be rather a challenge in enhancing the quality of the library services in this digital era. On the other hand, as the mission of the library states, the library functions as a ‘learning support service center’ providing a coordinated range of high quality, timely responsive, cost effective library services to its users. To fulfill that task, higher computer literacy of the library staff should be taken into account. Hence, the main objective of the study was to enhance the computer literacy of the staff while evaluating computer literacy of them was the interlinked objective. For this survey, the entire non-academic library staff (i.e. 62) was selected as the sample of the study to gather data through an online questionnaire which basically consisted of computer fundamentals and the use of computer technology in the library environment. Accordingly, the majority (i.e. 36%) of the staff was in a very satisfactory level; 22% - not satisfactory; 18% - satisfactory; 5% - excellent and 19% was absent. The enhancement of computer literacy among library staff is excepted as one main task of the Interactive Media Unit of the library. Therefore, it was decided and permitted to commence a series of workshop named ‘Library Professionals’ Training Series (LPTS) -Part I, II and III’. Accordingly, the entire staff was grouped into 3 sects based on the above evaluation and the program has already been started with a new syllabus and new teaching aids. The practical sessions were the most impressive parts in every program in which their awareness and knowledge on modern technology, technical devices, modern library trends, internet, web and related technologies could be expanded. The duration of each LPTS program is 3 months (6 hours per week). The termination of each program will be marked with issuing certificates.

Keywords: Computer Literacy, Computer skills, University Library, Library Staff Development

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A Study of Ancient Buddhist Paintings in Sri Lanka

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Buddhist Painting is very famous in Sri Lanka. The roots of painting of Sri Lanka dates back to prehistoric era, but the professional way of world famous painting system has been begun in 3rd B.C after the arrival of Arahath Mahinda. After that, in different phase of times, with the firm contribution of kings and divisional rulers, the ancient paintings originated on the basis of Buddhist Monasteries. The research question of this study is to identify the evolution of the ancient painting of Sri Lanka. The research methodology of study is field observation and data were collected as primary data. Previous researches were also referred as a secondary data for this study. It has been revealed that the classical painting system of Sri Lanka can be seen from 3 B.C to 19th century. The paintings from 3 B.C to 12th century shows a gradual sequence. There are numerous of evidence regarding this matter in many places in Sri Lanka such as Wessagiriya, Ruwanweli Stupa, Mihinthala Stupa, Mahiyangana Stupa, Kambaragala, Mirisawetiya Stupa, Thiwanka Pilimageya and Galwiharaya. From 12th century to 16th century there are no evidence of painting in Sri Lanka but, from 16th century to 19th century the paintings were totally differ from the other paintings ironically and technically. The painting of this era as known as Kandian paintings. Ancient Dambulla Buddhist temple, Degaldoruwa and Medawala temple are the best examples which represent the paintings in this caliber. At the 19th and 20th century the painting system in Sri Lanka gets the influence of European painting. These painting were more romantic while the ancient Buddhist paintings were more religious. These kinds of painting can be seen in Kelaniya, and Bellanwila.

Keywords: paintings, buddhist, traditional

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හරිත සමාජයක් සඳහා ශ්‍රී ලංකාවේ විද්‍යුත් සහ ඉලෙක්ට්‍රොනික් සහ අපද්‍රව්‍ය කළමනාකරණ ක්‍රියාවලිය පරිපාලනය කිරීම: කොළඹ දිස්ත්‍රික්කය ආශ්‍රයෙන් කෙරෙන පර්යේෂණාත්මක අධ්‍යයනයක්

ඩී.එච්.ඒ.එස් සෝමරත්න¹

කිරසාර සංවර්ධන ඉලක්ක ලඟා කර ගැනීම තුළ ගෝලීය වශයෙන් රාජ්‍යයන් මුහුණදෙන පාරිසරික අභියෝග අතර විද්‍යුත් සහ ඉලෙක්ට්‍රොනික සහ අපද්‍රව්‍ය කළමනාකරණය කිරීම මූලික වේ. නිෂ්පාදන වේගයට සාපේක්ෂව දෛනිකව ජනනය වන විද්‍යුත් සහ ඉලෙක්ට්‍රොනික සහ අපද්‍රව්‍ය ප්‍රමාණය විධිමත් අයුරින් කළමනාකරණය කිරීම සඳහා වූ පාරිසරික ප්‍රතිපත්ති හා වැඩසටහන් කෙරෙහි නූතනයේ සංවර්ධිත රටවල් මෙන්ම සංවර්ධනය වෙමින් පවතින රටවල ද අවධානය යොමුව තිබේ. හරිත සමාජ වර්ධනයක් අපේක්ෂාවෙන් සිටින ශ්‍රී ලංකාව ද විද්‍යුත් සහ ඉලෙක්ට්‍රොනික් සහ අපද්‍රව්‍ය කළමනාකරණ කිරීම සඳහා වූ ජාතික යාන්ත්‍රණයක් ක්‍රියාවට නංවනු ලබනු ලබන ද එය තවදුරටත් පරිසර ගැටලුවක් බව පරිසරවේදීන් වෝදනා කරති. ඒ අනුව මෙම අධ්‍යයනයෙහි මූලික අරමුණ වූයේ ශ්‍රී ලංකාවේ විද්‍යුත් සහ ඉලෙක්ට්‍රොනික සහ අපද්‍රව්‍ය කළමනාකරණය කිරීම සඳහා වූ රාජ්‍ය යාන්ත්‍රණයේ ක්‍රියාත්මක භාවය අධ්‍යයනය කිරීමයි. ගුණාත්මක පර්යේෂණ සැලසුම යටතේ කොළඹ දිස්ත්‍රික්කය අධ්‍යයන ප්‍රදේශය ලෙස තෝරා ගනු ලැබීය. අරමුණු සහගත නියැදි ක්‍රමය යටතේ මධ්‍යම පරිසර අධිකාරියෙහි ඉ- අපද්‍රව්‍ය කළමනාකරණ ඒකකයෙහි නිලධාරීන් 04 දෙනෙක්ද, ඉ- අපද්‍රව්‍ය එක්රැස් කිරීම සඳහා අවසර ලත් ආයතන දෙකක නියෝජිතයන් 06 ක් ද, අවිධිමත් ලෙස ඉ- අපද්‍රව්‍ය එක්රැස් කරන වෙළෙන්දන් 10 ක් සහ ප්‍රජාව 20 දෙනෙක් ද වශයෙන් සමස්ත නියැදිය 40ක් තෝරා ගනු ලැබීය. ප්‍රාථමික දත්ත රැස් කිරීම සඳහා සම්මුඛ සාකච්ඡා ක්‍රමය හා ප්‍රශ්නාවලි ක්‍රමය යොදාගෙන ඇති අතර ද්විතියික දත්ත ලබා ගැනීම සඳහා අධ්‍යයනයට අදාළ ලිපි, වාර්තා, ලේඛන හා අන්තර්ජාලය භාවිතා කරන ලදී. සමස්ත දත්ත විශ්ලේෂණය සඳහා විස්තරාත්මක ක්‍රමය යොදා ගනු ලැබීය. අධ්‍යයනය තුළින් ශ්‍රී ලංකාවේ විද්‍යුත් සහ ඉලෙක්ට්‍රොනික අපද්‍රව්‍ය කළමනාකරණ යාන්ත්‍රණය පිළිබඳ ගැටලු කිහිපයක් හඳුනා ගත හැකි විය. ඉ- අපද්‍රව්‍ය කළමනාකරණය සඳහා වූ පරිසර පනතෙහි ක්‍රියාත්මක භාවය අවම මට්ටමක පැවතීම, ඉ- අපද්‍රව්‍ය කළමනාකරණය සම්බන්ධයෙන් මහජන දැනුවත් භාවය අඩු වීම, ඉ- අපද්‍රව්‍ය ප්‍රතිචක්‍රීකරණයට අදාළ දැනුම, තාක්ෂණ ඥාණය හා සම්පත්වල හිඟ බව ඒ අතර මූලික විය. ශ්‍රී ලංකාවේ ඉ-අපද්‍රව්‍ය කළමනාකරණය යාන්ත්‍රණය සාර්ථකව ක්‍රියාවට නැංවීම සඳහා රාජ්‍ය ප්‍රතිපත්ති විෂය තුළ පරිසර ප්‍රතිපත්ති සඳහා ප්‍රමුඛතාවය ලබා දෙමින් ඒවා ප්‍රායෝගිකව බලාත්මක කිරීම, අපද්‍රව්‍ය කළමනාකරණයට අදාළ අන්තර්ජාතික නීති රීති හා සහයෝගිතාව පුළුල් කිරීම, ඉ- අපද්‍රව්‍ය කළමනාකරණයට අදාළ තාක්ෂණික දැනුම, සම්පත් රට තුළ ප්‍රවර්ධනය කිරීම, දියුණු රටවල ක්‍රමෝපායන් අදාළ කර ගැනීම, ඉලෙක්ට්‍රොනික් භාණ්ඩ නිෂ්පාදනය හා අලෙවි කරනු ලබන ආයතන වෙත ස්වකීය වගකීම තහවුරු කිරීම, ඉ- අපද්‍රව්‍ය එක්රැස් කරන නිත්‍යානුකූල ආයතන දිරිමත් කරමින් ඊට අදාළ පහසුකම් තවදුරටත් සංවර්ධනය කිරීම හා අවසාන වශයෙන් ඉ- අපද්‍රව්‍ය කළමනාකරණයට අදාළව මහජන දැනුවත් භාවය හා වගකීම පුළුල් කිරීම ද කාලීන වශයෙන් වැදගත් වේ.

ප්‍රමුඛ පද: කිරසාර සංවර්ධනය , ඉ- අපද්‍රව්‍ය, අපද්‍රව්‍ය කළමනාකරණය, හරිත සමාජය ,පරිසර ප්‍රතිපත්ති

¹ ජේරාදෙණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව, arunasrisampath92@gmail.com

Legal Barriers Faced by Female Entrepreneurs in Sri Lanka

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According to the data obtained from the Women's Chamber of Industry and Commerce Sri Lanka, there is a significant increase in the number of female entrepreneurs in Sri Lanka over the past decade. Sri Lankan female entrepreneurs play a significant role contributing to the economic development of the country. These female entrepreneurs work for the common good of the society, while looking for opportunities and utilizing them for their own betterment. There are many challenges faced by female entrepreneurs during the course of their ventures including economic, political, technological and legal constraints. The objective of this paper is to examine the legal barriers the Sri Lankan female entrepreneurs come across during the course of their business venture. The study was done with secondary data obtained from materials from the Central Bank of Sri Lanka along with data obtained from a survey research conducted by the author, of a population consisting 200 interviews. The standardized five point's Likert questionnaire which was used by many researchers with a proven reliability and validity was used and a few personal interviews were done with female entrepreneurs chosen from random sampling. A qualitative analysis was conducted to analyse the data and the results proved that the legal factors affect the decision making of female entrepreneurs in Sri Lanka. In addition, the research identified various legal barriers which affect and influence the female entrepreneurs in Sri Lanka. This paper will propose some solutions to help overcome these legal barriers. The paper recommends that Sri Lanka ought to imply strong policies and national laws, which can be implemented to offer solutions to address these concerns.

Keywords: Legal Barriers, Female Entrepreneur, Sri Lanka

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Factors Influencing the Discourse-Practice Gap in Work Life Balance (WLB) of Female Academia in Higher Education (HE) in Sri Lanka

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Work Life Balance (WLB) is the lack of opposition between work and other life roles or in other words concordance between work and other life roles. WLB is also known as the state of equilibrium in which demands of personal life, professional of working life and family life are equal. There are sufficient discourses to ensure WLB of people but when these discourses come into practice, there can be seen some gaps between WLB. Thereby the study focuses on the factors influencing the discourse-practice gaps in WLB of female academia in Higher Education (HE) of Sri Lanka. The study designed to identify, how the practices in HE supports or challenges the WLB discourses in aspects of Socio-economic, Political and Organizational. Therefore the problem of the research is to identify “what are the factors influencing the discourse-practice gap in WLB of female academia in HE of Sri Lanka”. The general objective of the study is to suggest some systematic ways to the administration to reduce the gap between discourse-practice WLB among female academia in HE of Sri Lanka while addressing the importance of WLB to each and every individual. The type of the study can be identified as a casual study rather than a correlational study where the study emphasized on identifying the most influence factors on WLB. The unit of analysis was at individual level, the female academia in HE of Sri Lanka from government universities. This study continues with 50 hand delivered questionnaire or online questionnaire accordingly to collect data. The cluster sampling method which is included to the probability sampling technique used as the method of sampling as all the universities are considered as equal or homogeneous from outside but unequal or heterogeneous from inside the cluster. Descriptive analysis, bivariate analysis, and advance analysis techniques were used to analyze data with the use of Statistical Package for Social Sciences (SPSS), and Microsoft Excel. Employment, package of remuneration, social dialogue and social security has found as Socio-economic factors while academia’s rights considered as Political factors of WLB. The essential rights that are related with freedom of association, quality of work, practice of decent working hours, absence of unacceptable works and the nonappearance of enforced or abusive form of work are the factors of WLB that can be further categorized as Organizational factors of WLB. WLB is essential in each and every persons’ life. People tend to engage in the eventful day to day schedules and they are unconscious about the life activities other than the work. Thereby the significance of this study is as the study could reveal the most influence factors on WLB or in other words the causes of discourse-practice gaps in WLB of female academia in HE of Sri Lanka which helps to be conscious on those factors in order to ensure the WLB in their lives.

Keywords: Female academia, Higher Education, Organizational factors, Political factors, Socio-economic factors, Work Life Balance

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Terrorism as a Major Challenge to the Entire Political and Security Scenario in South Asia: With Special Reference to Sri Lanka

Y.A.S. Hansamali Yapa¹, Rukshan Rajitha²

South Asia has been increasingly overwhelmed with an assortment of events, political violence and terrorism. Terrorism is not a new phenomenon to South Asian Region in which plenty of unsettled issues still remain in the region. It is however, the transnational nature of terrorism that is playing a significant role in transforming the tension and challenges in South Asia. It is commonly believed that South Asia is plagued with major terrorist groups, ethnic, political violence/ instability and economic downwards. Afghanistan, Pakistan and India are amongst the top ten countries in the world that are mostly impacted by terrorism. Recently Bangladesh and Sri Lanka became victims of terrorism due to ethno-political agendas. Terrorism in South Asia is a multifaceted reality, which has developed in practically all countries in South Asia. Therefore, it is important that SAARC focuses on taking security measures that are likely to be effective against terrorism to ensure peace and stability in South Asia. Although SAARC brings out many prospects to its members, the South Asian region is faced with diverse challenges that threatens the security and the political stability in the region. One of the daunting challenges the countries in South Asia encounters is terrorism which not only places national security at risk but also threatens the national and international peace. Moreover, the international interferences in the domestic affairs of South Asia is another prominent cause of the turmoil in the region as often international interferences causes instability in the region thus resulting in escalation of terrorism in South Asia. SAARC as a whole faces this threat of terrorism and the failure to address the issue have caused the ineffectiveness of SAARC as a regional organization in South Asia. However, since the establishment of SAARC, the organization has taken many initiatives to address the terrorism implementing policies to counter terrorism in the region. This paper examines the counter terrorism endeavor by South Asian countries and focuses on the recent up rise of terrorism in Sri Lanka. Further the influence of ethno - political agenda to the terrorism in Sri Lanka is highlighted referring to the new challenges of terrorism within the state and its implications to the South Asian region. Moreover, this paper analyses the extent the challenge of terrorism threatens the political and security scenario in South Asia. The data of the study is derived from the literature review, document analysis and observation. Practical implication of the study is pointing out the challenges directly affects the security and political scenario of the region, collapse of the powerful governments and the deterioration of nation states.

Keywords: Terrorism; Security; Political; South Asia; SAARC

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Revival of Silk Route: Practicing China's Economic Diplomacy

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Ancient trade routes have played an important role in promotion economic ties and cultural linkages between nations. China, as one of the major trading partner in the world has established famous silk route to develop trade partnership between Europe, Middle East, Africa and Asia. After re-establishment of new silk route in 2003 which it consists of two most important projects called the ' New Silk Road Economic Belt ' and '21st Century Maritime Silk Road' apparently paved the way for practicing China's Economic Diplomacy. China's investment, domestic growth by opening up new trade markets and the strengthening of the Chinese Yuan to become an international currency will improve the economic development and exchange between China and nations in this area are the major initiatives to taken up in recent years. The Silk Road induces developing unity among OBOR partners sharing its cultures by trade and now China is pursuing an insightful plan to revive ancient trading links with its neighbor countries, stretching South to North and East to West. This research paper is addressing new trends, patterns and prospects of OBOR initiatives taken up in the developing nations through building of New Economic Cooperation's. Furthermore, this research paper examines the China's economic behavior in the Silk Road project with implications for the developing nation's special reference to Sri Lanka. Sri Lanka and China have practiced trade relations as a major center in the historical silk route over the last centuries and again China Sri Lanka have unprecedented economic and trade ties with after China's significant influence in Sri Lankan market. The objective of this paper is to find out the impact of beneficial of OBOR projects conducted by host country towards developing economies. The research reveals the trade relations among China Sri Lanka and focus of its effect on our middle income index. The much more consideration goes to new projects executing in Sri Lanka particularly development and impact of port city in Colombo. The Chinese government has invested large amount to develop infrastructure and projects which consider as the Revival of Ancient Silk Route as a mutually beneficial program. Therefore, methodology of the study is derived from the analysis of trade statistics, literature reviews, document analysis and observations. Practical implications of the study are point out the challenges of China's economic diplomacy to overcome US China trade war.

Keywords: China; Economic Diplomacy; Silk Route; Trade war; Revival

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Contemporary Situation of Film Marketing Practice in Sri Lanka

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Film is an art form which is basically to entertain people through visual storytelling. On the other hand it's a business which has been a huge revenue driver in the entertainment industry. However, not all films succeed with high profit margins. Success of a film depends on various functions and Film Marketing is one of them. According to the Film Marketing hand book "any activity that assists a film in reaching its target audience at any time throughout its life" is called as Film Marketing. The main stages of activity in the film industry are development, production, post-production, distribution and exhibition and there is a need to focus on marketing in all of these stages. Despite the very high number of Sri Lankan film halls, audience and film sales are very low. However, a cinema without audience doesn't make any sense. Having audience is considered as a requirement for prosperity and development of the movie industry. This is where the importance of marketing a movie emerges.

The aim of this research was to study the contemporary situation of Film Marketing practice in Sri Lanka. The research was conducted as a systematic inquiry. Secondary data were articulated such as books, research articles, articles on journals, newspapers, web sites and these materials were sufficiently utilized for the analysis. Due to the lack of secondary data related to film marketing practice in Sri Lanka, primary data were collected by interviews. Ten film directors, five film producers and three academics who research on film industry in Sri Lanka were selected using purposive and judgmental sampling technique.

The research revealed that though world's most lucrative film industries (Bollywood, Hollywood) has provided interesting case studies for Film Marketing, many of Sri Lankans even those within the film industry, understand marketing activities as the creation of posters and trailers, advertising and promotional activities in advance of a film's release. They have no idea about the bigger picture of Film Marketing. On the other hand many film industry professionals do not regard what they do as marketing, although on a daily basis they are packaging each film and marketing it to a number of people.

Keywords: Film Industry; Film Promotions; Film Marketing; Communication; Sri Lanka

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Factors Affecting for the Diversity of Agro – Crops in Dry Zone of Sri Lanka; A Case Study at Siyambalanduwa D.S.D

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Agro - Crop diversity is the variance in genetic and phenotypic characteristics of plants used in agriculture. This research paper examine the factors affecting for the diversity of agro crops in agro ecological zones in Sri Lanka. This study was conducted in an ecological approach by using both qualitative and quantitative data. The data were collected through questionnaires, structured and unstructured interviews, books, magazines, online resources and 1.50000 digital maps. The sample of the study was Samanalabedda GND in Siyabalanduwa DSD in Monaragala district. DL 1 b Agro Ecological Zone was selected as the study area because it is the most widespread agro ecological zone in Siyambalanduwa Divisional Secretariat Division and also in the Dry Zone of Sri Lanka. Fifty farm families were selected through random sampling system for this study which represents 20% from the whole study area. The collected data were analyzed through the correlation coefficient and GIS. The variety of agro-crops in the study area is due to subsidies, ease of maintenance, increasing the education level of the farmers, increasing the number of family members, good yields and a good market. There is a 0.75 positive correlation between the number of family members and the quantity of cultivated crops. The study found that subsidizing the farmers in the area has resulted in a greater diversity of agricultural crops in the area. Due to the introduction of new crops in this area, crops such as cocoa, rubber and wallapatta are easy to maintain and have a high income. Accordingly, it was clear that DL 1b of DSD in Siyambalanduwa was influenced by a number of factors contributing to the diversity of agro-crops in the agro-ecological Zone.

Keywords: Agro crops, Agro ecological zones, Diversity in agro crops, Economic geography

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Digitalization of Community Engagement Practices and Research in Humanitarian Action

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Under a systematic desk study and insider interviews, the paper reviews how community engagement practices and research in humanitarian action has been digitalized during the recent past. It also identifies reasons for which communication with communities has become indispensable in humanitarian action.

Engaging with and being accountable to people affected by disaster and crisis is not a new proposition. It stems from the participatory methods that emerged in the 1980s. These methods were formalized as engagement and participation through system-wide initiatives and humanitarian research such as Sphere, the Humanitarian Accountability Partnership (HAP), People in Aid, the Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP) and, most recently, the Core Humanitarian Standard (CHS) on Quality and Accountability. The main finding of this ongoing research is that, beyond one-way information provision, meaningful engagement is achieved when humanitarian organizations ensure that public concerns are consistently understood, considered and addressed. This can be done through ongoing dialogue or two-way communication using the latest technological advances.

Most of the humanitarian actors have now turned into digital information gathering, curates and analyses volunteered geographic information (VGI) on urban communities. This transformation is based on a combination of collaborative satellite-imagery digitization and participatory mapping, which relies upon geospatial open-source technologies and the collaborative mapping platform OpenStreetMap, mobile phones usage for digital data collection using open data kit, online cash transfers, and social media to biometrics identification, geospatial mapping, drones, and big data. The desk study and the conducted insider interviews with humanitarian aid workers conclude that these new technological advancements address the twofold challenge of achieving equitable community engagement. In the meantime, they generate spatial data that adheres quality standards to produce rigorous and trusted evidence for policy and decision making.

Keywords: Community Engagement; digitalization, communication with communities; humanitarian actions; accountability

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Investigating the Effectiveness of Social Media and Traditional Media Marketing on the Purchase Intention of Fashion Brands in Sri Lanka

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Today, the marketing communication methods are evolving rapidly due to the rise of social media. Some companies totally depend on social media sites on their marketing communications and while most of the matured business organisations utilize both. Since there are mixed arguments the marketing practitioners are keen to understand the impact of the consumer purchase intention through both marketing communication modes. Hence, the purpose of this paper is to investigate the effectiveness of both social media and traditional media marketing on the purchase intention of the fashion brands in Sri Lanka. It aims to investigate whether people rely on one channel or whether they consider both media when making a purchase. The study further aims to identify how both marketing modes motivates people to make the final decision of purchase.

A self-administered questionnaire is distributed among 123 Facebook users, the sample consists of both male and female and employed and unemployed who are in-between 20-50 years of age category and residing in Colombo and suburb. Among 118 responses received 100 completed questionnaires were finally employed for statistical analysis. Sample was selected based on non-random sampling method. Among the existing literature on purchase intention the Theory of Reasoned Actions (TRA) is utilized to serve the purpose. According to the theory the independent variables are Attitude, Subjective Norms and External Variables and this study use the same variables as independent variables. The researcher selected quantitative research methodology adopting to the deductive research approach.

The results of the empirical study show that both traditional communications and social media communications have a significant impact on consumer purchase intention and also the consumers suggest that those two mediums should be integrated/synergised to serve them better. The results provide evidence to say that the traditional media has a stronger impact on creating awareness while social media communications strongly influence brand image. Firm-created social media communication is shown to have an important impact on creating attitudes and making them engaged with it.

Keywords: Fashion Brands, Purchase Intention, Social Media Marketing, Sri Lanka, Traditional Media Marketing

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An Overview of Trends of Rural Poverty Condition in Sri Lanka Within Last Two Decades

Lakshitha Lakmal Rajakaruna, Geethani Amarathunga

The poverty is the major social problem of third world rural societies and it has been created many social problems in the society. Thus Social disparity and social unrest have risen. Hence many rural societies in the developing countries have suffer from poverty and they have disorganized. According to the World Bank intention poverty is multidimensional concept. Thus to identify root causes of rural poverty have to pay attention about cultural and psychological aspects of rural human being as well as International trade policies and financial policies pertaining to the country. Sri Lanka has been given priority to State welfare and social development programs and have implemented many poverty alleviation programs since independence hence rural poverty has decline significantly. However regional disparities are high. Hence The United Nations has announced the year 2000 as the year to eradicate extreme poverty and hunger with collective effort through the Millennium development goals (MDGs) which expired 2015. The MDGs have not achieved targets as the expected level. In 2015 The UN introduced the sustainable development goals (SDGs) to end poverty in all its forms everywhere by 2030. Further rural poverty negatively influenced to the human development as well as human capabilities and have been effected sustainable development in Sri Lanka. This paper attempt to analysis and identify significant variations and trends of rural poverty condition in Sri Lanka.

Keywords: Poverty, rural poverty, poverty condition, last two decades, rural poverty condition in Sri Lanka

The Adulthood Difficulties on Childhood Physical Abuse

Himalshi Serasinghe¹

Childhood Physical abuse simply defined as brutality and other unexpected prohibit human actions that inflict pain on a child and injury or lifelong destruction to growth or work on. Further, bumps, wounds, fractures, burns, bites, poisoning, internal injuries, drowning, smothering, prohibiting, shaking and cutting were identified as the types of physical abuse. In the literature there were less researches have been done related to adulthood difficulties on physical abuse yet. The purpose of the study is to identify the adulthood difficulties on childhood physical abuse. To achieve the purpose of the research qualitative approach has been used. Further, Prisma methodology coded the content of each of the 50 journal article based on themes to identify the latent idea of the phenomena. Content analysis was used to develop the conceptual model. According to data, Substance abuse, Post Traumatic Stress Disorder, Antisocial behavior, Eating disorder and Attempt to suicide were identified as the direct adulthood difficulties on childhood Physical abuse. Furthermore, Sexual problems, Divorce or Separation, Decline in Socio economic status, frailer to graduate from high school were identified as the indirect adulthood difficulties on childhood physical abuse. Based on the analyzed data, it could be concluded that the victims of the childhood physical abuse are effect on adulthood difficulties directly or indirectly. Thus, further research needed to be measure the conceptualized model and difficulty which could more effect on childhood physical abuse.

Keywords: Physical Abuse; Direct Adulthood Difficulties; Indirect Adulthood Difficulties

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The Conceptive of Risk of Outdoor Adventure Activities Influence on an Individual's Self-Confidence

A.M.S.J.P. Abeykoon¹, R.P.D.D. Rajapaksha²

The risk when engaging with adventure activities could affect differently on the physical and mental wellbeing of a person. There are two types of adventure 'soft adventure and hard adventure (Hudson, 2003) so it includes hard and soft risk. Humans are believed to comprehend risk through two fundamental mechanisms, an "analytic" system and an "experiential" system (P.Solvic, M.L. Finucane, E. Peters, D.G. MacGregor, 2004). Hence, this research study focuses on the conceptive of risk of outdoor adventure activities' influence on an individual's Self-confidence. Researchers are found that adventure risk impacts mind and health. But according to the literature review, there is no conceptualization. Also, in the Sri Lankan context, much research has been done on adventure activities and adventure locations. But there is a paucity of research on outdoor adventure risk. Therefore, there is a lack in the knowledge domain in terms of conceptualization and construct development for further empirical studies in the field. The field of outdoor adventure management has not developed empirical tools to measure the impact of outdoor adventure risk on an individual's Self-confidence with a particular concern in the Sri Lankan context. Therefore, this research study fills the gap in terms of the measurement of outdoor adventure risk impact on an individual's Self-confidence. A qualitative approach has been adopted with thematic analysis methods to answer the research question along with the main objective. The PRISMA methodology coded the content of each of the 35 journal articles based on the themes to identify the latent idea of the phenomenon. Content and construct validity methods were used to confirm the items related to the factors. It was 10 items that were above the value of the content validity of individual items (I-CVI) than 0.8 out of 7 items originally developed. Only 7 items were agreed by raters which were at a level of 1 in terms of I-CVI. Any researchers who have an interest in the field of outdoor adventure can use the conceptualized model which has 8 factors to measure the risk of outdoor adventure activities influence on an individual's Self-confidence with empirical validation.

Keywords: Outdoor adventure; Risk; self-confidence; Self-efficacy; content analysis

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The Potential of Kandy for Cultural Heritage Tourism Development: Enhancing the Sustainability

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Cultural heritage tourism has a tremendous impact on enhancing the sustainability. The sacred city of Kandy can be identified as one of the UNESCO world heritage sites in Sri Lanka and it has become a popular destination among the domestic and the international tourists. Kandy is the last kingdom of Sri Lanka which has a rich Sinhala Buddhist tradition with tangible and intangible attractions. Most of the tourists travel to Kandy to explore the experience of religious and cultural values. Apart from that, there are many stakeholders supplying their service to tourists at the destination. Also, when promoting Kandy, we want to consider the environmental, economic and socio-cultural sustainability and minimize the risk of arising the issues according to those sectors. Through the research expects to identify the potentials of cultural heritage tourism in Kandy and how should we enhance the sustainability within the sectors of economic, socio -cultural and environmental. As the specific objectives of the research are to organize a proper program in socio economic aspect of the host community. The study reveals the comprehensive analysis of cultural resources in Kandy. The empowerment of community and the other stakeholders of the cultural heritage is the key to address long-term sustainability in any of the cultural heritage destination. Therefore, the researcher is focusing on how to achieve the sustainability in Kandy with the development of cultural heritage tourism. And more consideration goes to minimize the issues thereby promote the Kandy as a sustainable cultural heritage tourism destination. The research is conducted on both qualitative and quantitative methods, where primary and secondary sources are referred in data collecting and the sample of 50 tourists and 50 community members in Kandy randomly selected and SWOT analysis were used to identify the sustainability level in Kandy for the research.

Keywords: culture; heritage; community empowerment; tourism; sustainability

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The Impact by Environmental Features of the Recreation Parks on the Continues Participation

R.P.D.D. Rajapaksha¹, A.M.S.J.P. Abeykoon²

During the past few decades, the role of sport and physical education in health and vitality has been the focus of the attention of sports scientists. Research has shown that recreational activity is effective for the health and well-being of society. Therefore, they have not forgotten to pay attention to spend their leisure time in parks. Thus, it is important to point out that the human and social-centric conditions motivate the individual to engage in recreational activity and, on the other hand, the natural or designed environment on which the relevant functions are based is acting as the pull factors. The key objective of this study was to identify how environmental features impact on the tendency for continues participation. It was intended to collect Primary data. Convenient sample method was used to collect data from 200 people who arrived to the “Diyatha Uyana”. The questionnaire covered the 03 main aspects of environmental features called Greenspace, Landscape & River Trails. “The tendency to continue participation” was the dependent variable of this study, which was measured by the number of arriving by the beneficiaries from January to September of 2019. An analysis was done using the descriptive and inferential statistics method such as Structural Equation Modeling (SEM). Estimated relationship in SPSS- AMOS 21 and SPSS statistic version 21. The analysis showed that River trails (P=.064) and Landscape (P=.010) variables were statistically significant at 0.5 levels. In addition, among the identified variables the impact of the landscape has most regression weights reported as .134. Which can make an impact on the beneficiaries’ tendency to participate in the “Diyatha Uyana”. It means that when landscape increase by one standard deviation, the tendency to participate goes up by 0.134 standard deviations. Moreover, this result indicates that, landscapes and River trails variables have a comparatively higher association with beneficiaries' participation in “Diyatha Uyana” than green space.

Keywords: Greenspace, Landscape, River trails, Diyatha Uyana, tendency to participate

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Perceived Trust of E-Services, Perceived Usefulness and Adoption of E-Banking in the Context of Sri Lankan Private Sector Banks: A Relational Study

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The primary objective of the study is to examine the relationship of perceived usefulness and perceived trust of e-services on adoption of e-banking in Sri Lankan context. Sample was drawn from the students of University of Kelaniya, those who are possessing e-banking facilities of private banks. Sample was selected out of the university students in view of the time constraints. Respondents were selected using simple random sampling as per registration numbers. Initially 500 questionnaires were distributed and 305 duly completed questionnaires were considered for the final data analysis process. Determinant factors on perceived trust of e-services were identified by conducting principal component analysis. TAM has been extended by using the perceived trust of e-services variable. In order to test the hypotheses correlation analysis followed by multiple regression analysis using hierarchical method along with diagnosis tests for outliers, residuals, influential cases, were performed whilst supplementary statistical tests, such as trend analysis and contrast test of ANOVA were also used for further analysis of demographic characteristics. The empirical evidences supported first and second hypotheses indicating the positive relationships of perceived trust of e-services and perceived usefulness variables towards e-banking adoption. Furthermore, it was revealed that there are differences between socio-demographic characteristics; namely, age, education, occupation, banking experience and e-banking adoption. Third hypothesis stating the existence of differences in adoption of e-banking between lower income category customers and higher income category, was also supported. Constrained sample selection and time restrictions are limitations of the present study. Nevertheless, extending of TAM in relation to present research context, could be recognized as the originality of the research. Findings would be beneficial for Sri Lankan bankers and banking application developers in view of promoting e-banking adoption level in Sri Lanka. In conclusion, future researches could be conducted in varied contexts in the field of technology adoption in search of novel findings.

Keywords: E-banking; PCA; perceived trust; perceived usefulness; socio-demographic variables

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(කැලණිය විශ්වවිද්‍යාලය ඇසුරෙන්)**

එච්.ඒ. ඉසුරු කොශලයා¹, සුරිය රශ්මික²

සෑම වසරකම ලංකාවේ රාජ්‍ය විශ්ව විද්‍යාල පද්ධතියට නවක සිසුන් විශාල සංඛ්‍යාවක් බඳවා ගනී. ඒ අතර විශේෂ අවශ්‍යතා සහිත දරුවන් ද සිටින නමුත් ඔවුන්ට ලැබිය යුතු වරප්‍රසාද හා පහසුකම් ඒ අයුරින්ම ලැබෙනවා ද යන්න පිළිබඳව ගැටළුවක් පවතී. ඒ අනුව මෙම අධ්‍යයනය මගින් විශේෂ අවශ්‍යතා සහිත සිසුන් සඳහා විශ්ව විද්‍යාල තුළින් ලබා දෙන්නා වූ පහසුකම් ප්‍රමාණවත් ද? යන්න පිළිබඳව කැලණිය විශ්ව විද්‍යාලය ඇසුරෙන් මෙම පර්යේෂණාත්මක නිබන්ධනය සිදු කෙරුණි. ඒ අනුව විශ්ව විද්‍යාල තුළ විශේෂ අවශ්‍යතා සහිත විද්‍යාර්ථීන් හට අවශ්‍ය වන්නා වූ පහසුකම් සලසා දීම සහ ඔවුන්ගේ අධ්‍යාපනික ක්‍රියාවලිය දියුණු කිරීම යන අරමුණු ඔස්සේ මෙම අධ්‍යයනය සිදු කරනු ලැබීය. අධ්‍යයන සඳහා ප්‍රාථමික දත්ත සහ ද්විතියික දත්ත භාවිතා කළ අතර ප්‍රාථමික දත්ත ලබා ගැනීම සඳහා කැලණිය විශ්ව විද්‍යාලය තුළ අධ්‍යාපනය ලබන සියලුම අධ්‍යයන වර්ෂවලට අදාළව කලා, වානිජ හා කළමනාකරන සහ විද්‍යා පීඨයන්හි සිසුන් 25 දෙනෙකු සහ එම සිසුන් අධ්‍යාපනය ලබන අධ්‍යයන අංශවල ආචාර්යවරුන් 25 දෙනෙකුගෙන් යුත් නියැදියක් විය. ඔවුන් සමඟ සිදු කලා වූ සම්මුඛ සාකච්ඡා තුළින් අදහස් ලබා ගන්නා ලදී. එසේම ප්‍රශ්නාවලි මගින් ද දත්ත රැස් කරන ලදී. එසේම ද්විතියික දත්ත රැස් කිරීම සඳහා අන්තර්ජාලය සහ ඒ ආශ්‍රිත ග්‍රන්ථ යොදා ගැනුණි. ඒ අනුව දත්ත විශ්ලේෂණය කිරීම සඳහා ගුණාත්මක පර්යේෂණ ක්‍රමවේදය මෙන්ම ප්‍රමාණාත්මක පර්යේෂණ ක්‍රමවේදය ද යොදා ගන්නා ලදී. මෙම අධ්‍යයනයේ නිගමනය වන්නේ ශ්‍රී ලංකාවේ බොහෝ විශ්ව විද්‍යාලයන් තුළ දැනට ආබාධිත මධ්‍යස්ථානය හරහා සිසුන් වෙත සිදු කරන සේවාවන් ප්‍රමාණවත් නොවන බවත් දැනට කැලණිය විශ්ව විද්‍යාලය තුළ අධ්‍යාපනය හදාරන සිසුන් සඳහා නේවාසිකාගාර තුළ තුළත්, විශ්ව විද්‍යාලය තුළ ඇති දේශන ශාලා තුළත්, පුස්තකාල තුළත් පවතින පහසුකම් ප්‍රමාණවත් නොවන බව පැහැදිලි විය. එමෙන්ම විශ්ව විද්‍යාලය තුළ ගමන් කිරීමට ඇති මාර්ගයන් හා පඩි පෙළි හේතුවෙන් විශේෂ අවශ්‍යතා සහිත සිසුන් පීඩාවන්ට පත්වන බව පැහැදිලි විය. කැලණිය විශ්වවිද්‍යාලය තුළ දැනට ක්‍රියාත්මක වන ආබාධිත මධ්‍යස්ථානයට අවශ්‍ය පහසුකම් ලබා දීමේ විධිමත් ආකාරයකට සංවිධානය කිරීමත්, විශ්ව විද්‍යාලය තුළ විශේෂ අවශ්‍යතා සහිත සිසුන්ට වඩාත් වැදගත් වන ප්‍රවේශ පහසුකම් වැඩි දියුණු කිරීම වඩාත් යෝග්‍ය වේ.

මුඛ්‍ය පද : "විශේෂ අවශ්‍යතා, ආබාධිත මධ්‍යස්ථාන, කැලණිය විශ්ව විද්‍යාලය"

¹ සමාජීය විද්‍යා පීඨයේ දේශපාලන විද්‍යාඥාධ්‍යය, කැලණිය විශ්ව විද්‍යාලය, කැලණිය, ශ්‍රී ලංකා, ishurukaushaya@gmail.com
² සමාජීය විද්‍යා පීඨයේ දේශපාලන විද්‍යාඥාධ්‍යය, කැලණිය විශ්ව විද්‍යාලය, කැලණිය, ශ්‍රී ලංකා

Use of Chronemics: Ethical Considerations of the Process of Communication in the Family

R.N.H.M.D. Jayarathna¹

Appearing for a one out of seven codes of non verbal signals, ‘chronemics, represents the use of time as a message system such as punctuality, amount of time spent with another and waiting time. As it is a component which is accountable to the quality of the process of communication, the use of ‘chronemics’ is substantially liable upon the emergence of ethics in the society. In an any social situation, one’s communication is massively influenced by related family. In this context, considering the process of communication in the family, this study aimed two objectives as the major one was to identify a common code of ethics in use of ‘chronemics’ and the other specific one was to identify attributed values of the use of chronemics. The mixed research methodology was applied though qualitative data were cared prominent. Interviews were used as the main instrument of data collection while the observation was present too. Only for this study, the families were categorized into five groups under a simple socio-economic criterion; by names the families represent ancient folk, rural elites’ ancestry, modern middle class, modern rural folk, and modern town folk. Allowing five families to belong to each group, sum of twenty five families in Kurunegala district were randomly selected as the sample. Two indicators of ‘chronemics’ namely ‘spending time with another’ and ‘waiting time’ were concerned. Likewise the both indicators equally proclaimed the extra ordinary complexity of the use of chronemics, they revealed that there’s an identifiable difference between the particular use within family members and with aliens. ‘Spending time with another’ is more effectively applicable when communicating with an alien but it creates ethical issues if use against the family members. Although ‘the waiting time’ for a family member is various due to intra family kinship, the lowest ‘waiting time’ in it is obviously higher than the ‘waiting time’ kept for any outsider. Both indicators show some variations in practice according to the family category but more families revealed even attitudes about the particular use of ‘chronemics’ though the practice doesn’t represent it properly. Conclusion made by the attitudes of the sample families as a qualitative analysis was done stating that there are more common ethics in the use of ‘chronemics’ where in the process of communication in the family.

Keywords: “ethics; non verbal signals; chronemics; kinship”

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විශ්වවිද්‍යාල විද්‍යාර්ථීන්ගේ පරිගණක සාක්ෂරතාව කෙරෙහි තෝරාගත් සාධකවල බලපෑම

සී.බී. චන්දිමසිංහ¹

ගෝලීයකරණයේ හේතුවෙන් 21 වැනි ශතවර්ෂයෙන් පසු ලෝකයේ තොරතුරු තාක්ෂණය සහ සන්නිවේදනය යන විෂය ධාරාව ඉතාමත් වේගයෙන් වර්ධනය වීමේ ප්‍රවණතාවක් දක්නට ලැබිණි. තොරතුරු තාක්ෂණය සහ සන්නිවේදනය යන විෂය ධාරාව සමඟ පරිගණක සාක්ෂරතාව ඉහළ නැංවීමට නම් ශ්‍රී ලංකාවේ අධ්‍යාපන ආයතන තුළ පරිගණක සාක්ෂරතාවය ඉහළ නැංවීම අත්‍යවශ්‍ය වන අතර මෙම අධ්‍යාපන ආයතන තුළ පවතින පරිගණක සාක්ෂරතා මට්ටම් පිළිබඳව අවබෝධයක් ලබාගැනීම ඉතාමත් වැදගත් වේ. මෙම හේතුව නිසාම ශ්‍රී ලංකාවේ විශ්වවිද්‍යාල විද්‍යාර්ථීන්ගේ පරිගණක සාක්ෂරතාවය සඳහා බලපාන සාධක හඳුනාගැනීමේදී විශ්වවිද්‍යාල පද්ධතිය තුළ පරිගණක සාක්ෂරතාවයේ වර්තමාන තත්ත්වය හඳුනා ගැනීම මෙම අධ්‍යයනයේ අරමුණ විය. මෙම අධ්‍යයනය කැලණිය විශ්වවිද්‍යාලයේ සියලුම පීඨවල විද්‍යාර්ථීන්ගෙන් යුත් සංගහනයෙන් ස්තෘත සසම්භාවී නියැදීම හා විනිශ්චය නියැදීම මගින් විද්‍යාර්ථීන් 200 දෙනෙකුගෙන් සමන්විත නියැදියක් තෝරා ගනු ලැබීය. මෙහිදී දත්ත රැස් කිරීමෙහිලා ප්‍රාථමික හා ද්විතීක දත්ත යොදා ගත් අතර ප්‍රශ්නාවලි ක්‍රමය ඔස්සේ ප්‍රාථමික දත්ත රැස් කර ගන්නා ලදී. මෙම අධ්‍යයනයේදී දත්ත විශ්ලේෂණය සඳහා ඊෂීල ජෛවික මෘදුකාංග භාවිත කරමින් දත්ත විශ්ලේෂණය කරන ලදී. පරිගණක සාක්ෂරතාවය කෙරෙහි බලපානු ලබන සාධක ඇතුළත් සුදුසුම ආකෘතිය සඳහා පදිංචි ප්‍රදේශය, පෞද්ගලික පරිගණකයක් භාවිතය, අ.පො.ස උසස් පෙළ දී අමතර විෂයක් ලෙස පරිගණක විෂය හැදෑරීම, අන්තර්ජාල භාවිතය සහ අධ්‍යාපන කටයුතු සඳහා අන්තර්ජාලයෙන් තොරතුරු ලබාගැනීම යන සාධකයන් අන්තර්ගත වූ අතර දත්ත ඉදිරිපත් කිරීම තුළින් ද විශ්වවිද්‍යාලය තුළ සිසුන්ගේ පරිගණක හා සම්බන්ධ බොහෝ තොරතුරු අනාවරණය කරගන්නා ලදී. විශේෂයෙන්ම විශ්වවිද්‍යාල විද්‍යාර්ථීන්ගෙන් 50% ආසන්න පිරිසකගේ පරිගණක සාක්ෂරතාවය සතුටුදායක මට්ටමක නොපවතින බව මෙම අධ්‍යයනයට අනුව පැහැදිලි විය. පරිගණක භාවිතය පිළිබඳ වැඩි දැනුමක් නාගරික ප්‍රදේශවල විද්‍යාර්ථීන් සතු බව කේන්ද්‍රික ප්‍රවණතා යටතේ මධ්‍යස්ථය ගණනය කළ විට සංඛ්‍යාත්මකව අනාවරණය විය. පරිගණක අධ්‍යයනය පිළිබඳ ග්‍රාමීය හා නාගරික හේදයකින් තොරව කුඩාකළ පාසල තුළ දී නිසි අධ්‍යාපනය ලබා දීමත් විශ්වවිද්‍යාලය තුළ තොරතුරු තාක්ෂණ විෂය සියලුම විද්‍යාර්ථීන්ට අනිවාර්ය විෂය ඒකකයක් බවට පත් කිරීමත් සිදු කළ යුතුය. එසේම විශ්වවිද්‍යාලය තුළ තොරතුරු තාක්ෂණය පිළිබඳ වැඩිමුළු පැවැත්වීම මගින් විශ්වවිද්‍යාල විද්‍යාර්ථීයා පරිගණක සාක්ෂරතාවයෙන් ඉහළ මට්ටමකට පවත්වා ගැනීමට හැකියාව ලැබෙනු ඇත.

මූලාශ්‍රය: පද: පරිගණකය, පරිගණක සාක්ෂරතාවය, විශ්වවිද්‍යාලය, විද්‍යාර්ථීන්

¹ ජනසන්නිවේදන අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව, chamaliwanigasingha@gmail.com

Impact of VAT for Wholesalers and Retailers of Tourism Industry in Galle, Sri Lanka

Thashila Yohani¹

According to the current situation, new reform of Value Added Tax is a common problem for wholesalers and retailers of tourism industry in Galle area. There are many researches studies done about the Value Added Tax. However, there are no proper studies done to reveal the impact of VAT. Especially there are no researches done about impact of VAT for wholesalers and retailers in Galle area related to the tourism industry. Hence, the problem of study: what are the effective factors for wholesalers and retailers in tourism industry from VAT. Then, the objective of the study is to examine and analyze the impact of VAT for wholesalers and retailers to go to the digital transformations in the modern world. Wholesalers and retailers were the sample of the study and sampling method was stratified sampling. The responses were selected from 4 Grama Niladhari Divisions in Galle area like waliwatte, pettigalawatte, galwadugoda and thalapitiya. There were 20 questions from different variables asked from the sample and primary data were analysed by using EXCEL sheets. In this study, eight key variables were identified to help to find wholesalers and retailers of tourism industry view about VAT and to investigate how it will effect for businesspersons. According to the research findings, factors like attitudes, government new policies, educational level and VAT rate. The study has given an insight into the understanding about new reform of Value Added Tax. However, study has identified that there is a high impact of VAT for wholesalers and retailers in tourism industry and researcher mentioned that the positive view about the VAT. Finally, study has mentioned some recommendations to minimize the impact of VAT for wholesalers and retailers of Tourism Industry in Galle, Sri Lanka by digitising methods.

Keywords: " VAT; Wholesalers; Retailers; Tourism Industry "

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සමාජ මාධ්‍ය අලෙවිකරණ මෙවලමක් ලෙස ෆේස්බුක් මාධ්‍ය භාවිතය (දේශීය හා විදේශීය හෝටල් ෆේස්බුක් පිටු පිළිබඳව කෙරෙන තුලනාත්මක අධ්‍යයනයකි)

අකිලා නිර්මාණි ද සිල්වා¹

භාණ්ඩ හුවමාරු ක්‍රමයේ සිට ආරම්භ වූ අලෙවිකරණය මුදල් භාවිතය වර්ධනය වීමත් සමඟ වඩාත් දියුණුවට පත් විය. අලෙවිකරණය යනු භාණ්ඩ විකිණීම පමණක් නොවේ . අලුතින් පාරිභෝගික ප්‍රජාවක් ගොඩනංවා ගැනීමට මෙන්ම පාරිභෝගික වර්ග ගොඩනැංවීම විෂයෙහි අලෙවිකරණය වැදගත් වේ. අලෙවිකරණය තුළ ප්‍රචාරණය වැදගත් ය. මුල් කාලීනව පෝස්ටර් දැන්වීම් වැනි සම්ප්‍රධායික මාධ්‍යයන් ගෙන් ආරම්භ වී පසුකාලීනව තාක්ෂණය සමඟ වර්ධනය වී නව මාධ්‍ය දක්වා ප්‍රචාරණය පුළුල් වී තිබේ. වර්තමානය වනවිට සමාජ ජාල මාධ්‍ය අලෙවිකරණයේ මෙවලමක් ලෙස වර්ධනය ව පවතින්නේ නව ප්‍රවණතා බිහිකරමිනි. මෙම පර්යේෂණය ඔස්සේ සමාජ මාධ්‍ය අලෙවිකරණ මෙවලමක් ලෙස ෆේස්බුක් ව්‍යාපාරික පිටු භාවිත වන්නේ කෙසේද යන්න අධ්‍යයනය කරන ලදී .

ෆේස්බුක් පිටු සඳහා භාවිත කළ හැකි අලෙවිකරණ උපක්‍රම හඳුනා ගැනීම, දේශීය හා විදේශීය හෝටල් ෆේස්බුක් පිටු භාවිත කරනු ලබන අලෙවිකරණ උපක්‍රම හඳුනාගැනීම, දේශීය හා විදේශීය හෝටල් ෆේස්බුක් පිටුවල අලෙවිකරණ උපක්‍රම භාවිතයේ ස්වරූපය සංසන්දනාත්මකව අධ්‍යයනය කිරීම මෙම පර්යේෂණයේ අරමුණු ලෙස සඳහන් කළ හැක. මෙම පර්යේෂණ අරමුණු සාධනය කරගැනීම සඳහා දත්ත රැස්කිරීමට අන්තර්ජාල පරිශීලනය, කානි හා පෙර පර්යේෂණ අධ්‍යයනය කරන ලදී. දත්ත විශ්ලේෂණය සඳහා ගුණාත්මක පර්යේෂණ ක්‍රමවේදයක් වන අන්තර්ගත විශ්ලේෂණ ක්‍රමවේදය යොදාගන්නා ලදී. තුලනාත්මකව එම දත්ත විශ්ලේෂණය කරන ලදී. පර්යේෂණය සඳහා නියැඳිය තෝරා ගැනීමට ෆේස්බුක් ග්‍රාහකත්වය පිළිබඳව දත්ත සපයන සෝෂල් බේර්කස් (Social Bakers) වෙබ් අඩවියේ Accommodation (තේවාසික පහසුකම්) ලෙස දක්වා ඇති වර්ගීකරණයේ වැඩිම ලයික් ප්‍රමාණයක් ලබාගෙන තිබෙන හෝටල් ෆේස්බුක් පිටු දහය දලලංකාවේ වැඩිම ලයික් ප්‍රමාණයක් ලබාගෙන තිබෙන හෝටල් ෆේස්බුක් පිටු දහයද තෝරාගන්නා ලදී.

දේශීය හා විදේශීය හෝටල් ෆේස්බුක් පිටුවල අලෙවිකරණ උපක්‍රම භාවිතය පිළිබඳව සිදුකරනු ලැබූ මෙම අධ්‍යයනය හරහා නිගමන කිහිපයකට එළඹෙන ලදී. ඒ අනුව වැඩිම ලයික් ප්‍රමාණයක් ලබාගෙන ඇති ෆේස්බුක් පිටු වැඩිම අලෙවිකරණ මෙවලම් ප්‍රමාණයක් භාවිත කර ඇත. එම ගිණුම්වල ෆේස්බුක් මෙවලම් භාවිතය ප්‍රතිශතයක් ලෙස 90% කි. තෝරා ගන්නා ලද හෝටල් ෆේස්බුක් පිටු අතරින් අවම ලයික් ප්‍රමාණයක් ලබාගෙන ඇති ෆේස්බුක් පිටු අවම අලෙවිකරණ මෙවලම් ප්‍රමාණයක් භාවිත කර ඇත. එම ගිණුම්වල අලෙවිකරණ මෙවලම් වල භාවිතය ප්‍රතිශතයක් ලෙස 40% කි. ඒ අනුව අලෙවිකරණ උපක්‍රම භාවිතය ෆේස්බුක් පිටුවල ඉහල ලයික් ප්‍රමාණයක් ලබාගැනීමට ධනාත්මකව බලපානු ලබන බව හඳුනාගන්නා ලදී. වැඩිම ලයික් ප්‍රමාණයක් ලැබූ හෝටල් ෆේස්බුක් පිටුවල අලෙවිකරණ උපක්‍රම භාවිතය 70% වඩා ඉහළ අගයන් ගනු ලැබූ අතර ලංකාවේ වැඩිම ලයික් ප්‍රමාණයක් ලැබූ හෝටල් ෆේස්බුක් පිටුවල අලෙවිකරණ මෙවලම් භාවිතය 40% - 60% අතර අගයක පවතින බව හඳුනාගන්නා ලදී.

මූලාශ්‍ර: අලෙවිකරණය , හෝටල් අලෙවිකරණය , ප්‍රචාරණය , සමාජ මාධ්‍ය , ෆේස්බුක් පිටු

¹ ජනසන්නිවේදන අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව, akilanirman123@gmail.com

අස්පර්ශිත සංස්කෘතිය පිළිබිඹු කරන කොහොඹා යක් කංකාරිය

පී.එම්.එස්.වීග අපොන්සු¹

කොහොඹා යක් කංකාරිය උඩරට ප්‍රදේශවල පවතින අතර අවම භාවිතය හා ජනමූල විශ්වාසයන් වෙතින් සමාජය ඇත්වීම කරණකොටගෙන මෙම යාතු කර්මය අදාළ සංස්කෘතිය සමාජයෙන් ගිලිහෙමින් පවතී. මෙම ගිලිහියාම ශ්‍රී ලංකාවේ අස්පර්ශිත සංස්කෘතික සංවරණය කෙරෙහි බලපෑම් ඇති කරනු ලබන්නේ කෙසේද යන්න මෙහි ගැටළුවයි. මෙම පිරිහීම මඟින් සංචාරක කර්මාන්තය මත ඇති කරනු ලබන බලපෑම නිරීක්ෂණය කිරීම මෙම පත්‍රිකාවේ අරමුණයි. සංස්කෘතිකමය වශයෙන් වැදගත් මෙවැනි මෙම යාතු කර්ම ක්‍රමයෙන් පිරිහියාමට හේතු පිරික්සීමේදී යාතුකර්ම පැවැත්වීම සඳහා පවතින මූල්‍යමය හිඟතාවය, ශිල්පීන්ගේ හිඟය, කාර්යබහුලත්වය වැනි හේතූන් මූලික වී ඇති බැව් අධ්‍යයනයේදී හඳුනාගැනීමට හැකිවිය. ඒ අනුව මෙම පර්යේෂණයේදී කොහොඹා යක් කංකාරිය ආරක්ෂා කරගැනීමට සංස්කෘතික සංවරණය යොදාගත හැක්කේ කෙසේදැයි සාකච්ඡා කෙරේ. මෙම ශාන්ති කර්මයේ විශ්වාසයන්ට හා වත්පිළිවෙත්වලට හානියක් නොවන ලෙස සංස්කෘතික සංවරකයාට පිළිගැන්විය හැක්කේ කෙසේද යන්නත්, එහිදී රජයේ සහ ශාන්තිකර්ම ශිල්පීන්ගේ, සංචාරක නියෝජිත ආයතනයන් හි කාර්යභාරයන් කවරේදැයි විමසීම සෙසු අරමුණු අතර වේ. ඒ අනුව කොහොඹා යක් කංකාරිය පැවැත්වෙන අවස්ථාවන්ට සහභාගි වී එම ශිල්පීන්ගෙන් සහ ශාන්තිකර්මය සඳහා සහභාගිවීමට පැමිණි ගම්වාසීන්ගෙන්, විදේශීය සංචාරකයන් කිහිපදෙනෙකු සමඟ පවත්වන ලද සාකච්ඡා තුළින් ප්‍රාථමික දත්ත සපයා ගත් අතර, පුස්තකාල පරිශීලනය මඟින් ද්විතීක තොරතුරු රැස් කරන ලදී.

පුමුබ පද : "අස්පර්ශිත සංස්කෘතිය, සංචාරක කර්මාන්තය, කොහොඹා යක් කංකාරිය, ප්‍රචර්ධනය"

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A Study on the Necessity of Implementing Online Programs for Higher Educational Institutes in Sri Lanka

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Generally, education is considered as a factor which moulds an individual to a professional. Conventional education refers to long-established customs that society traditionally used in educational institutes. In Sri Lanka, education for both secondary and tertiary education still depends on routine physical attendance of students in classroom activities. When considering the higher education in Sri Lanka, in most of the situations, working professionals face various constraints in continuing their further studies. As a result of this issue, a knowledge gap is created. However, with the passage of the time and with transformation of the teaching and learning methods in education, technology received a high demand in the educational sector. Moreover, in the contemporary world, there is a trend for online programs which can fill the aforementioned gap. This research study examines the necessity of implementing online programs in Sri Lankan higher educational institutes. As the targeted population is considerably high sample has been selected from National Institute of Business Management and has been narrowed down to the students graduated from School of Computing and School of Business in the year of 2018. Due to complexity of studying, the sampling has been limited to 250 graduates. A questionnaire was circulated among randomly selected 50 (25 each) graduated-working professionals of National Institute of Business Management and using random sampling method. They are asked to recirculate the provided questionnaire among five colleagues in the same organization from different higher educational institutes in Sri Lanka. The data analysis method used in the research study is regression analysis. The results of the research study revealed that the demand for the online programs among the working professionals is high due to many advantages that they can fulfill. Moreover, the findings indicate the factors (independent variables); self-efficacy, social influence, user satisfaction, quality of information and academic relevance. Based on the factors the findings indicate that there is a strong effect on the demand for online programs in multi-disciplines.

Keywords: Educational institutes; Higher education; Online programs; Technology; Working professionals

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War Reporting and Photojournalism (Special Reference to Sri Lankan War)

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Photojournalism plays an important role in journalism. War reporting is one of the genres of conflict reporting and War news has a high value. War photographs can describe the incident and deliver the truth more than words. Reporting a war is different from reporting news in civil society. Special skills are needed for war reporting. This study is about war reporting practice in Sri Lanka. How Photojournalists performed duties on the battlefield was studied by the researcher. The reporters who were there at the war zone were identified under two categories and held in-depth interviews. 10 news reporters from Sri Lankan newspapers and 6 news reporters working for foreign news agencies were selected for interviews. Data were analyzed using qualitative methods. The focus of this study was to identify the war photography knowledge of war reporters & the ability to perform the duty on the battlefield. In conclusion, it was proved that the contribution given by the war reporters was less and not up to the standard. In comparison to the foreign news agency reporters, the standard and the ability of local war reporters is not sufficient. Because local news reporters did not have any war reporting or conflict reporting training, updated camera equipment and basic knowledge of conflict reporting. Newspaper companies sent their journalists to the battlefield who were reporting usual political reports. All the war reporters faced Post Traumatic Stress Disorder and they have never met psychiatrists. Local war reporters haven't been to the front line to report the war. They have on duty in the area, which was cleared by the Sri Lankan Army. Local newspaper companies have not paid much attention to their reporters. The findings proved photojournalists must have the particular training for the better reporting.

Keywords: War Reporting, Photojournalism, Newspaper, Journalism, Conflict Reporting

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දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීම සඳහා බිල්බෝඩ්ස් හා කටවූට්ස් තුළ ජායාරූප භාවිතය (ශ්‍රී ලංකාවේ 2015 ජනාධිපතිවරණයට විශේෂිතව)

ඩබ්ලිව්. අමානි ඉරේමිකා රූපසිංහ¹

කැමරාව බිහිවීමත් සමඟ ජායාරූපය, දෘශ්‍ය සන්නිවේදනයේ ප්‍රමුඛස්ථානයකට පැමිණේ. ජායාරූපය විවිධ සමාජ, දේශපාලනික වුවමනා වෙනුවෙන් භාවිත කිරීම එහිදී කැපී පෙනේ. දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීම පිණිස භාවිත කරන කටවූට්ස් හා බිල්බෝඩ්ස් මහජන සම්බන්ධතා මෙවලම් අතර වැදගත් ස්ථානයක් ගනී. මෑත යුගයේ ශ්‍රී ලංකාවේ දේශපාලන මැතිවරණ ව්‍යාපාර තුළ කටවූට්ස් හා බිල්බෝඩ්ස් භාවිතය ප්‍රචලිතව ඇත. දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීම සඳහා බිල්බෝඩ්ස් හා කටවූට්ස් තුළ ජායාරූප භාවිතයේ උපයෝගීතාවය කෙබඳුද? යන්න මෙම පර්යේෂණයේ ගැටලුවයි. දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීම සඳහා බිල්බෝඩ්ස් හා කටවූට්ස් තුළ ජායාරූප භාවිතයේ උපයෝගීතාවය අධ්‍යයනය කිරීම මෙම පර්යේෂණයේ අරමුණයි. පර්යේෂණ ක්‍රමවේදය ලෙස මිශ්‍ර ක්‍රමවේදය භාවිත කළ අතර ප්‍රශ්නාවලිය, අන්තර්ගත විශ්ලේෂණය හා සම්මුඛ සාකච්ඡා මගින් නිගමනයන්ට එළඹුණි. බස්නාහිර පළාතේ කොළඹ, ගම්පහ, කළුතර යන දිස්ත්‍රික්කවල අහඹු නියැදියක් ලෙස ජන්දදායකයින් සිය දෙනෙකු පර්යේෂණය සඳහා යොදා ගත් අතර SPSS හා Excel මෘදුකාංග ඔස්සේ දත්ත විශ්ලේෂණය කෙරිණි. ශ්‍රී ලංකාවේ 2015 ජනාධිපතිවරණයේ ප්‍රධාන අපේක්ෂකයින් වූ මෙමතිපාල සිරිසේන හා මහින්ද රාජපක්ෂ යන අපේක්ෂකයින් සිය දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීම සඳහා භාවිත කළ කටවූට්ස් හා බිල්බෝඩ්ස් තුළ අඩංගු ජායාරූප පර්යේෂණය සඳහා යොදාගත් අතර දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීම සඳහා කටවූට්ස් හා බිල්බෝඩ්ස් තුළ ජායාරූප භාවිතයේ උපයෝගීතාවයක් සිදු නොවුණු බව පර්යේෂණයේ අවසන් නිගමනය විය. දේශපාලන මහජන සම්බන්ධතා ගොඩනැංවීමට මහජන මුදල් නාස්තියෙන් හා පරිසර දූෂණයෙන් තොර වර්තමානයේ දියුණු මහජන සම්බන්ධතා ක්‍රම භාවිතයත්, ඒ සඳහා නිර්මාණශීලී තෙවන ඇසකින් ජායාරූප ලබා ගැනීමත්, රටට ගැළපෙන ප්‍රතිපත්තියකින් අවංකව මහජන සේවය සඳහා කැපවීමත් සිදු කළ යුතු බව පර්යේෂණයෙන් අනාවරණය කරගැනීමට හැකි වීණි.

මුඛ්‍ය පද : “ජායාරූප; දේශපාලනය; දේශපාලන මහජන සම්බන්ධතා; දේශපාලන සන්නිවේදනය; ජන්දදායකයා”

¹ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව

වෘත්තීය අපේක්ෂාවන් සාක්ෂාත් කරගැනීම සඳහා නව සමාජ මාධ්‍ය භාවිතයන් පිළිබඳ අධ්‍යයනයක්

එච්.එම්. මල්ලානි නදීශා¹, ජී. සවිනි සතෝශනී පෙරේරා²

මිනිසාගේ බහුවිධ අවශ්‍යතා සපුරාගැනීම පිණිස මිනිසා සතුව ඇති නිර්මාණාත්මක තාක්ෂණයේ නව්‍ය මුහුණුවරක් වශයෙන් නව සමාජ මාධ්‍ය හඳුනාගත හැකිය. නවීන තාක්ෂණික ක්‍රම භාවිතය මගින් මිනිසාගේ සන්නිවේදන ක්‍රමෝපායන් පුළුල්ව ඇත. විශේෂයෙන්ම නව සමාජ මාධ්‍යවලට තරුණ ප්‍රජාව සහ රැකියා ක්ෂේත්‍රයේ නියුතු පුද්ගලයන් පවා සීඝ්‍රයෙන් නැඹුරු කරගැනීමේ ආකර්ෂණීයභාවයක් පවතියි. රැකියා අපේක්ෂකයින් නිරන්තරයෙන්ම වෘත්තීය අවශ්‍යතා සාක්ෂාත් කරගැනීමට ප්‍රයත්න දරයි. ඒ සඳහා උපයෝගී කරගත හැකි ප්‍රබල මාධ්‍යයක් ලෙස නව සමාජ මාධ්‍ය හඳුනාගත හැකිය. ඒ අනුව මෙම අධ්‍යයනයේ අරමුණ වූයේ වර්තමානයේ ස්ත්‍රී පුරුෂ දෙපක්ෂයම තමන්ගේ උගත්කම සහ පළපුරුද්ද තුළින් වෘත්තීය සොයා ගැනීමට සමාජ මාධ්‍ය ජාලා කොතරම්දුරට ඉවහල් කරගන්නේදැයි අධ්‍යයන කිරීමයි. වෘත්තීය අපේක්ෂා සාක්ෂාත් කරගැනීම සඳහා සමාජ මාධ්‍ය ජාලා කොතෙක් දුරට භාවිත කරන්නේද යන්න පර්යේෂණයේ ගැටලුවයි. එහිදී සමාජ මාධ්‍ය ජාලා ලෙස මෙම අධ්‍යයනයේදී මූලික වශයෙන් ලින්ඩින් පැතිකඩ (LinkedIn Profile), මුහුණු පොත (Face Book), ටුවිටර් (Twitter), බ්ලොග්ස් (Blogs), ආයතනික නිල වෙබ් අඩවි සහ රැකියා සම්බන්ධයෙන් වන ඇප් කෙරෙහි පවතින නැඹුරුතාව කෙරෙහි අවධානය යොමු කරන ලදී. මෙම අධ්‍යයනය ප්‍රාථමික හා ද්විතියික දත්ත ආශ්‍රයෙන් විශ්ලේෂිතය. මෙම අධ්‍යයනයේ නියැදිය වයස අවුරුදු 25ත් 42ත් අතර පුද්ගලයින් 50කින් සමන්විතය. එහිදී ලින්ඩින් පැතිකඩ භාවිත කරන අයදුම්කරුවන් 20ක් සමඟවී ලෙස තෝරා ගැනිණි. එම 50කින් යුතු නියැදිය සඳහා ව්‍යුහගත ප්‍රශ්නාවලියක් ලබාදෙන ලද අතර ඒ ආශ්‍රිත දත්ත සරල සංඛ්‍යාතමය ක්‍රමවේදය යටතේ වගු ප්‍රස්තාර ආශ්‍රයෙන් විශ්ලේෂණය කරන ලදී. අධ්‍යාපනික, රක්ෂණ සහ තාක්ෂණික ක්ෂේත්‍රයේ සේවයේ නියුතු පුද්ගලයින් 10 දෙනෙකු සමඟ පවත්වන ලද සම්මුඛ සාකච්ඡා ආශ්‍රිත දත්ත විස්තරාත්මක ක්‍රමවේදය ඔස්සේ විශ්ලේෂණය කරන ලදී. ඒ අනුව රැකියා සොයා ගැනීමේ ක්‍රම විශ්ලේෂණයට අනුව ආයතනයන්හි නිල වෙබ් අඩවිය භාවිත කරන පිරිස බහුල විය. පුද්ගලයින්ගේ අධ්‍යාපන මට්ටම් අනුව ගත් කල්හි උපාධි, පශ්චාත් උපාධි පුද්ගලයින් වැඩි වශයෙන් ටොප් ජොබ්ස් (top jobs) වැනි රැකියා සම්බන්ධයෙන් වන ඇප්ස් සහ සතිපතා වන පුවත්පත් ආශ්‍රයෙන් රැකියා සොයා ගැනීම කෙරෙහි නැඹුරුතාවයක් දක්වන්නන් විය. රැකියා නියුතු පුද්ගලයින් සම්බන්ධයෙන් සලකා බැලීමේ දී ලින්ඩින් පැතිකඩ භාවිතා කරන පිරිස අවම වේ. රැකියා ලෝකය තුළ අවතැන් වූ ශ්‍රම බලකාය සේවයේ යෙදවීම සඳහා නව අවස්ථා උත්පාදනය කිරීමට නව මාධ්‍ය ජාලා භාවිත කළ හැකිය. ඒ සඳහා නව මාධ්‍ය ජාලා තුළ ද රැකියා අවස්ථාවන්ට මූලික ඉඩ ප්‍රස්ථාවක් ගොඩනැගිය යුතු අතර ඩිජිටල් සාක්ෂරතාවයේ පවතින විෂමතාවට කාලීන වශයෙන් වැඩපිළිවෙලක් අවශ්‍ය වේ.

මුඛ්‍ය පද : සමාජ මාධ්‍ය, වෘත්තීය අපේක්ෂා, නව මාධ්‍ය, රැකියා අවස්ථා

¹ දේශපාලන විද්‍යාව අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, කැලණිය, ශ්‍රී ලංකාව, malee9390@gmail.com
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Influencing Factors of Paddy Production in Sri Lanka

Hareesha H. Withanage¹

Gross Domestic Product is structured by a combination of the agriculture, industrial and service sectors in Sri Lanka. Paddy is the main growing crop of farmers in agricultural sector. In literature review emphasized that there were several factors that affect the production of paddy in Sri Lankan economy such as fertilize usage and land. According to that, the researcher attempted to examine the most reasonable factor affect to paddy production in Sri Lanka. The sample of the research collected from Central Bank Annual Report in Sri Lanka according to the secondary data of paddy production, fertilize usage and land from 1987 to 2016. The research revealed that paddy production gradually increased in 2015 although it has decreased in 1996. In the analysis of the research, the researcher built two hypotheses. The null hypothesis was there is no relationship between fertilize usage, land and the paddy production. The alternative hypothesis was there is a relationship between fertilize usage, land and the paddy production. The findings of the research emphasized that there is a positive relationship between fertilize usage, land and the paddy production by accepting the alternative hypothesis under regression analysis. It means that when fertilize usage was constant if land factor increased in one unit, the paddy production also increased in 1.44 units. And also when land factor was constant if fertilize usage increased in one unit, the paddy production also increased in 1.33 units. Finally, it described that the land factor was made more influence on the paddy production.

Keywords: Paddy Production; Fertilize Usage; Land; Factor Influence

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Identifying the Negative Influence of Political Culture on Development Policies in Sri Lanka

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The main objective of this study is to the negative influence of political culture on development policies that have been implemented by the successive governments in Sri Lanka since independence in 1948. Based on the descriptive analysis of this study, the impact of the political culture of Sri Lanka has badly affected the implemented development projects and it causes to make lots of issues of the expected results of the projects. Sri Lanka remains a developing nation in the Asian region even after 70 years of independence. Without a proper national development policy, the island nation has failed to come up to par with many other Commonwealth nations in a post-colonial era. Modes of thinking and policy stances of political parties in the country were influenced by their ideological allegiances. The difference and the contrast of the main political parties who have governed the country are directly and badly affected development projects. The United National Party (UNP), the right of the center of Sri Lankan politics, adopted a basically libertarian ideology, in combination with an element of social democracy. The Sri Lanka Freedom Party (SLFP), the principal alternative to the UNP, was basically social-democratic in its ideological orientation but had also absorbed certain elements of socialist ideology from the radical left. But, many other Commonwealth nations have managed to pass Sri Lanka in the Development race thanks to their cemented and inclusive national development policies but as a country, Sri Lanka is yet to identify or launch a proper national development policy owing to the negative influences of its political culture in a post-colonial era.

Keywords: Political Culture, Development Policies, national development policy, development projects

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Sustainable Solutions for Drinking Water Problem in the City of Matara

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This study emphasizes how to give a sustainable solution for drinking water problems and how to manage water resources in the Matara city using a sustainable water management system. The main objectives of this research are to identify drinking water issues, identify the main causes behind drinking water issues and suggest sustainable ways to protect drinking water resources in Matara Municipal Council Area because it has been the main hub of Development plan of Matara District. A mixed methodology has been applied for the research. Both Primary and secondary data were collected to achieve the research objectives. A questionnaire survey and interviews have been conducted. Beside them, secondary data sources such as maps, institutional data, and previous research reports will be referred for higher accuracy. According to the first part of the research has identified the major issues of drinking water in the City of Matara, The River Nilwala is the main source for the supply of pipe born water for the Matara municipal area. Water is taken for treatment at the intakes of Nadugala, Kadduwa and Balukawala pumping station to the treatment plants at Nadugala and Malimbada and treated in conformity with the prescribed standards. The treated water is then delivered by the storage tanks. Seventeen water tanks supply water to Matara. People who lived in the Matara Municipal Council area they don't have the volume of water needed for daily consumption. A major aspect of the water crisis in Matara that purified drinking water is used for every kind of water requirement of households. The population growth in the Matara town is expected to increase in the future and the water resources should increase. Clean drinking water is the well-being in terms of health and economy. Ensuring access to clean water service is the first step in eliminating poverty and essential for the overall economic and social development of a country. Therefore in the second step will focus on sustainable solutions for the drinking water issue of the City of Matara.

Keywords: Water, Sustainability, Management, Population, The City of Matara

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Purchase Intention of Consumers on Heirloom Rice Varieties in Sri Lanka; Special Reference to Galle District

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Sri Lanka is one of the precious islands which has been blessed by Mother Nature. Hence the agricultural sector was the major economic contributor during the hydraulic civilization. Since the ancient kingdoms, rice cultivation was not only an economic activity, but also a way of life for the people in Sri Lanka. According to the historical evidence, during the kingdom of Polonnaruwa, Sri Lanka introduced more than thousands of indigenous rice varieties to the world. In the 1940s the Department of Agriculture identified 150 varieties of traditional rice and released them to farmers to cultivate. Hence, at present only about 0.1% of traditional rice cultivations can be seen out of the total cultivated lands in Sri Lanka. These heirloom rice varieties contain higher nutritional values. Under this backdrop, it is prudent to answer the question of what factors affect the purchase intention of heirloom rice varieties by consumers, thereby influencing the payment behavior towards heirloom rice varieties in Sri Lanka. The general objective of this study is to identify the perception of consumers regarding purchase intention and payment behavior for heirloom rice varieties. Furthermore, the study attempts to investigate the relevance of the Theory of planned behavior on purchase intention and payment behavior of the consumers on heirloom rice varieties. The total population of Galle District was the target population of this study. The simple random sampling technique was adopted to generate a sample of 500. Data was collected using a questionnaire survey on purchase intention and payment behavior towards the heirloom rice varieties of Galle district residents. The response rate for the questionnaire was 92.6%. The operational methodology for this study is a factor analysis, which has three stages. The first stage is an Exploratory Factor Analysis to identify the major factors that influence the purchase intention and payment behavior. The second stage is a Confirmatory Factor Analysis to confirm the identified major factors from the Exploratory Factor Analysis. Finally, the Structural Equation Model is used to identify the relationships between the identified factors in the model. According to the Factor analysis, the study found that Attitudes, Normative Beliefs and Perceived Behavioral Control have influenced the perception of consumers to purchase the heirloom rice varieties. Moreover, the study revealed that Attitudes, Normative Beliefs and Perceived Behavioral Control have a significantly positive impact on Purchase Intention of heirloom rice varieties. Normative Beliefs have a 96% impact on Purchase Intention, and is the most crucial factor. Further, the study found that Purchase Intention influenced 73% on the Payment Behavior.

Keywords: Factor Analysis; Payment Behavior; Purchase Intention; Theory of Planed Behavior

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ශ්‍රී ලංකාවේ මෙගලිතික සුසාන සංස්කෘතියෙන් හමුවූ මැටි භාජන පිළිබඳව විමර්ශනාත්මක අධ්‍යයනයක් (ඉබ්බන්කටුව මෙගලිතික සුසාන සංස්කෘතිය ආශ්‍රයෙනි)

මහේෂි සමරවික්‍රම¹, මහිෂානි අබේකෝන්²

මානවයා ශිෂ්ටාචාර ගතවීමත් සමඟ අත්පත් කරගත් දියුණු නිර්මාණ ශක්තියක් ලෙසින් මැටි අමුද්‍රව්‍ය නිර්මාණකරණය පෙන්වා දිය හැකිය. පූර්ව නියොලිතික මෘද්භාණ්ඩ ((PPN- Pre Pottery Neolithic period) අවස්ථාවේ සිට පශ්චාත් නියොලිතික යුගය දක්වා මැටි නිෂ්පාදනයන් භාවිතයට ගනු ලැබීය. මැටි භාජන කෙරෙහි ප්‍රථමයෙන් මිනිසා යොමු වූ කලාපය ලෙසින් යුරෝපය සැලකේ. නමුදු තවද පිළිගැනීමක් ලෙසින් පෙන්වා දිය හැකි වන්නේ, සියලු කලාපවල සමකාලීනව ආරම්භ වී වැඩි වර්ධනය වූ බවය. ද්‍රව්‍යාත්මක සාධක මත පදනම්ව අතීතය ප්‍රතිනිර්මාණය කිරීමේදී මැටි භාජන කෙරෙහි සුවිශේෂී වූ අවධානයක් යොමු වේ. ඒ අනුව ලංකාවේ මේ දක්වා සිදුකරන ලද කැණීම් බොහොමයක් ඇසුරින් මැටි භාජන කැබැලි හෝ සම්පූර්ණ වශයෙන් සාධක අනාවරණය වී ඇත. ආරාමික සන්දර්භයන්ගෙන් හමු වූ මැටි භාජන සාධකයන් , ලෝකික පරිශ්‍රයන්ගෙන් අනාවරණය වූ මැටි භාජන සාධකයන් , බෞද්ධ ස්මාරක ආශ්‍රයෙන් හමු වූ මැටි භාජන සාධකයන් , මෙගලිතික සුසාන ආශ්‍රයෙන් හමුවූ මැටි භාජන සාධකයන් ලෙසින් වර්ගීකරණය කළ හැකිවේ. ශ්‍රී ලංකාවේ මෙගලිතික සුසාන ක්ෂේත්‍රයන් අතරින් සීගිරිය - දඹුල්ල කලාපයේ පිහිටා ඇති ඉබ්බන්කටුව මෙගලිතික සුසානය ඉතා වැදගත් වේ. ඒ අනුව මෙහි සුසාන ඉදිකිරීම සඳහා පාෂාණ භාවිත කර ඇත. සුසාන සන්දර්භය තුළින් මියගිය පුද්ගලයින් සඳහා සොහොන් නිර්මාණය කිරීම හා මියගිය පුද්ගලයා වෙනුවෙන් තැන්පත් කරන ලද භාණ්ඩ සංස්කෘතියක් අනාවරණය වේ. සුසාන සන්දර්භයට අයත් මැටි භාජන විශේෂයෙන්ම මිනී අළු තැන්පත් කිරීමට හා පරිහරණය කරන ලද දෑ තැන්පත් කිරීමට යොදා ගෙන ඇතැයි නිගමනය කර ඇත. එම ප්‍රස්තුතයන් මත පදනම්ව මෙම පර්යේෂණය හරහා ඉබ්බන්කටුව මෙගලිතික සුසාන සම්ප්‍රදායට අයත් මැටි භාජනයන්හි ආකෘතිමය වශයෙන් සුවිශේෂී ලක්ෂණයන් අනාවරණය වන්නේ ද යන්න අධ්‍යයනයට ලක්කිරීම සිදුකරනු ලබයි. එම පර්යේෂණ ගැටළුව විශ්ලේෂණය කිරීම සඳහා පර්යේෂණ අරමුණ ලෙසින් දැක්විය හැකි වන්නේ , ශ්‍රී ලංකාවේ මෙගලිතික සුසාන සංස්කෘතියෙන් හමුවන මැටි භාජන ලෝකයේ පැවැති අනෙකුත් මෙගලිතික සුසාන ආශ්‍රයෙන් හමුවන මැටි භාජන සමඟ සමානතාවයක් පවතින්නේ ද අවබෝධ කරගැනීම විය. මේ සඳහා දත්ත රැස්කිරීමේ දී සාහිත්‍යමය මූලාශ්‍ර අධ්‍යයනය කිරීම හා නිරීක්ෂණ අධ්‍යයන ක්‍රමයන් හා සම්මුඛ සාකච්ඡා වැනි විධික්‍රම භාවිතයට ගැනුණි. මෙම අධ්‍යයන ක්ෂේත්‍රය ඔස්සේ සමාලෝචනය කළ හැකි වූයේ, මෙගලිතික සුසාන සම්ප්‍රදායට අයත් මැටි භාජන කෙරෙහි සාමාන්‍යත්වයක් සහිත මැටි භාජන ලෝකයේ අනෙකුත් මූල ඓතිහාසික යුගය නියෝජනය කරනු ලබන සන්දර්භයන්ගෙන් ලැබී ඇති බවත් මෙම මැටි භාජන නිරීක්ෂණය කිරීමෙන් දැකගත හැකි වූ ආකෘතිමය ලක්ෂණ අනුව සුවිශේෂී ලක්ෂණයන් දැකිය හැකි බවත් මෙම සම්ප්‍රදාය නියෝජනය කරනු ලබන ආවේණික මැටි බඳුන් ආකෘතීන් ද හඳුනා ගත හැකි බවත් වේ.

Keywords: මෙගලිතික යුගය, මැටි භාජන , මූල ඓතිහාසික යුගය, ඉබ්බන්කටුව , සුසාන

¹ පුරාවිද්‍යා අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය , ශ්‍රී ලංකාව, msarchi92@gmail.com
² පුරාවිද්‍යා පශ්චාත් උපාධි ආයතනය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව

Exposure of Social Structure in Director Pa.Ranjith's Films

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Cinema has played a role in caste and politics of India, Political mediation employed by the veteran actors will have to come to terms with its specific screen images. Especially Tamil cinema has always been in a constant struggle to eradicate as well as to maintain the boundaries between the dominant and the dominated. There are many directors in the cinema field; within them some are getting the in-depth place among their viewers. In that way director Pa.Ranjith has carved a niche for himself by bringing social and political realities of contemporary Tamil Nadu into mainstream cinema. His films do not compromise on his politics and show a natural progression of political discourse on the life of Dalits and other marginalized communities. This paper deals with the analysis of director Pa.Ranjith's four films Attakathi (Cardboard knife) (2012), Madras (2014), Kabali (2016), and Kaala (2018). This researcher's main purpose is to find out the way of exposing social structure throughout his four films and to find out what strategies are being used by the director to expose the structure. The hypothesis of this research is the four films of director Pa.Ranjith represent social structure through their screening, characterization, languages and even with colors also. The film Attakathi is a light hearted romantic comedy which won critical acclaim for its honest and realistic treatment. Film Madras depicts life in north Chennai, and it revolves around how two political parties lay their claim to it. The film Kabali concerns the gang war between the protagonist and antagonist who attempts to protect his family from enemies, gained in his time as a gangster. Kaala A resident of Dharavi unites the people living in his area to stand up against a ruthless politician who dreams of taking over their land. The descriptive content analysis with semiotic approach, and in depth interviews used as the study methodology. Secondary data has been used as sources. The cultivation theory and auteur theory have been used to analyze the theoretical framework. As in the conclusion, the symbols and colors were used as main strategies to expose the social structure including the caste, status, differentiation and challenges of middle class people by director.

Keywords: Social structure, theme, director, setting of films, caste and politics

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ජේ.ඒ. තරුණ මාධව¹

රේඛා රූප මගින් අදහස් නිරූපණය ආරම්භය දුරාතන මානව ශිෂ්ටාචාරය කරා විහිදී යයි. ආදි වාසී ගෝත්‍ර යුගයේ මානවයා සිය මූලික අවශ්‍යතා වන ආහාර, ආරක්ෂාව හා ලිංගික අවශ්‍යතා වෙනුවෙන් ශබ්ද සංඥා සංකේත භාවිතයේ සීමාවන් දුටුවේ ය. එතැන් සිට දෘශ්‍ය රූප උපයෝගී කොට ගෙන සිය හැගීම් ප්‍රකාශ කළ බව මානව විද්‍යාඥයින්ගේ පිළිගැනීමයි. සංඥා රූප විකූ වලට නැගීම ආරම්භ කරන වූයේ ඉන් අනතුරුවය. ලේඛනය, චිත්‍රණය, හැගීම් ප්‍රකාශන මාධ්‍යයක් නොව තොරතුරු, විනෝදය, පෙළඹවීම, විරෝධය සඳහාද ක්‍රමයෙන් භාවිතා වන අයුරු සන්නිවේදන විකාශනය තුළ හඳුනා ගත හැකිය. යුරෝපයේ ඇතිවන කාර්මික විප්ලවයත් සමඟ ප්‍රකාශන මාධ්‍යයක් ලෙස මුද්‍රණ ශිල්පය ඔස්සේ වර්ධනය වූණු ලේඛනය සමාජ විරෝධය සඳහා කැරකේවර් විකු හෙවත් කාටූන් චිත්‍ර ඇදීම 15,16.17 සියවස්වල දී ප්‍රංශය, ජර්මනිය, ඉතාලිය හා සෙසු යුරෝපීය රටවල ව්‍යාප්ත විය. මේ සමඟම මෙතෙක් විවිධ පසුකල පත්‍රිකා මත අදිනු ලැබූ චිත්‍ර, කාටූන් පුවත්පත් මාධ්‍යයට එක් වුණි. කාටූන් සෑම පුද්ගලයෙකුටම රස විඳිය හැකි කලාවක් වේ. භාසා රසය හෝ උපහාසය ජනනය වන ආකාරයට නිර්මිත කාටූන් චිත්‍ර මගින් සාක්ෂරතාවක් රහිත ජනතාවට පවා ආමන්ත්‍රණය කර හැකි වීමත්, පහසුවෙන් තේරුම්ගත හැකි වීමත් සුවිශේෂිත කරුණ වේ. දේශපාලන මුහුණුවරකින් යුත් මුලින්ම කාටූනය ප්‍රංශයේ චිත්‍ර ශිල්පී "ඔනෝරේ ඩෝමියර්" අතින් බිහිවූ අතර එය මගින් එකල රජය විවේචනය කර ඇත. ශ්‍රී ලංකාවේ පළ වූ මුල්ම කාටූනය ලෙස සිංහල විශ්ව කෝෂයේ දක්වන්නේ "දිනමිණ" පුවත්පතේ පළ වූ " මුදලාලි" කාටූනයයි. මෙම පර්යේෂණයේ දී මා විසින් මුලිකව අධ්‍යයනය කරන ලද්දේ රාවය පුවත්පතේ කේ.ඩබ්ලිව්. ජනරජන මහතා විසින් අදින ලද වර්ෂ 2004 සිට 2006 වසර අතර කාලයේ වන්දිකා කුමාරතුංග මැතිණියගේ ජනාධිපති පාලන කාලය තුළ පළ වූ කාටූන් අධ්‍යයනය කිරීමයි. වෘත්තියෙන් නීතිඥ වරයෙකු වන ජනරජන ජ්‍යෙෂ්ඨ මාධ්‍යවේදියෙක් සහ කර්තෘ වරයෙක් හා කාටූන් ශිල්පියෙකි. කේ.ඩබ්ලිව්. ජනරජන රාවය පුවත්පතේ වර්ථමාන කර්තෘ ලෙස කටයුතු කරන අතර ඔහු විසින් එම පුවත්පතේ කතු වැකිය, විශේෂාංග ලිපි හා අනෙකුත් ලිපි කටයුතු කරගෙන යමින් පවතියි. ඔහුගේ කාටූන් බොහෝවිට දේශපාලනමය මුහුණුවරකින් දේශපාලන කරනු අරඹයා සිදු කරන ලද කාටූන් බව දක්නට ලැබේ. වැඩිදුරටත් ජනරජන සමඟ සම්මුඛ සාකච්ඡා සිදුකර ලබා ගත් තොරතුරු හා එම පුවත් පතේ කාටූන් ශිල්පීන් නිර්මාණකරණයේ අදහස් ද මෙම පර්යේෂණයේ දී අධ්‍යයන කර ඇත. එම කාටූන් වල සංඥා රූප විග්‍රහයන්ද, කාටූන් අධ්‍යයන කිරීම සඳහා මා විසින් භාවිතා කරන ලද ක්‍රමවේදයන් හයක් පිළිබඳව ද මෙම පර්යේෂණයට ඇතුලත් කොට ඇත. මෙම කාලය තුළ නිර්මාණය කරන ලද දේශපාලනමය කාටූන් වන්දිකා මැතිණියගේ පාලන කාලයේ ආණ්ඩුවේ පවතින අස්ථාවරත්වය කුමන ආකාරයෙන් විවේචනය කළේ ද, පාලනයේ විෂමතා හා ගැටළු, වංචා දූෂණ කුමන ආකාරයෙන් නිරූපණය කර ඇති ද යන්න අධ්‍යයනය කර ඇත. එම අවස්ථාවල ලිපි වලින් ඇතිකල හැකි බලපෑමට වඩා විරුද්ධත්වය ප්‍රකාශ කිරීමට ඉතා සුක්ෂමව, විශාල අදහස් ප්‍රමාණයක් ජනමත කිරීමට, ප්‍රභසනාත්මක ලෙස කාටූන් උපයෝගී කර ගෙන ඇති ආකාරය අධ්‍යයන කරන ලදී. එමෙන්ම එම කාටූන් පාඨකයන් තුළ කුමන ආකාරයේ විකල්ප මතවාදයන් ගොඩ නැගීමට දායක වී තිබේද යන්න පිළිබඳව වැඩි දුරටත් මෙම පර්යේෂණයේ දී අධ්‍යයනය කර ඇත.

මූඛ්‍ය පදය : "ජනරජන කාටූන්, වන්දිකා, සංඥා රූප, විකල්ප මතවාද"

¹ මානවශාස්ත්‍ර පීඨය, කැලණිය විශ්වවිද්‍යාලය

The Easter Sunday Attack and Banning Social Media – A Reception Analysis

Dinesh Koduthor¹

Nowadays social media has been important part of one's life. Social media plays a vital role in transforming people's life style. It includes social networking sites and blogs where people can easily connect with each other. With that currently media involve many fields including economics, social development and even with war. After the emergence of social media, now each and every field seems a new revolution with in them. The block on social media including Facebook and Whats App and Instagram services have announced by the Sri Lanka government's official news portal, which cited the spread of "false news reports" online. The main purpose of this research is to find out that how it seems the freedom of expression and freedom of speech in social media after the Easter Sunday attacks. This paper deals with the users of social media and their views on this, so the audience analysis/reception analysis was used as a methodology to analyze. For this reception analysis, the researcher has included all ethnicity of students from University of Jaffna. In that way, the researcher has selected 20 students from each ethnicities, such as Sinhala, Tamil and Muslim, totally altogether 60 students were used as receptions. Questionnaires were distributed among those students and focus group discussions were also conducted by the researcher and those information were used as primary data. Further, research articles, books, journals were used as secondary data. The hypothesis of this research is the freedom of expression and speeches in social media are controlled/limited aftermath the Easter attack. Two-step follow theory and social learning theory were used as the theories of this research. Finally, the conclusion of this research is that, among 60 students 30 students were replied the banned of social media on these time is no need. It is not an essential; even the freedom of expression is limited among its users.

Keywords: Social media, easter Sunday, attack, banning, freedom of speech

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Military Analysis of Advance Phase of the Vijithapura Battle

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Vijithapura Battle was the first recorded professional battle in Sri Lankan history, which is fought between King Dutugamunu and the Chola invader King Elara. Although there were numerous literature sources can be identified, it was really emphasized the incidents of the history. Even though it was not analyzed in military eye sight, it was a significant battle which displayed the indigenous military knowledge of Sri Lanka. This research totally based on the secondary data sources and the research approach fully acquiesces with qualitative method. Scope of this research is to analyze the advance phase of the Vijithapura Battle using present day battle appreciation format of Sri Lanka Army. King Dutugamunu's force had to advance nearly 2 years in various terrain and the weather conditions until they reached Vijithapura. Along his advance King Dutugamunu had to fight against 36 Generals of King Elara who were deployed along the Mahavali River. By utilizing indigenous military tactics of spies, creating dissension among the enemy and deception methods such as set up his own effigy in different places King Dutugamunu was able to defeat all of them. During the long march between Magama and Vijithapura the force of King Dutugemunu has considered many factors which are not having much recognition of the present day battle appreciation format. Basically, they consider number of facts such as weather condition throughout the march. Where else in the present military context earmarked only few concentrations regarding that fact in the battle appreciation formats. When the Battle of Vijithapura is analyzed, it can be mentioned that, though the weather factor is not concerned much it has influenced directly for the succession of the battle. Establishing of base camp and protection are other fact that King Dutugamunu was highly concerned where else present military not concerning during the advance. Weather and the base camp strategies are the things that should be embedded to the present advance appreciation format for the battle success.

Keywords: Vijithapura Battle; Anuradhapura Kingdom; Ancient Military Tactics; Advance Phase; Battle Appreciation Format

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The Potential of Use Slope Gradient as a Criterion for Demarcating Agro Ecological Zones of Wet Zone, Sri Lanka: With Special Reference to Kegalle District

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This study is focused to introduce the importance of slope gradient for existing criterion for demarcating agro ecological zones of the Wet Climatic Zone (WCZ). The case is special reference to Kegalle District. There are 46 agro ecological zones in Sri Lanka and those defines with considering similar climatic variations, soil condition as a major factor and beyond this stage, it has been concerned elevation regarded from the mean sea level (MSL). Then focus either level of precipitation and spatial changes or soil types when constant level precipitation with vary of soil types. This zonation is the major decision of agriculture; it is a major economic activity, which is majority of local population engaged. Apart from that, commercial and domestic agriculture is the backbone for cultural aspects of traditions Sri Lankan society. Agriculture is playing a key role of land use activities with dynamic scenarios plus unplanned land use and land cover changes are key roles to enhance disaster risk specially the WC. Consequently, there is essential to apply better land use practices including agriculture for the disaster risk reduction.

This study points out that the slope gradient is an important factor for demarcating agro ecological zones in WCZ and the study recommends for applying micro level implementation for agriculture decision-making to risk areas of WCZ. Kegalle District is a one of high disaster risk district for landslide with identified risky and dynamic land use practices.

The study based on spatial analysis with the secondary data collected from Land use and Policy Planning Department (LUPPD) and Department of Survey, Sri Lanka. Then, applied relevant geospatial techniques to manipulate the data for the research purpose. Selected manmade agriculture (MMALs) land covers in 1998 and 2016 as tea, home garden and rubber cultivation were concerned in whole Kegalle District. Arc Map 10.1 is the main Geographic Information System (GIS) for apply relevant Geoprocessing techniques. Couple of slope gradients selected here according to the LUPPD as 30 – 60% gradient use under proper soil conservation methods and more than 60% slope gradient keep with natural vegetation. The results show the MMALs has temporal changes with drastically increasing even in the slopes of more than 60% within last 50 years of period. This situation alarming to consider the slope gradient use as a criterion for demarcating agro ecological zones of WCZ with relevant conditions.

Keywords: Agro ecology; Disaster; Kegalle; Slope gradient; Wet zone

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The Parallel Thinking Pattern of Humans in Developing Military Weapons

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World history and military history which are on par can be discussed neither analyzed individually when the bound historical events and wars are concerned. Therefore, the source of man-made weapons in the military history is often apparent to be connected with the quotidian routine of the ancient man. Ancient weapons used in the battles are recorded to have been manufactured in different parts of the world, but with many similarities seemingly. In this study, the researcher has studied about the evolution of primary weapons and then analyzed the below mentioned groups of weapons which display identical parallel thinking patterns of human beings. This research is mainly based on secondary data and the research approach totally complies with qualitative method. According to the analysis the Native Australians' Boomerang and the ancient Egyptians' Throwing Stick, Sword and the Macahuitl of which the sides are embedded with prismatic obsidian blades, the Native Americans' Gunstock and Native Samoans' War Club to be similar thinking patterns is illustrated here. In addition, the Indian Katar which is a type of push dagger and the Native Americans' all-purpose knife Ulu are two hand held weapons which exhibit similar grasping. Though these weapons were the same in their shape, exterior features, utility and the way of grasping, the men who manufactured these weapons were far away from each other and did not exchange knowledge among them. So, it concludes that, while they lived in different locations of the world, they have displayed a parallel thinking pattern in weapon development. It can be assumed that, similar pressures experienced by the past man had directed him to similar manufactures and development of weapons.

Keywords: Military history; Evolution of weapons; Similar weapons; Primary weapons; Parallel thinking patterns

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Using Logistic Regression to Estimate the Influence of Environmental Factors on Motor Cycle Road Crash Severity

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The field of transportation has undergone a massive growth with the immense development that occurred with the industrialization. But as a side effect, a huge increase in road accidents can be depicted. It has become one of the leading causes of death and injury in Sri Lanka. Nowadays, the rate of incidence of traffic accidents is increasing severely. Much against the popular belief, it is the light vehicles that are most often causing traffic accidents. Each year over 35752 road accidents occur in Sri Lanka, causing on average eight fatalities every day. In every year the highest numbers of deaths occurred with motorcyclists. There are various factors which are related to motorcycle road accidents. So this study was carried out to find the factors influencing the severity of the motorcycle accidents in Sri Lanka. This study was based on the records of the Traffic Police Head Office, Colombo. 171493 motorcycle accident cases were considered during the period 2008-2017. Logistic Regression was used to estimate the severity of factors related to road. The logistic regression model is the most common model for data analysis when the dependent variable is in binary nature. It is normally used to study the association between a binary dependent variable and a group of the continuous or categorical independent variable. The response can take the values 1 or 0. The variable “Nature of the Accident” (Fatal/Non-fatal) is considered as a dichotomous variable, and the factors road surface, weather condition and the light condition are treated as influencing factors on the accident severity. After a series of statistical analyses were conducted, all of the independent variables were identified as influential variables to the accident severity. But as none of the four variables was included in the equation, there were no coefficients for them. Rather, dummy variables which code for each and every independent variable are in the equation, and those have coefficients. Of the road surface variable, two categories namely wet road surface and the slippery road surface were found to be significantly associated with the outcome of the dependent variable. Dry road surface and the road flooded with water were not statistically significant. Of the weather condition variable, two categories were found to be significantly associated with the outcome of the dependent variable namely rainy weather and the fog/mist weather. Clear and cloudy weather was not statistically significant. Of the light condition variable, three categories were found to be significantly associated with the outcome of the dependent variable namely daylight, no light at the night and the improper light at the night. Dusk/ Dawn and good street light at night were not statistically significant. Results from this study reveal that the fitted logistic regression model can be used for the safety improvements against the motorcycle road accidents in Sri Lanka.

Keywords: Accident severity; Environmental Factors; Logistic regression; Motor-cycle accidents

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Application of Queuing Models to Reduce the Waiting Time: Case Study Based on Dental Clinic of Colombo South Teaching Hospital

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One of the major essentials in improving efficiency in the provision of health care services is patient flow. The growing population and health-need due to adverse environmental conditions have led to escalating waiting times and crowding in government hospitals. Queuing theory has effectively been applied to various fields including health care. According to the previous literature, the application of queuing theory enhanced the efficiency of the waiting time of both dentists and patients. As a developing country, Sri Lankan government hospitals also face the challenge of queuing problems. The problem of this study is identifying an appropriate queuing model to enhance the efficiency of waiting time in the Dental clinic in Colombo South Teaching Hospital (CSTH). This study has used the secondary data obtained through the annual bulletin of Colombo South Teaching Hospital Statistic unit, Hospital data Queries and also primary data were obtained by the direct observations and structured questionnaire within January 2019. In the analysis purpose, this study mainly used queuing approach with M/M/1, M/M/S, M/M/S/N systems and the service disciplines like first come first out, priority and shortest job first. Under these queuing models, study has calculated the various parameters to measure the queue performance in a dental clinic in the CSTH. In this case study use M/M/4 queue model to characterize the patient flow in the Dental clinic of CSTH and M/M/S/N system characterized at the light surgery section of the dental. Under these queuing models, this study has measured various parameters such as Utilization factor, Average queue length, Average number of system, Average waiting time in the queue, Average waiting time in the system, Idle time of the servers and Probability of exactly n customers in the system, etc. The Multiple Single-Server queuing model is employed at the dental clinic. This implies that patients on arrival to the clinic join a queue to see any out of about 3 to 5 doctors who are consulting at the same time. All dentists have a single line of patients waiting to be attended to and the patients are directed to the queues by the nurses and record staff of the clinic. The patients are directed to queues in the order they arrived. This study has considered that the number of dentists is less than with the number of beds. Practice shows that the majority of the cases the dentists can deal with more than 1 patient in 25 minutes. Some of the suggestions from patients included more dentists be employed to reduce waiting time on the queue, doctors need to come on time to avoid stagnation of patients at the clinic, first-come-first-serve discipline should be observed on the queue to ensure fair play, and records staff should not take bribe from patients for the purpose of jumping the queue. Queues should arrange on the aspect of service provided by each dentist.

Keywords: Dental Clinic, Efficiency, Patient flow, Queuing models, Waiting time

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Significance of Forest Tanks (*Kuluwew*) Renovations in the Cascade Tank Systems (*Ellanga*) in Dry Climatic Zone of Sri Lanka: The Cases from the Cascades in Puttlam District

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This study investigates the significant role of *Kuluwew* (forest tanks) to sustain the forest ecosystems and the *Ellanga* (Cascades) social-ecological systems of the Dry Climatic Zone (DCZ) of Sri Lanka and points out the neediness of renovating these abandoned tanks. The *wew* (Tanks) civilization of Sri Lanka is unique and endemic because the tank systems have their own philosophy, science, technology, and arts. Basically, these tanks have been built by the kings of Sri Lanka under the Buddha's thoughts. King Parakramabahu the Great (1153 AD –1186 AD) has concluded the philosophy of irrigation tanks in Sri Lanka as “truly in such a country, not even a drop of water that comes from the rain must flow into the ocean without being made useful to all living beings”. Under the concept, the cascade tanks lie on small valleys with low gradient in the DCZ to provide water for all needs of human beings and other living beings in the social and ecological systems. Consequently, there are many types of tanks in the same cascade and they play different roles. The *kuluwew* are located near to the forest or inside the forest for especial purposes like providing water for wild animals, reduce the silting, filtering the debris, store the rainwater and enrich the groundwater level, supply water to the irrigation tanks by seepage, maintain the food chain providing water, fruits, grass, leaves etc. Unfortunately, after the king's periods, the modern rulers did not pay adequate attention to protect those tanks and now they are malfunctioned. Consequently, lots of wild animals, have been migrated into the villages and it has become a major issue of tank villages in DCZ of Sri Lanka. Wild elephants, monkeys, porcupines, giant squirrels, wild bore, and hundreds of insects and caterpillars are invading the village ecosystems and threaten the whole wellbeing of settlers unprecedentedly. This study has done 07 case studies in 07 major cascade systems in Puttlama District. There are 159 tanks altogether in these 7 cascade systems and out of the 34 tanks are forest tanks. The main data collecting technique is PRA and resource and hazard maps, seasonal calendar, matrix analysis, transect walks, focus group discussions were the tools. The study has revealed that all the forest tanks have not been renovated for many decades and they are malfunctioned. Consequently, there is a lack of water and edible plants and fruits for the animals in annual dry periods from March to October. Therefore wild animals have been motivated to enter the villages and nearby farmlands. Sometimes some insects, rats and snakes are also coming into the residential and farming areas. The conclusion is that these forest tanks should be renovated systematically and the wild animal threat may reduce by 80 percent after a full renovation of all the forest tanks and restore the forest ecosystems.

Keywords: Forest tanks, *Kuluwew*, Cascades, *Ellanga*

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ඔස්සේ ගොඩනැගුණු පානම ජනසමාජයේ උප සංස්කෘතිකමය අන්‍යෝන්‍යතාවය**

තුෂාර විකාරණ¹, අමරසිරි වික්‍රමරත්න²

ක්‍රි.ව 1818 උච්ච වෙල්ලස්ස පාදක කරගනිමින් සිදුවූ ශ්‍රී ලංකාවේ පළමු නිදහස් සටනේ ප්‍රතිඵලය වූයේ බ්‍රිතාන්‍යයන් විසින් දේශීය සටන්කරුවන් පරාජය කිරීමයි. එම පරාජයේ අත්දැකීමත් ඒ ඔස්සේ ජනිත වූ පීඩනය හේතුකොටගෙන උච්ච වෙල්ලස්ස නිදහස් සටනට දායක වූ ජනතාව ආරක්ෂාව උදෙසා කඳුකරය අත්හැර පහතරට ප්‍රදේශ වෙත විතැන් වූහ. මේ අතරින් ගොවිගම කුලයට අයත් ජනතාවක් ඔස්සේ පානම ග්‍රාමය ජනාවාස වී තිබේ. මෙලෙස විතැන් වූ ජනතාව විසින් තම අන්‍යෝන්‍යතාවය සගවාගැනීමේ ආරක්ෂක අවශ්‍යතාවය සපුරාගන්නා ලද්දේ කෙලෙසද යන්න මෙම අධ්‍යයනයේ අධ්‍යයන ගැටලුව විය. එම ගැටලුව නිරාකරණය කරගැනීමේ අරමුණින් සිදුකරන ලද මෙම අධ්‍යයනයේ ප්‍රාථමික දත්ත රැස්කිරීමේ විධික්‍රමය වශයෙන් නිරීක්ෂණ ක්‍රමය සහ සම්මුඛ සාකච්ඡා ක්‍රමය භාවිත වූ අතර ද්විතීයික දත්ත මූලාශ්‍ර වශයෙන් ප්‍රකාශිත දත්ත මූලාශ්‍ර භාවිත විය. උච්ච වෙල්ලස්ස නිදහස් සටනින් පසු ආරක්ෂාව පහා ලාහුගල, වඩගම ආදී ප්‍රදේශ වෙත විතැන් වූ ජනතාව අතරින් පානම ග්‍රාමය ජනාවාස කරගත් පිරිස ආරක්ෂක අවශ්‍යතාවය මත අවට පිහිටි පොකුණිල්, අක්කරෙයිපත්තු වැනි ග්‍රාමයන්හි ජීවත් වූ දෙමළ ජනතාව සමග මිශ්‍ර වූ බවක් දක්නට ලැබේ. ඒ ඔස්සේ තම සිංහල නම් වෙනුවට දෙමළ උච්ච උච්ච ගත් නම් නිර්මාණය කරගත් සිංහල ජනයා දෙමළ භාෂාවේ වචන බොහොමයක් තම වහරට එක්කරගන්නා ලදී. උච්ච වෙල්ලස්සේ සිටියදී බුද්ධාගම ඇදහූ මෙම ජනයා බුද්ධාගම ඇදහීම වෙනුවට දෙමළ සමාජයටද එකඟවිය හැකි වූ පත්තිනි ඇදහිල්ලට හුරු වූහ. සිංහල අලුත් අවුරුදු සැමරීමේ වාරිත්‍රයට තිබූ ප්‍රමුඛත්වය පාලන-පත්තිනි විශ්වාසය හා බැඳුණු අංකෙළිය නම් ජන ක්‍රීඩාව වෙත ලබා දුන්හ. උච්ච වෙල්ලස්සේ සිටියදී ගත කළ කෘෂිකර්මාන්තය පාදක කරගත් දිවිපෙවෙත වෙනුවට දඩයම, මී කැඩීම, ධීවර කර්මාන්තය ආදී වූ විවිධාකාර වෘත්තීයවලට හුරු වූ ජනයා එමගින්ද ස්වකීය අන්‍යෝන්‍යතාවය සැඟවීමට උත්සහ කළහ. මේ අනුව විශ්ලේෂණයෙන් උකහාගත හැකි සොයාගැනීම් ලෙස ක්‍රි.ව 1818 උච්ච වෙල්ලස්ස නිදහස් සටනින් පරාජය වී පානම ග්‍රාමය ජනාවාස කරගත් සිංහල බෞද්ධ ජනයා බ්‍රිතාන්‍ය පාලකයන්ගෙන් සැඟවී සිටීමේ අවශ්‍යතාවය මත තම ආගම, ජාතිය, කුලය, භාෂාව ආදී වූ සියලු ආකාර අන්‍යෝන්‍යතා සඟවා වෙනත් ජනකොට්ඨාශයක් සමග මිශ්‍ර වී පානම ග්‍රාමයට සුවිශේෂී වූ උප සංස්කෘතික ලක්ෂණ බොහොමයක් නිර්මාණය කරගෙන ඇති බව දැක්විය හැකිය. බ්‍රිතාන්‍ය පාලනය අවසන් වුවද අද වන විටද පානම ග්‍රාමයට අන්‍යෝන්‍යතා එකී උප සංස්කෘතිකමය ලක්ෂණ දැකගත හැකිවීම සුවිශේෂීත්වයක් ලෙස පවතී.

ප්‍රමුඛ පද: උච්ච වෙල්ලස්ස, නිදහස් සටන, පානම, පත්තිනි ඇදහිල්ල, උප සංස්කෘතිය

¹ පොදු හැදෑරුම් දෙපාර්තමේන්තුව, අධ්‍යයන අංශය, ශ්‍රී ලංකා යුද්ධ හමුදා විද්‍යාපීඨය, දියතලාව, ශ්‍රී ලංකාව
² භාෂා අධ්‍යයන අංශය, කලා හා සංස්කෘතික පීඨය, ශ්‍රී ලංකා අග්නිදිග විශ්ව විද්‍යාලය, ශ්‍රී ලංකාව

Straddled Boundaries of Health Care in a Sri Lankan Village: A Medico-Anthropological Analysis

J.A.P.S. Perera¹, B.H. Angammana²

Medical Pluralism (MP) is a vital phenomenon, deeply focused and widely studied in Medical Anthropology and Medical Sociology. Sri Lanka is a medically pluralistic country which offers a wide array of health care/treatment options which are available and utilized successively, alternatively, and/or simultaneously. However, the scholarship on MP in the Sri Lankan context mainly carries the biomedical perspective. In this background, we explored how socio-cultural factors and structures shape MP in a Sri Lankan rural village while there is a rapid proliferation of bio-medicine and health care technologies ranging from basic rural dispensaries to e-health facilities at the macro level. Our objectives were to; identify the dynamics of MP in the chosen village, identify how pluralist medical environment influence the health seeking behavior of the villagers and identify the reasons to cross/straddle and continue medically pluralistic situation in the village. This was an ethnographic study conducted in Dorakumbura Village in Matale district in 2018. The method of data collection included observations, interviews (10), and focus group discussions (05) conducted with a wide array of respondents (ranging from peasants, traditional healers, exorcists, astrologers, doctor, nurses, treatment seekers, to village administrative and related stake holders). We adopted the narrative analysis as the method of data analysis. The research revealed that there are three main sectors of medical pluralism; popular sector, folk sector and professional sector and villagers adopt a combination of treatment practices drawing from local, regional and cosmopolitan medical systems. Kinship and family ties still play a major role in transmitting the traditional knowledge on diseases and related treatments among the villagers studied. The peasants revealed very diverse health beliefs and they follow diverse health care/treatment practices from various health traditions which are based on a wide range of social, cultural, ecological and structural factors that shape people's choices and decisions on health. Although there seems to be a co-existence of several treatment traditions among the villagers, bio-medicine still exerts dominance. Further, cultural propensities and religious faith play a significant role in shaping pluralistic medical practices among villagers studied.

Keywords: Medical pluralism; health care system; ethnography; culture; Sri Lanka.

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ශ්‍රී ලංකාවේ විද්‍යුත් මාධ්‍ය විකාශන ශ්‍රේණිගත කිරීම පිළිබඳ මාධ්‍ය කර්මාන්තයේ ආකල්පය පිළිබඳ අධ්‍යයනයක්

ප්‍රසංග මාහරණ¹

ශ්‍රේණිගතකිරීම යනු සංඛ්‍යාලේඛන නියඳීමය දත්ත මඟින් පෙන්වන ග්‍රාවක හා ප්‍රේක්ෂක ග්‍රාහක ප්‍රමාණ මත රූපවාහිනී, ගුවන් විදුලි හා අනෙකුත් මාධ්‍ය මැනීම වේ. ශ්‍රේණිගතකිරීම් බලපාන්නේ ද තීරණාත්මක සාධකයක් වන්නේ ද රූපවාහිනී හා ගුවන්විදුලි දැන්වීම් ප්‍රචාරණවලට ය. මාධ්‍ය ආයතනයන්හි ආර්ථිකය අසමානුපාතික ලෙස ඉහළ මට්ටමින් පාලනය, වැඩසටහන් කාල රාමු හා අන්තර්ගතය තීරණය කිරීමේ හැකියාවක් ශ්‍රේණිගත කිරීමේ දත්තවලට ඇත. මාධ්‍ය නාළිකා ප්‍රමාණය සංඛ්‍යාත්මකව ඉහළ යනවිට ප්‍රචාරණ කටයුතු සඳහා දැන්වීම්කරුවන්ට පදනමක් අවශ්‍ය විය. ලංකා මාර්කට් රිසර්ච් බ්‍රොෆර් (LMRB) සහ සර්වේ රිසර්ච් ලංකා (SRL) යන පෞද්ගලික සමාගම් දෙක පමණක් ශ්‍රී ලංකාවේ විද්‍යුත් මාධ්‍ය විකාශන ශ්‍රේණිගතකිරීම් කරයි.

ශ්‍රී ලංකාවේ විද්‍යුත් මාධ්‍ය විකාශන ශ්‍රේණිගත කිරීම පිළිබඳ මාධ්‍ය කර්මාන්තයේ ආකල්පය කෙබඳු ද ? යන්න මෙම පර්යේෂණයේ ගැටලුව වූ අතර "විකාශන ශ්‍රේණිගත කිරීම පිළිබඳ මාධ්‍ය කර්මාන්තයේ ආකල්පය සෘණාත්මක වේ" යන උපන්‍යාසය මත පදනම්ව පර්යේෂණ අරමුණු සාක්ෂාත් කරගැනීම සඳහා මිශ්‍ර ක්‍රමවේදය යොදා ගන්නා ලදී. එහිදී ප්‍රමාණාත්මක දත්ත ලබාගැනීමට ප්‍රාථමික දත්ත රැස් කිරීමේ ක්‍රමවේදය යටතේ ප්‍රශ්නාවලි ක්‍රමය භාවිත විය. LMRB - 2018 වාර්තාවේ ඉහළින්ම ඇති නාලිකා 08 ගුවන් විදුලි සහ රූපවාහිනී වශයෙන් 04 බැගින් ද 2018 වසරේ සුමති හා රයිගම් සම්මාන උලෙලේ හොඳම වෙළඳ දැන්වීම සඳහා නිර්දේශිත වෙළඳ දැන්වීම් නිර්මාණය කරන ලද දැන්වීම් ප්‍රචාරක ආයතන 07 ද පර්යේෂණයට යොදාගන්නා ලදී. අදාළ ආයතනයන්හි අංශ 06ක ඉහළ කලමනාකාරීත්වයට ප්‍රශ්නාවලි 50ක් ලබාදෙන ලදී. දැන්වීම් ප්‍රචාරණ ආයතන හතෙහි මාධ්‍ය සැලසුම් අංශ 07 සඳහා ද ප්‍රශ්නාවලි 50 ක් ලබාදෙන ලද අතර සමස්ත ප්‍රශ්නාවලි ගණන 100කි. ගුණාත්මක දත්ත ලබාගැනීම සඳහා සමපාතව බේදී යන පරිදි සම්මුඛ සාකච්ඡා හතරක් ද ගනු ලැබුණි. ප්‍රශ්නාවලි ඔස්සේ ලබාගත් දත්ත SPSS හා EXEL මෘදුකාංග යටතේ ද සම්මුඛ සාකච්ඡා මඟින් ලබාගත් දත්ත ස්වයං විශ්ලේෂණය යටතේ ද විශ්ලේෂණය කරන ලදී.

ප්‍රතිඵල විශ්ලේෂණයට අනුව "ශ්‍රී ලංකාවේ විද්‍යුත් මාධ්‍ය විකාශන ශ්‍රේණිගත කිරීම පිළිබඳ මාධ්‍ය ආයතන නිලධාරීන්ගේ ආකල්පය සෘණාත්මක වන අතර දැන්වීම් ප්‍රචාරණ ආයතන තුළ ආකල්පය යහපත් වේ" යන නිගමනයට එළඹීමට හැකි වූ අතර ශ්‍රේණිගතකරණයේදී දත්ත රැස්කිරීමට යොදාගන්නා නියඳීම තවදුරටත් පුළුල් විය යුතු බවත් ක්‍රමවේදය විනිවිදභාවයෙන් යුක්ත විය යුතු බවත් හඳුනාගත හැකි විය.

Keywords: විද්‍යුත් මාධ්‍ය; මාධ්‍ය කර්මාන්තය; විකාශන ශ්‍රේණිගතකරණය

¹ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව, prasangamabarana@gmail.com

ශ්‍රී ලංකාවේ දිළිඳුබව පිටු දැකීම සඳහා භාවිත සංවර්ධනාත්මක සන්නිවේදන උපායමාර්ග හා ජන විඥානය

මාපා තිලකරත්න¹, චන්ද්‍රසිරි රාජපක්ෂ², කේ.එම්.හේරත් බණ්ඩාර මැදගම³

ශ්‍රී ලංකාවේ දරිද්‍රතාවෙන් පෙළෙන දුප්පත් ප්‍රජාව සවිබල ගැන්වීමට රජයන්, 1931න් පසු ක්‍රියාත්මක කරන ලද සුභ සාධන වැඩ සටහන් වලදී අනුගමනය කරන ලද සංවර්ධනාත්මක සන්නිවේදන උපාය මාර්ග හා ජනවිඥානය පිළිබඳව සංවර්ධනය හා මානව විද්‍යාත්මකව මෙම පර්යේෂණ සිදු කරන ලදී. දිළිඳුබව පිටු දැකීමට තිරසාර සංවර්ධනය අවශ්‍ය බවත්, සංවර්ධනය ප්‍රජාව වෙත ගෙනයන සන්නිවේදන උපාය මාර්ග, ආකෘත හා සමෘද්ධි වැඩසටහන පිළිබඳවත් අධ්‍යයනය කර ඇත. පර්යේෂණයේ ගැටලුව වනුයේ දිළිඳු බව පිටු දැකීම සඳහා ක්‍රියාත්මක කළ සුභසාධන වැඩ පිළිවලදී භාවිත කළ සංවර්ධනාත්මක සන්නිවේදන උපාය මාර්ග සාර්ථකද? අසාර්ථකද? යන්න පිළිබඳවය. දිළිඳුබව පිටු දැකීම සඳහා භාවිත කළ යුතු තිරසාර සංවර්ධන සන්නිවේදන උපාය මාර්ග ආකෘති හඳුන්වාදීම මෙම අධ්‍යයනයේ ප්‍රධාන අරමුණ වේ. නිසිලෙස ජන විඥානය හඳුනා නොගෙන දිළිඳු බව පිටුදැකීමට ක්‍රියාත්මක කළ සුභසාධන වැඩ සටහන් අසාර්ථක වීමට හේතු සාධක වූ බව උපකල්පනයයි. ලිඛිත සාහිත්‍ය අධ්‍යයනය කර ඇත. සංවර්ධනය, සංවර්ධන සන්නිවේදනය, මානව විද්‍යාත්මකව දුගී දුප්පත්කමේ ව්‍යාප්තිය යන විෂයන්ට අයත් මූලාශ්‍ර ග්‍රන්ථ හා සංවර්ධන සන්නිවේදනය පිළිබඳ පර්යේෂණ නිබන්ධන වාර්තා දෙකක් අධ්‍යයනය කර අවශ්‍ය තොරතුරු රැස් කර ගැනීමද, සංකල්ප න්‍යායයන්, අදහස් හා මත අවශ්‍ය පරිදි උපුටා ගැනීම කර ඇත. මහ බැංකු වාර්තා, පනත්, ලිපි සඟරා ද අධ්‍යයනය කර සංඛ්‍යා සටහන් උපුටා ගැනීමද කරන ලදී. පර්යේෂණ ක්‍රමවේදය වූයේ සාහිත්‍ය අධ්‍යයනය හා නියැදි ක්ෂේත්‍ර සමීක්ෂණයක් මගින් සම්මුඛව ප්‍රශ්නාවලියකින් තොරතුරු රැස් කරගැනීමයි. ප්‍රාදේශීය ලේකම් කොට්ඨාශ 5කින් ග්‍රාම සේවා වසම් 20කින් සමෘද්ධි ලාභීන් 500 දෙනෙකු නියැදිය වශයෙන් තෝරා ගෙන ඇත. ශ්‍රී ලංකාවේ දරිද්‍රතාවයෙන් පෙළෙන දිළිඳු ප්‍රජාවගේ භාෂා දැනුම, අධ්‍යාපන මට්ටම, නව තොරතුරු තාක්ෂණ දැනුම අවබෝධය, සන්නිවේදන කුසලතා, සංස්කෘතිය, ආගමික විශ්වාස, ඇදහිලි, ආකල්ප මත ගොඩනැගුන ජනවිඥානය, වියදම්, පුරුදු වාර්තාවන්, මූල්‍ය සාක්ෂරතාවය හා ඉතිරි කිරීමේ පුරුද්ද මෙන්ම සමාජීය වශයෙන් කටයුතු කිරීම ද යන තොරතුරු රැස් කර ගෙන ඇත. තුන්වන ලොව දුප්පත් රටවල දරිද්‍රතාවයෙන් පෙළෙන ප්‍රජාවට ආධාර දෙන සංවිධාන පිළිබඳව ද එම රටවල දරිද්‍රතාවයෙන් පෙළෙන ජනතාව සවිබල ගැන්වීමට ක්‍රියාත්මක කරන ලද වැඩසටහන් පිළිබඳවද තොරතුරු දක්වා ඇත. ප්‍රථමික හා ද්විතීය දත්ත විශ්ලේෂණය කිරීම සඳහා පර්යේෂණ සැලසුමේ දැක්වෙන ක්‍රමවේදයට අනුව සංස්කරණය කර, කේත කිරීම කර ඇත. දත්ත ක්‍රමානුකූලව වර්ගීකරණය කර ගොනු කර ඇත. දත්ත සම්පිණ්ඩනය කර ගැනීමට අවශ්‍ය ලෙස සංඛ්‍යා වගුගත කිරීමත්, ප්‍රතිශත දැක්වීම, ඒ අනුව ප්‍රශ්නාර මගින් දැක්වීමද කර ඇත. මෙහිදී නිගමනය වන්නේ දැනට ශ්‍රී ලංකාවේ දිළිඳුකම පිටු දැකීමට ක්‍රියාත්මක කරන සුභ සාධන වැඩ සටහන තුළ සිටින සමෘද්ධි ලාභීන් විශාල පිරිසක් තමාගේ විභව ශක්තිය හඳුනා නොගෙන යැපීම් මතසකින් සිටින බවයි. දියුණු වීමට උත්සහ නොකරයි. ලැබෙන ආදායමින් වැඩි කොටසක් මත්පැන් හා දුම්වැටි වලට වියදම් කිරීමට පුරුදු වී සිටිති. ඔවුන් සමෘද්ධිමත් කිරීමට අපහසු බවත් නිගමනය කර ඇත. උපකල්පනය සැසඳීමත් පර්යේෂණ ගැටලුව විසඳීමත් නිගමනයන් ඉදිරිපත් කරමින් දක්වා ඇත. මේ අනුව පර්යේෂණයේ අරමුණ කරා ලඟා වී ඇති බවත් දැක්විය හැකිය. යෝජනා වශයෙන් දිළිඳු ප්‍රජාවගේ ජන විඥානය නිසි ලෙස හඳුනාගෙන ඔවුන්ට ගැලපෙන සන්නිවේදන උපාය මාර්ග ආකෘතියක් ඇතුළත් සුභසාධන වැඩ සටහන් ක්‍රියාත්මක කිරීමෙන් සාර්ථක ප්‍රතිඵල අත්කර ගතහැකි බව සඳහන් කළ හැකිය. මේ සඳහා මූල්‍ය සාක්ෂරතාවය පිළිබඳ දැනුමක් ලබාදීම ද කළ යුතුය. මෙවැනි සමාජ විද්‍යාත්මක පර්යේෂණ වැදගත් වේ.

මූල පද : සංවර්ධන සන්නිවේදනය; දිළිඳුබව; ජනවිඥානය; තිරසාර සංවර්ධනය; (සමෘද්ධි) සුභසාධනය

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³ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණියවිශ්වවිද්‍යාලය, කැලණිය, ශ්‍රී ලංකාව

A Geo-Spatial Analysis to Identify the Land Losses and Land Use Changes Due to Clay and Sand Mining – A Case Study of Ma-Oya Left Bank in Katana Divisional Secretariat Division

M.Jayarahthe¹, W.J.M. Dayaratne², A.M.C. Dissanayake³

Mining is one of the main methods to extract mineral resources. This research carried out to identify the loss of land and land-use changes due to clay and sand mining in the lower Ma-Oya river bank of Katana Divisional Secretariat Division. Geographically, environmentally and socio-economically the Ma-Oya river basin is one of the unique river basin in Sri Lanka. The length of Ma-Oya River is 134km and the size of the river basin is 1528Sq.km. During the last few decades, due to sand and clay mining both left and right river banks of the lower Ma Oya river basin have been highly degraded.

Field observation, Participatory Rural Appraisal (PRA) and Global Positioning System (GPS) data and google satellite images were used as primary data. Land use maps of 1956, 1984, 2018 and resource report of Katana DS Division were used as secondary data. This has done using mix method. QGIS 2.8 and Arc GIS 10.1 and MS Office applications have been used to analyze the spatial land-use changes and calculated the extent of land losses. The Inverse Distance Weighting (IDW) analysis and geo-processing techniques have been applied to determine multivariable interpolations.

The study revealed that Ma-Oya left river bank highly changes and loss of land due to critical natural resource use issues. Especially clay has been excavated up to 835 hundred meter distance from the left river bank. As a result, a considerable amount of land and land uses have been loosed. 119 hectares of the total land area were loosed and according to the present value of lands in the area, it was the amount of Rs. 2,728,774,720 (27287 Rs/M). Respectively, 63.25ha of coconut lands, 42.24ha of home gardens, 9.79ha of paddy lands, 2.68ha of scrubs and 1.24ha of croplands have been converted into water bodies or bare lands in lover left bank of Ma-Oya.

Keywords: Land Degradation, Spatial analysis, Clay and Sand Mining, Land use change and land loss

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Professional Development of Education Administrative Officers in Sri Lanka: A Sociological Analysis

Sumedha Jayaweera¹, K. Karunathilake²

The purpose of this paper is to investigate into salient features of professionalism which will be developed by Sri Lanka Education Administrative Officers in the government school education system and analyses causes and effects that can be identified among current education officers attached to Western Province in Sri Lanka towards a commonly accepted professionalism.

Mixed methodology is used in this research study. Survey, Case study, Auto Ethnography, and Life stories are used as research methods. In addition, Traditional Model, Craft Model, Reflective Inquiry Approach, Mentoring, Reading and Journaling will be used as tools of assessing principal/ education officer professional development.

Nature and constitution of the Sri Lanka Education Administrative Service (SLEAS) which comprises mainly recruitment procedure, pre-service induction training, capacity building training courses relating to the SLEAS officers and professional development of education officers in different countries will be considered as key variables in the investigation. A survey will be expected to be carried out in this research from quantitative perspective by using questionnaires, document surveys, and interviews will be employed to gather data. Furthermore, observation will be used throughout the data collection period being a member of SLEAS own experience earn for 15 years would be a valid ground for data gathering, analyzing and interpretation.

The sample population consists of 110 education officers in Colombo, Gampaha and Kaluthara districts. The findings of the study will be urged policy makers and stakeholders of education system to revisit the concept of professional development programmes and leadership development in education administration officers who play a key role of education in primary and secondary education sector in Sri Lanka. Moreover, the overall results of the study will bring the intended benefits and to enhance the quality of education in Sri Lanka.

Keywords: Education Development, Professionalism, Administration, Professional Development, Leadership

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The Impact Towards the Rural Social Structure Due to Proliferation of Kidney Disease

Samantha Munasinghe¹, K. Karunathilake²

The aim of the study was to understand the impact of kidney disease to the structure of the rural society of Sri Lanka. Research problem used was ‘what is the impact of kidney disease to the structure of rural community?’ The study was conducted in two Divisional Secretariat Divisions (DSDs), namely Medawachchiya and Padaviya in 2018. These DSDs are located in the Anuradhapura District Sri Lanka and these are the mostly affected DSDs where unknown kidney disease can be identified. Especially, the study is focused on the impact towards the stability of the family, household economy, children’s education, and the nature of social relationship. All households selected on the basis of kidney disease affected patients who are below age 60. Though there are different statistics in health officials it was a difficult task to identify 100 households from one Grama Niladhari Division (GND). Therefore, 100 households selected from 9 GNDs in Medawachchiya DSD while another 100 households selected from 5 GNDs in Padaviya DSD. Altogether, it was a purposive sample with 200 households.

Both quantitative and qualitative methods and techniques were used in this study for data generation and data collection. Historical methods, comparative methods, functional methods and statistical methods were used as key research methods while questionnaires, observation, Key-informant Interviews and Focus Group Discussions were used as data collection tools.

The study identified several key findings. They are; affected households income level has reduced extensively because most of the patients are the breadwinners of the household. Their average monthly income is Rs. 30000.00 after the disease. School attending children has victimized their education as a result of poor source of family income and time allocation of parents’ kidney disease treatments. At the time of study 5 families have stopped children’s education. There is no active program for the rural community in general and particularly effected patients to uplift their livelihood except the grant of Rs. 5000 given by the government. About 79% of the sample is under thorough medical advices, but not attending clinics and dialysis due to economic reason. There is a tendency of getting the kidney disease within close family members and the tendency is 61.5%. Thus, there is an issue of social exclusion in these study areas. The stigmatic condition prevailing in the area is a serious social problem that affected to the families and the rural social structure. There are 73 effected households who have mortgaged their properties to find required amount of money to continue recommended treatment. Especially, they have consulted medical specialists in distance places such as Colombo, Kandy, Trincomalee, etc. This situation has further aggravated the issues in family relationship and rural social structure. In addition, there are many latent issues and factors that influenced on the stability of family relationships and rural social structure. Finally, the study shows that the disease has made critical issues in affected families and the rural social structure.

Keywords: Kidney disease, Rural social structure, Family, Children’s Education

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How Young Men Establish Their Same-Sexual Relationships through Digital Contexts, Mutual Understanding and Emerging Networks of Digital Intimacy

Manoj Jinadasa¹, Roshan Priyankara²

This paper reviews three divisions as mutual understanding, digital media contexts, and emerging networks of digital intimacies. First, mutual understanding involves with explaining how young men establish similar understanding between each other through interactive communication via Facebook in order to establish their same sexual relationships. Second, Digital media contexts involves with reviewing digital media's potentials and spaces, on which rural young men create mutual understanding. Third, emerging networks of digital intimacies involves with clarifying how rural young men network themselves for their same sexual relations through Facebook as a safe and convenient space for their intimacies.

On this qualitative literature review, key concepts such as mutual understanding, digital contexts and emerging networks of digital intimacy are explored to argue how rural young men create a network of digital intimacy on their same sexual relationships. Mutual understanding as a key public relation concept, is used to understand how young men establish their same sexual relationships through a process of inter-personal communication via Facebook. Digital media's potentiality through 'network society' and 'participatory culture' are explored in order to understand how Facebook helps to create mutual understanding. Accordingly, this paper defines mutual understanding based on how young men individually interconnect through Facebook in order to identity "who they are" for their same sexual relationships. This is not similar to how relationships are managed between organisation and its stakeholders in terms of the corporate benefit. In short, this thesis argues how mutual understanding is constructed through young men's individual understanding on a process of interaction via Facebook. As a result, it is argued how these virtual communities create a network of digital intimacy.

Keywords: Mutual understanding, digital contexts, digital intimacy, Facebook, same-sexual relations, Young men

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ශ්‍රී ලංකාවේ වලච්ච සමාජය හා මහජන සම්බන්ධතාව (සබරගමු පලාතට අයත් එක්තැලිගොඩ වලච්චට විශේෂිතව සිදුකරනු ලබන අධ්‍යයනයකි)

එන්.එම්. අමිල නුවන් මධුසංඛ¹, ඩී.එස්.ආර්.ඊ.එස්. ගුණවර්ධන², ප්‍රසංග මාහරණ³

ශ්‍රී ලාංකීය සමාජය අතීතයේ දී විවිධ සමාජ ස්ථරවලට බෙදී පැවතුණි. එහිදී ඉහළම සමාජ ස්ථරයන් නියෝජනය කරන ලද පුද්ගලයන් වාසය කරන ලද ඓතිහාසික නිවාස වලච්ච නමින් හඳුන්වනු ලබයි. ලංකාවේ වැඩිම නින්දගම් ප්‍රමාණයක් පැවති ප්‍රදේශය ලෙස සබරගමුව ඉදිරියෙන්ම සිටියි. සබරගමු පලාතේ පැවැති ඉපැරණි වලච්ච අතරින් අදටත් ආරක්‍ෂා වී ඇති වලච්චක් ලෙස එක්තැලිගොඩ වලච්ච හඳුන්වා දිය හැකිය. යම් කිසි සංවිධානයක් සහ එහි ජනතාව අතර අන්‍යෝන්‍ය අවබෝධය ගොඩනගනු පිණිසත්, එය පවත්වාගෙන යෑම සඳහාත් සියුම් ලෙස සැලසුම් කළ අඛණ්ඩ උත්සාහය මහජන සම්බන්ධතාවය නම් වේ. වලච්ච සමාජය සිය අධිපතීත්වය ආරක්‍ෂාකරගැනීම සඳහා මහජන සම්බන්ධතා උපක්‍රම භාවිත කරනු ලැබුවේ ද ? යන පර්යේෂණ ගැටලුව මූලික කරගනිමින් සිදුකරනු ලැබූ මෙම අධ්‍යයනයේ මූලික අරමුණ වූයේ වලච්ච සමාජය සිය අධිපතීත්වය ආරක්‍ෂා කරගැනීම සඳහා මහජන සම්බන්ධතා උපක්‍රම භාවිත කරනු ලැබුවේ ද යන්න පිළිබඳව අධ්‍යයනය කිරීම යි. අහඹු නියැදිය යටතේ සබරගමුව පලාතට අයත් එක්තැලිගොඩ වලච්ච, වලච්චේ ජීවත්වන සාමාජිකයින් (05) සහ වලච්ච අවට ගම්වැසියන් (50) පමණක් පර්යේෂණය සඳහා තෝරාගනු ලැබීය. දත්ත රැස්කිරීම සඳහා සහභාගීත්ව නිරීක්ෂණය, සම්මුඛ සාකච්ඡා, අන්තර්ගත විශ්ලේෂණය සහ සිද්ධි අධ්‍යයනය යොදා ගන්නා ලදී. දත්ත විශ්ලේෂණයේදී ගුණාත්මකව ලබාගත් දත්ත ස්වයං විශ්ලේෂණයට භාජණය කරන ලද අතර ප්‍රමාණාත්මකව ලබාගත් දත්ත SPSS වෘද්ධාංගය භාවිතයෙන් අධ්‍යයනය කරන ලදී. පර්යේෂණය අවසානයේ එක්තැලිගොඩ වලච්ච සිය අධිපතීත්වය ආරක්‍ෂාකරගැනීම සඳහා මහජන සම්බන්ධතා උපක්‍රම භාවිත කරනු ලබන බව නිගමනය කල හැකි විය. එහිදී ගෘහ නිර්මාණ ශිල්පීය උපක්‍රම, භාහිර පරිසරය, මානව සම්බන්ධතා, සංස්කෘතික කටයුතු, ආගමික කටයුතු, සමාජ දේශපාලන කටයුතු සඳහා වැඩි අවධානයක් යොමු කර තිබෙන බව දක්නට ලැබුණි. වලච්චට අයත් ප්‍රදේශයේ සාමාන්‍ය ජනයා සමඟ හොඳ සම්බන්ධතාවක් පවත්වාගෙන ගිය මොවුන් වැදගත් යැයි සැලකෙන සෑම සංස්කෘතික උත්සවයක් ම ග්‍රාමීය ජනතාව ද සහභාගී කරවාගෙන උත්කර්ශවත් අන්දමින් සමරා තිබේ.

මූල පද : “වලච්ච සමාජය, ප්‍රභූත්, මහජන සම්බන්ධතාව, එක්තැලිගොඩ, අධිපතීත්වය”

¹ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
² ක්‍රීඩා විද්‍යා හා ශාරීරික අධ්‍යාපන අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
³ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව

වෘත්තීය තත්ත්වය තීරණය කිරීමෙහි ලා කුල සාධකයෙහි බලපෑම (යටත් විජිත යුගයේ වලච්චි සමාජයට විශේෂිතව සිදුකරනු ලබන අධ්‍යයනයකි)

එන්.එම්. අමීර නුවන් මධුසංඛ¹, ඩී.එස්.ආර්.ඊ.එස්. ගුණවර්ධන², ප්‍රසංග මාහරණ³

යටත් විජිත යුගයේ වලච්චි සමාජය බිහිවීම කෙරෙහි මෙම කුල සාධකය ප්‍රබලව බලපෑම් කර තිබේ. එසේම වෘත්තීය තත්ත්වය තීරණය වීම කෙරෙහි ද කුලය විශාල බලපෑමක් සිදුකර ඇති බව දක්නට ලැබේ. කුලීන කුල හීන වශයෙන් ප්‍රධාන කොටස් දෙකක් යටතේ ගොඩ නැගෙන සමාජය ඒ ඒ කුලයන්ට ගැලපෙන ආකාරයෙන් වෘත්තීන් නියම කර ඇත. රැකියාව පමණක් නොව ආවාහ විවාහ කටයුතු, සමාජ සම්බන්ධතා හා තීරණ ගැනීමේ නිදහස කෙරෙහි ද මෙම කුල සාධකය අතීත සමාජයේ සංස්කෘතිය සමඟ තදින් බැඳී තිබුණි. යටත් විජිත යුගයේ වෘත්තීය තත්ත්වය තීරණය කිරීමෙහි ලා කුල සාධකය බලපෑම් කරනු ලැබුවේ ද? එසේනම් ඒ කවරාකාරයෙන් ද? යන පර්යේෂණ ගැටලුව මූලික කරගනිමින් සිදුකරනු ලබන මෙම අධ්‍යයනයෙහි මූලික අරමුණ වූයේ යටත් විජිත යුගයේ වෘත්තීය තත්ත්වය තීරණය කිරීමෙහි ලා කුල සාධකය බලපෑම් කරනු ලැබුවේ ද යන්න පිළිබඳ අධ්‍යයනය කිරීම යි. මෙහිදී පර්යේෂණ නියැදිය වශයෙන් සබරගමුව පලාත තෝරාගත් අතර දත්ත රැස් කිරීම සඳහා අන්තර්ගත විශ්ලේෂණය, සම්මුඛ සාකච්ඡා, සහභාගීත්ව නිරීක්ෂණය යන පර්යේෂණ ක්‍රමවේදයන් තෝරාගන්නා ලදී. ඉහත ක්‍රමවේදයන් යටතේ ලබාගත් ගුණාත්මක දත්ත ස්වයං විශ්ලේෂණය යටතේ විශ්ලේෂණයට භාජනය කරන ලදී. පර්යේෂණය අවසානයේ යටත් විජිත යුගයේ වෘත්තීය තත්ත්වය තීරණය කිරීමෙහි ලා කුල සාධකය බලපෑම් කර තිබේ යන නිගමනයට එළැඹීමට හැකියාව ලැබුණි. එහිදී භාරතීය සමාජ ක්‍රමය තුළ මෙන් ප්‍රධාන කුල හතරක් පැවති බවත් ඒවායෙන් වෛශ්‍ය සහ ශුද්‍ර යන කුල දෙක තවත් අනු කොටස්වලට බෙදෙමින් කුල රැසක් නිර්මාණය වී පැවති බවත් අවබෝධකරගත හැකි විය. සෑම කුලයක් සඳහාම වෙන් වූ රාජකාරියක් පැවති බව හඳුනාගත හැකි විය. පාලන කටයුතු, ආවාහ විවාහ කටයුතු, සමාජ සම්බන්ධතා ගොඩනගා ගැනීම සහ පවත්වාගෙන යාම, මූලික මානව අයිතිවාසිකම් තීරණය කිරීම ආදිය කෙරෙහි මෙම කුල සාධකය බලපෑම් කර තිබේ. කුලීනයින් කුල හීනයින් පහත් කොට එක්ව ආහාර ගැනීම පවා ප්‍රතික්ෂේප කර තිබේ. වංශවතුන් කුල හීනයන් සමඟ කිසිදු ආකාරයක විවාහ සම්බන්ධතාවක් ගොඩනගා ගැනීම තහනම් විය. කුලීනයින් සිරුර වැසෙන සේ ඇඳුම් ඇන්දූන්, කුල හීන පිරිමින් හා කාන්තාවන්ට උඩුකය ආවරණය කිරීමට පවා අවසර නොතිබුණි. සාමාන්‍ය ජනතාව පීඩාවට පත් කළ මෙම කුල සාධකය වර්තමානයේ පවා යම් යම් සමාජ කොටස්වල දැඩිව ක්‍රියාත්මකවන ආකාරයක් දැකගත හැකිය.

මූල පද : යටත් විජිතය, වලච්චි සමාජය, සමාජ තත්ත්වය, කුලය, වෘත්තීය තත්ත්වය

¹ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
² ක්‍රීඩා විද්‍යා හා ශාරීරික අධ්‍යාපන අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
³ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව

වලව් සමාජයේ පැවති දිග්ගෙයි නර්තනය සහ මහජන සම්බන්ධතාව (සබරගමුව පලාතේ මහසමන් දේවාලයට විශේෂිතව සිදුකරනු ලබන පර්යේෂණාත්මක අධ්‍යයනයකි)

එන්.එම්.අමිල නුවන් මධුසංඛ¹, ඩී.එස්.ආර්.ඊ.එස්. ගුණවර්ධන², ප්‍රසංග මාහරණ³

ඉපැරණි සිංහල නර්තනය වූ කලී පුරුෂයින්ට ම පමණක් ආවේණික වූවකි. වර්තමානයේ ස්ත්‍රීන් ද ප්‍රමුඛත්වයේ ලා ගැනුණ ද එකල ස්ත්‍රීන්ට නර්තනය අතිශයින් ම අකැප විය. එය කෙතරම් දුරට බලපැවැත් වූයේ ද යත් නර්තනයේ දී පමණක් නොව කෝලම් සහ නාඩගම් වැනි ජන නාට්‍ය ආශ්‍රිත ස්ත්‍රී වර්ග පවා නිරූපණය කළේ පිරිමින් ම විසිනි. එහෙත් ස්ත්‍රීන්ට ම පමණක් ආවේණික ලංකාවේ එකම නර්තන ක්‍රමය වූයේ දිග්ගෙයි නර්තනය යි. ලාංකේය දෙවොල් නිර්මාණයේ දී දිග්ගෙයි නමින් විශේෂ මණ්ඩපයක් සැකසීම පුරාණ දෙවොල් වාස්තු ශිල්පයේ අන්තර්ගත ලක්ෂණයකි. දේවාලයේ වෙනත් ස්ථානවලට වඩා දිගින් සහ පළලින් විශාල මණ්ඩපය දිග්ගෙයි යි. දෙවියන්ට හක්කි ප්‍රණාම දක්වනු වස් නර්තන, ගායන, වාදන ඉදිරිපත් කිරීමේ දිග්ගෙයි, රඟමඩලක් ලෙස අතීතයේ භාවිතය ට ගැනිණි. දිග්ගෙයි නර්තන සාම්ප්‍රදාය ඔස්සේ කාන්තාවන්ට සමාජගතවීමට අවකාශය ලැබුණි ද ? එසේනම් ඒ කවරාකාරයෙන් ද ? යන පර්යේෂණ ගැටලුව මූලික කරගනිමින් සිදුකරනු ලබන මෙම අධ්‍යයනයේ මූලික අරමුණ වූයේ දිග්ගෙයි නර්තන සාම්ප්‍රදාය ඔස්සේ කාන්තාවන්ට සමාජගතවීමට අවකාශය ලැබුණි ද යන්න පිළිබඳ අධ්‍යයනය කිරීම යි. පර්යේෂණ ක්ෂේත්‍රය ලෙස තෝරාගනු ලැබූයේ සබරගමුව පලාතේ මහසමන් දේවාල පරිශ්‍රය යි. පර්යේෂණ ක්‍රමවේදය වශයෙන් අන්තර්ගත විශ්ලේෂණය සහ සම්මුඛ සාකච්ඡා යොදා ගන්නා ලදී. දත්ත විශ්ලේෂණයේ දී අන්තර්ගත විශ්ලේෂණයෙන් සහ සම්මුඛ සාකච්ඡාවලින් ලබාගත් දත්ත ස්වයං විශ්ලේෂණයට භාජනය කරන ලදී. පර්යේෂණය අවසානයේ දිග්ගෙයි නර්තන සාම්ප්‍රදාය ඔස්සේ කාන්තාවන්ට සමාජගතවීමට අවකාශය ලැබුණු බවත්, ඒ ඔස්සේ මනා මහජන සම්බන්ධතා ක්‍රියාවලියක් ගොඩනැගුණු බවත් නිගමනය කළ හැකි විය. දිග්ගෙයි නර්තනය සඳහාම වෙන්වූ නර්තන පරම්පරාවක් පැවති බවත් ඔවුන් ට ප්‍රභූ සමාජයේ සුවිශේෂී වරප්‍රසාද හිමිවූ බවත් දක්නට ලැබුණි. දුරුතු මහේ අලුත් සහල් මංගල්‍යයට පෙර දවසේ හැන්දෑවේ, බක්මහේ අවුරුදු මංගල්‍යයට පෙර දින සන්ද්‍රාවේ, කුඹල් පෙරහැර විදි බහින්නට පෙර දින, ඇසළ මහ පෙරහැර මංගල්‍යය ආරම්භ කිරීමට පෙර දින, දෙවොලේ පෙරහැර විවී සංචාරය කිරීමට පෙර ආදී විශේෂ අවස්ථාවන්හිදී දිග්ගෙයි නර්තනය රඟදක්වා තිබේ. එසේම රජවරුන් සහ ප්‍රාදේශීය පාලකයින් අතර සුභදත්ත වර්ධනය වීම කෙරෙහි ද මෙම දිග්ගෙයි නර්තනය බලපෑම් කර තිබේ. වර්තමානයේ මෙම නර්තන ශෛලිය අභාවයට ගොස් පැවතියත් එහි තිබෙන සංස්කෘතිකමය වටිනාකම තවමත් නොනැසී පවතී.

මූල පද : දිග්ගෙයි නර්තනය, මහසමන් දේවාලය, සබරගමුව, මහජන සම්බන්ධතාව, කාන්තාව

¹ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
² ක්‍රීඩා විද්‍යා හා ශාරීරික අධ්‍යාපන අධ්‍යයනාංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව
³ ජනසන්නිවේදන අධ්‍යයන අංශය, කැලණිය විශ්වවිද්‍යාලය, ශ්‍රී ලංකාව

A Study on Factors Affect on Acquiring English as a Second Language

Aruna Lokuliyana¹, Ileka Ruwanpathirana²

English language skill is considered as one of most required skills in both educational and professional sectors in the modern society. After completing the school education students get chance to enter the state universities and this is where a graduate is being made according to universal aspects. Mass Communication and Public Relations are two global subjects which have been taught from very long time and English language skill is essential in both subjects in order to explore the academic and professional sector equally. However, every student is not given that privilege of learning the language properly. Especially when it comes to the non-urban areas of Sri Lanka, English language literacy is very low and in some areas it is zero. When a language is taught, the four skills of reading, speaking, writing and listening should be improved. During the process of learning, learner is affected by many factors in the second language acquisition process.

The purpose of this research is to identify the ethnographic facts which affect on acquiring English as a second language. Under the qualitative research approach a questionnaire was distributed among 100 undergraduates who were selected randomly from the Department of Mass Communication. Additional information was gathered from secondary data sources such as research articles.

It was proven by this study that undergraduates who belong to an upper social class background showed higher levels of English acquisition. At the same time it was revealed that undergraduates, who don't belong to that social class but still showed higher levels of English acquisition, highly depend on school and private institution for learning English. The most important fact which was emerged through this research is, learning the alphabet and grammar do not support to acquire the language to the expected extent as long as there is a lack of practice in all levels of language acquisition. Contrary to these findings, it was also found out from this study that the undergraduates were highly motivated to learn English. However, higher motivation in itself did not result in higher levels of English acquisition for all undergraduates.

Keywords: English Language, Second Language Acquisition, Second Language Learning, Sri Lanka, Mass Communicant

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Entrepreneurship Development as a Strategy for Expansion of Employment Opportunities in the Rural Sector (With Special Reference to Kurunegala District)

H.G.K.N.Bandara¹

Despite the fact that the past successive governments of Sri Lanka have been attempted to address the issue of rural unemployment through different strategies, unemployment and underemployment rates as well as the dependent population are still high in the rural sector of Sri Lanka. The salient feature of this problem is that the rate of unemployment and underemployment among the educated youth is higher than that of other groups. It is widely believed that Entrepreneurship development is a strategy that could support to overcome the persistent problem of unemployment in rural economies. Therefore, the present study focuses on the matter of how far successful Entrepreneurship Development programs that are being operated in Sri Lanka in coping with the problem of rural unemployment.

The objectives of this study were, to identify the nature of unemployment in the rural Sri Lanka and to make a methodical assessment of the contribution of Entrepreneurship development programs with regard to the reduction of rural unemployment and underemployment. The relevant primary data for the study were collected through a field survey. Two structured questionnaires were employed to collect primary data from the selected sample. Secondary data were collected through a number of sources; mainly from the official publications of government departments and institutions. The sample was selected from the Kurunegala District and the sample included both unemployed and underemployed persons as well as young educated entrepreneurs who are in the Kurunegala District. Collected data were analyzed with the help of basic statistical methods such as percentages, tables, graphs and measures of central tendency.

The study reveals that though there are many Entrepreneurship development programs have been implemented by the government of Sri Lanka, such programs have not been successful in dealing with the problem of rural unemployment due to lack of having proper awareness of the concept and insight into the matter. Therefore, Entrepreneurship Development programs should be designed in order to meet the needs of young, unemployed persons in the rural sector.

Keywords: Rural Sector, Unemployment, Under Employment, Dependency Rate, Entrepreneurship Development

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