

# Book of Abstracts

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# Keynote Speeches

## **EFFECTS OF ENVIRONMENTAL FACTORS ON CHRONIC KIDNEY DISEASE OF UNKNOWN ETIOLOGY (CKDu)**

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Department of Chemistry, University of Kelaniya,  
Sri Lanka

The Chronic Kidney Disease of unknown aetiology (CKDu) is a burning health issue, especially in the dry zone agricultural areas in Sri Lanka. During the last two decades, alarmingly high incidences of kidney failure and some associated deaths have become very significant in certain parts of the country. Highly prevalent areas are the North Central Province, North Western Province and Uva Province of Sri Lanka. To date, the etiology of the chronic kidney diseases in Sri Lanka remains a mystery and it has caused a high economical cost for the patient, family & the state. There are some acceptable explanations on environmental pollutants and theories associated with CKDu. Entry of Toxic substances like metals, fluorides, cyanobacteria, etc. via drinking water and food chain, excessive and improper use of fertilizers and pesticides and dehydration are some of them. Further synergetic effects of above factors may also trigger the disease.

**Keywords:** *Chronic Kidney Disease, Burning health issue, Environmental pollutants, high economical cost*

## **GENDER AND DEVELOPMENT- A STUDY OF MATERNAL & CHILD HEALTH CARE POLICIES IN ODISHA**

*Dr. Padmalaya Mahapatra*

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Gender discourse within the field of development has come a long way from building a case of 'inclusive' growth which prevents the marginalization of women to questioning of the predominant notions of development itself. The body of feminist critique continues to traverse new terrains and posit new challenges. The neo-liberal vision of society with a strong undercurrent of economic determinism often celebrates the atomistic, unconnected, self-maximizing individual- a conception which largely inhibits the space of both culture and development. Women's limited access to and control of material resources and limited decision-making power within the household can produce high fertility rates, under-investment in aspects of family welfare such as child nutrition and education, and sub-optimal allocations of human capital in the economy. Maternal morbidity and mortality along with infant mortality rate is universally considered as human development indicators in a country and determines the health status of the people. In spite of very good plans and programmes, the reduction in MMR & IMR is much below the target set in Odisha. The present study is based on both primary and secondary sources of data. The paper attempts to analyse the impact of maternal health care policies on women's health status in Odisha. The study is confined to two Gram Panchayats (GP) of Cuttack district of Odisha. About One hundred fifty pregnant and lactating mothers were interviewed in the present study through a structured questionnaire. It mainly focuses on maternal mortality relating to socio-economic characteristics of deceased, status of ante natal care, major causes that led to maternal death, major steps taken through various policies & programmes initiated by Govt. of India / Govt. of Odisha & their achievement. The present empirical study has reflected the gap between policy formulation and policy implementation. The author concludes the paper with an optimistic view point suggesting measures to remove the loopholes in Maternal and Child Health Care Policies in Odisha.

**Keywords:** *Gender, Development, Maternity, Mortality, Healthcare*

# Oral Presentations

## **THE DYNAMICS OF IMMIGRANTS PROBLEM IN ASSAM, INDIA**

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Associate Professor, National Law University, Assam, Guwahati, India*

A boon in undivided India has become a curse in divided India. To work in the tea gardens, the British needed labourers and started encouraging hard-working farmers from East Bengal to migrate to Assam. During those days, the Assamese speaking population not only did not resent the coming of the East Bengal farmers but welcomed them. Conflict of interest started between local Assamese and the immigrant cultivators after 1930s. The old attitude of welcoming the farmers changed into one of the hostility.

Taking advantage of this conflict, the communal forces started to work and the said conflict transformed into communalism. The perception had been hijacked by a few political parties. Any attempt at *en masse* eviction of so many million people will throw the entire region into turmoil and violence with unforeseen political consequence for the country and would be a serious issue of human rights violation. These people will become Stateless.

Four millions permanent residents of Assam have been excluded from the draft publication of the National Register of Citizens (NRC) on July 30, 2018. Production of birth certificate is mandatory. But the fact is that birth registration became mandatory in Assam after 1969. Those born before 1969 have no birth certificate. However, final draft was published on August 30, 2019 and the number of permanent residents drastically reduced into two millions.

What will happen to NRC is a matter of time but for too long, the perceived problem of Bangladesh migrants has forced the two millions people of Assam to live under a cloud of suspicion. On this issue, Bangladesh has categorically stated that it will not take back anyone branded as Bangladeshi. In a way, their deportation is not possible. So the next best course may be to allow them to stay but deprive them of their citizenship and voting rights and that would be against the Human Rights norms.

**Keywords:** Assam, Immigrant, Bengali, NRC

## EARLY STAGES OF THE IMPERATIVE MOOD IN SINHALA LANGUAGE (A MORPHOSYNTACTIC STUDY BASED ON THE SENTENCES BETWEEN THE 10<sup>TH</sup> CENTURY AND THE 12<sup>TH</sup> CENTURY)

**Ariyawansa, H. M. D. K.**

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According to *Sidat Saḡāra*., which is the oldest known surviving grammar book in Sinhala language, the function of the imperative mood is to direct someone to do something. Furthermore, it can be an authoritative command or a formal request. Since the earlier epigraphical records in Sinhala language were limited to the sentences about donations, early forms of imperative mood appeared in inscriptions and exegetical works belong to the 10th century. The purpose of this study was to examine the morphological factors related to the formation of the imperative forms and to observe the syntactic features associated with the imperative sentences. The morphological factors were recognized through examining the postpositions combined to the verb roots whereas the syntactic features were identified by analyzing the sentences through tree structures. According to the study, in certain instances, there was a connection between the postposition and the ending of the verb root. Although Sinhala prose in this period were greatly influenced by Pali works, some independent approaches could be identified in certain imperative forms. Moreover, the nature of the command had an impact on the formation of the imperative form. Therefore, unlike in Pali language, the noun phrase had the authority of determining the nature of the verb phrase in imperative sentences in Sinhala. Based on the sentences between the 10<sup>th</sup> century and the 12<sup>th</sup> century, early stages of the imperative mood could be identified as evidence for the morphological and syntactic identity of the Sinhala language.

**Keywords:** *Imperative mood, Pali influence, Sinhala postpositions, Sinhala syntax*

## SCREENING OF IMPROVED AND TRADITIONAL RICE VARIETIES AGAINST BROWN PLANTHOPPER, *Nilaparvata lugens* (Stål) FOR ITS MANAGEMENT

**Sarathchandra, S.R.<sup>1</sup>, Kavindya J.H.T.G.<sup>1,2</sup>, Amani Mannakkara<sup>2</sup>, Bandaranayake, M.A.B.R.P.<sup>1</sup>,  
Madhuvanathi, A.G.N.H.<sup>1</sup>, Dissananyake, D.M.O.K.B.<sup>1</sup>,**

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Rice (*Oryza sativa* L.) is one of the most important food crops grown widely throughout the world, providing a staple food for nearly half of the global population. Pests and diseases as major constraints for increasing its production worldwide. Brown Planthopper (BPH) is the serious pest of rice among others. Although the host plant resistant is an important strategy to manage BPH, chemical control is the most effective practice to manage their outbreaks. However, due to indiscriminate use of insecticides, BPH has evolved high levels of resistance to number of chemicals grouped into major classes of insecticides. Therefore, the study was conducted to evaluate the resistant levels of selected improved and traditional rice varieties against BPH. Total 59 varieties including 52 improved rice varieties and 7 traditional rice varieties were screened using parafilm sachet method of honey dew test with known susceptible (Bg 380) and resistant (PtB 33) check varieties. The study revealed the earliest Moderately resistant varieties; Ld 253, Ld 356, Ld 355, At 373, Pachchaperumal, Bw 273- 6B, Bw 363, Ld 371 were changed into Susceptible. Although earlier other rice varieties belongs to different categories, Bw 451, Bg 305, Bg 310, Bg 304, Bw 302, Bg 38, Bw 372, Bg 300, H 4, Bg 250, Bg 90-2, Bg 369, Bw 367, H 10 and Bw 267- 3 were changed into Moderately resistant level. And At 306, Bw364, and Bg 745 varieties showed resistant to *N. lugens*.

**Keywords:** *Nilaparvatalugens, Resistant, Rice varieties, Screening*

## LIQUID FORMULATION AND SPORE VIABILITY OF AN ANTAGONISTIC FUNGUS *Trichoderma viride*, IN FRUIT PULP OF *Tamarindus indica*

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*Trichoderma* species are promising antagonistic fungus against soil-borne plant pathogens and more prevalent among other bio-control agents. It has great perspective to be mass produced by using cost effective locally available substrates in Sri Lanka. Therefore present investigation was carried out to initiate the cost effective liquid medium by using, *Tamarindus indica* fruit pulp extract for *T. viride*. Medium was prepared by using deseeded pulp. Preliminary evaluation for conidial production was done with 10g of pulp for 100mL of distilled water. Then concentrations (2, 4, 6, 8, 10 g and 20, 40, 60, 80, 100g of pulp /100mL of distilled water) of the medium was standardized and effective range of concentration was chosen. For that selected effective range, conidial production was evaluated and viability of conidia produced on selected concentration ranges of the medium was determined by taking colony forming units (CFU/ mL). Results revealed, preliminary conidial count of  $2.0965 \times 10^8$ / mL was obtained at 1 Week after inoculation (WAI). From standardization, conidial count was obtained as  $15.731 \times 10^8$ ,  $12.534 \times 10^8$ ,  $7.412 \times 10^8$ ,  $5.65 \times 10^8$ ,  $5.492 \times 10^8$  conidia/mL respectively for 10, 8, 6, 4, 2 g/100ml and  $19.48 \times 10^8$ ,  $15.64 \times 10^8$ ,  $12.96 \times 10^8$ ,  $5.92 \times 10^8$ , respectively for 20, 40, 60, 80 and 100g/100ml of distilled water at 3 WAI. The selected effective concentration range of 5 to 25g /100 ml of distilled water was significantly promoted the conidial production from 10.132 to  $31.771 \times 10^8$ /mL at 3 WAI. The conidia were stabilized for 8 weeks in standardized tamarind pulp extract. This novel results would help the *Trichoderma* producing industries to economically feasible commercial production with the locally available natural ingredients. Further research has to be carried out to combine the tamarind pulp with other suitable ingredients to sustain the viability of the conidia in the commercial formulations for a longer period.

**Keywords:** *Trichoderma viride*, Mass production, Tamarind, Liquid medium, Viability

## HIGHER EDUCATION SERVICE QUALITY INFLUENCING STUDENT LOYALTY: THE MEDIATION EFFECT OF STUDENT SATISFACTION

K. Kajenthiran<sup>1</sup> & M. Karunanithy<sup>2</sup>

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Academic environment is changing rapidly and becoming more and more competitive, where potential students have several opportunities to select a best higher educational institution for his(her) carrier and personal life success. Despite the growing popularity of private higher education institutions, there remains a lack of research examining the impact of service quality on student loyalty. The study addresses this research gap by empirically investigate the effect service quality on student loyalty in private higher education institutions in Jaffna, which is one of the emerging regions in Sri Lanka. Further, the study also examines the mediation role of student satisfaction in the relationship between service quality and student loyalty. To that end, quantitative approach under the positivist research paradigm guide the researchers to test the hypothesis. Self-administered structured questionnaire was used to collect data from 186 students from the selected private higher educational institutions and the data was analyzed by using Data analysis employed the Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS version 3.0. The implications of these findings for theory and practice have been suggested. The findings of this study can suggest the practical implications for higher education sector administrators by strengthening their relationship with both existing and potential students.

**Keywords:** *Service quality, Higher education, Student satisfaction, Student loyalty, Mediation effect*

## RELATIONSHIP BETWEEN PLAYING ABILITY AND SELECTED ANTHROPOMETRIC, PHYSICAL FITNESS VARIABLES OF NATIONAL WOMEN FOOTBALL PLAYERS IN SRI LANKA

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The purpose of the study was to determine the Relationship between Playing Ability and selected Anthropometric, Physical Fitness variables of National Women Football Players in Sri Lanka. To achieve this purpose thirty (n=30) National Women Football Players were selected as the sample using Total Population Sampling Technique. The age of the subjects range 18 to 32 years. The Football playing abilities were selected as dependent variables; Dribbling, Kicking, Throw in, Shooting, Heading and Goal keeping. Same were assessed by subjective rating. Ten Anthropometric variables; Height, Weight, Girth measurements (chest, waist, wrist, thigh, calf and ankle), Length measurements (leg, foot) and five Physical Fitness variables; Muscular strength, Muscular endurance, Cardiorespiratory endurance, Flexibility and Agility were selected as Independent variables and tested by standard procedure. Pre Experimental Research design was applied to examine the study. Data were analyzed by SPSS software. Chi-Square test was applied to analyze the data ( $P < 0.05$ ). Statistically, a significant difference was found between Dribbling with Agility ( $P=0.004$ ) Heading with weight ( $P=0.035$ ) and Leg length ( $P=0.048$ ) Shooting with weight ( $P=0.040$ ) Kicking with Cardiorespiratory endurance ( $P=0.004$ ), Calf circumference ( $P=0.006$ ) and Foot length ( $P=0.031$ ) and Goal Keeping with Weight ( $P=0.029$ ), Wrist circumference ( $P=0.000$ ), Thigh circumference ( $P=0.016$ ), Calf circumference ( $P=0.004$ ), Leg length ( $P=0.017$ ) and Foot length ( $P=0.002$ ). Therefore, it can be concluded that Cardiorespiratory endurance, Agility, Calf circumference, Foot length, Leg length, Weight, Wrist circumference and Thigh circumference has a highest relationship between Dribbling, Heading, Shooting, Kicking and Goal keeping abilities among the football players. While some other abilities not revealed relationship.

**Keywords:** *Anthropometric, Football, Physical Fitness, Playing ability*

## IMPACT OF FINANCIAL INTERMEDIATION ON ECONOMIC GROWTH: EVIDENCE FROM SRI LANKA

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The main objective of this study is to investigate the impact of financial intermediation on economic growth of Sri Lanka. Economic growth is represented by gross domestic product (GDP) rate as the dependent variable and financial intermediation represented through three indicators which are Domestic Credit to Private Sector (DCPS), Domestic Credit Provided by Banking Sector (DCBS) and Broad Money (M2) as the independent variables. Investment Rate and Inflation Rate are used as the control variables in this study. The study used annually data which is collected from the World Bank Indicator report covering the period from 1977 to 2018. The study made use of regression analysis and linear multiple regression analysis. Overall results suggest that financial intermediation and economic growth in Sri Lanka are significantly relate. It is observed that GDP significantly positively relates to broad money while investment has significant control. However, DCPS and DCBS are found to be insignificant in determining the GDP in Sri Lanka.

**Keywords:** *Financial Intermediation, Economic growth, Gross domestic Product, Domestic Credit Provided by Banking Sector, Domestic Credit to Private Sector, Broad money*

## ENTERPRISE READY CONTAINERIZED AND MICROSERVICES ARCHITECTURAL DEVOPS ENGINE DESIGNING

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Seamlessly software delivery and maintaining without any delay, is the major task of DevOps engineers in industrialization. In traditional way it is using bare metal hardware or cloud services to farm the computer system infrastructure. While using those modules, the main problems arising are, huge cloud service charges, disability to use infrastructure in cross platform, difficulty of infrastructure migration, system archiving problem, data persisting problems and smooth scalability issue. Main objectives of the research study are to create portable system infrastructure modules, to create technical and theoretical containerized DevOps engine, apply long time data persisting approach to the enterprise applications and to apply high velocity innovation to the computer systems infrastructure. The proposed DevOps engine was designed with Docker container management system on top of the Linux operating system as the host. It was used Docker trusted images to deploy, isolated containers by using microservices architecture with advanced software engineering concepts with industrialized software applications. It was used enterprise ready software applications and services on the proposed engine to validate the concept over the same configurations on the cloud service. With the usage of encapsulated components container approach, all internal data was secured on top of the host operating system. Due to the portability of Docker containers, it was easy to migrate monolithic computer system to microservices architecture. By using fast Docker containers, it was facilitated to DevOps engineers on the engine to improve the scalability and security across the system infrastructure.

**Keywords:** *DevOps, Microservices, Containerization, Docker, Distributed computing*

## APPLICATION OF SUSTAINABLE PROJECT MANAGEMENT (SPM) DURING CONSTRUCTION STAGE OF BUILDING

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Building construction leads to environmental issues such as global warming, sea level rise and climate changes. The activities of constructing buildings involve a significant amount of usage of fuels, which produce a lot of toxic gases harmful to humans and the environment. These problems need to be addressed with a sustainable solution. Increased costs of construction materials and regulatory incentives are also pushing the construction industry to look into sustainable application considering all these challenges. To overcome these challenges, the concept of sustainable building construction has been implementing worldwide. Sri Lanka, like other countries, is facing challenges to develop sustainable building constructions for the future. This research study mainly focused on the identification of awareness of sustainable project management practices, challenges and barriers to implementing sustainable project management concepts during the construction stage in Sri Lankan building construction industry. The study revealed that construction of sustainable buildings in Sri Lanka still has several challenges to implement the Sustainable Project Management practices. There is a lack of proper project management framework for such building projects. Most of the organizations have well SPM in the areas of sustainable site practices, material & resources practices and social & cultural awareness practices. The level of awareness is low in the areas of water efficiency, innovation & design process, energy & atmosphere and management.

**Keywords:** *Sustainable Project Management, Building construction stage, Challenges*

## IMPACT OF YOGIC THERAPY ON BREAST CANCER PATIENTS

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The purpose of the study was impact of yogic therapy on breast cancer patients, aim of the study identify the patients stress level and anxiety level. To achieve this propose to the study hundred and fifteen (N-150) breast cancer patients women were selected as subjects who are from already undergoing surgeries before one month and who are undergoing radiotherapy at Apeksha cancer hospital, Maharagama. The age range between 45- 65 years. The study was performed by selected yoga asana namely standing forward bend, legs up the wall, the hip walk, the cormorant, the silly teapot, the cat purrs, the winding twist, easy pose, reclined bound angle pose, hero pose, child's pose, Sawasana morning time two hours one days per weeks over the patients of six months which was given by the yoga Expert in Apeksha hospital. The anxiety, stress, and selected as dependent variables and test by standard questionnaire procedure. The data was collected for questioner and survey. In order to examine the data statistically treated by using Two-sample t test 0.05 level confidence was fixed to test the significance. The result of the present study shown that there was a significant different between yogic therapy and the selected criterion variables (anxiety, stress,) of the breast cancer patients.

Therefore yoga programme effected to the cancer patients. When comparing the mental health of the patients are did not follow yoga, it could be determined that the patients who did not participate for the yoga, are affected by the anxiety, stress mental status severely. Finally it can be concluded that the yoga programme directly affects to increase the mental health status of the cancer patients at the Apeksha hospital, Maharagama.

**Keywords:** *Yoga, Anxiety, Stress, Breast cancer*

## AWARENESS OF PUBLIC SECTOR PARENTS ON SOCIAL MEDIA INTERACTIONS OF THEIR TEENAGE CHILDREN

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At a time where social media usage, the digital literacy of teenagers and harmful impacts of social media are increasing this research focusses on assessing the awareness among public sector parents on the social media interactions of their teenage children. According to Maslow's Hierarchy of needs theory, social need of connectivity plays a major role in a person's life. In this age of digitisation, people conveniently stay socially connected via internet, through numerous social networking platforms. Today's teenagers born after 1996 or later are the first generation to grow up entirely with smartphones. On the other hand majority of their parents were born before early 1980s and grown up in a pre-internet era. The IT knowledge of these two generations are alarmingly wide. Population of this qualitative pilot study consisted of all the parents with teenage children (age 14-19) working for a public sector organization in Sri Lanka. By using the purposive sampling a 95% sample was considered for data collection and data collected through interviewer administered questionnaire. Gathered data support the objectives of the research. Public sector parents lack the IT knowledge required to monitor children's social media interactions. Though a minor majority of parents monitor such interactions, even their knowledge on harmful effects of social media is minimal compared to the globally accepted such effects. In conclusion, parents should understand the invasion of the social media in their children's world and instead of ignoring the same parents should be IT savvy to be in par with their children's social media knowledge and essentially to monitor their interactions.

**Keywords;** *Social media, Awareness, Connectivity, Digital literacy*

## **COMMUNICATION SKILLS MATTER! THE OPINIONS OF YOUNG ENGINEERS WORKING IN SRI LANKAN INDUSTRIAL SECTOR**

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Communication skills are a basic requirement for professional practice of engineers to deliver information, knowledge and experience for effective usage of clients, staff members and society. Professional performance and career development of engineers heavily depend on the extent of communication skills possessed with each engineer. So, engineering undergraduates should develop their communication skills from the beginning of their undergraduate studies. Objective of this research was to gather and analyze the opinions from young engineers about the requirement of communication skills to perform well in Sri Lankan industries as young engineers. An online open ended question was administered via e mails for young engineers who have graduated within the last five (5) years of time and working in Sri Lanka. This question was sent to 2500 young engineers in Sri Lanka and 160 responses were received. Thematic analysis of results revealed that opinions of young engineers belong to 3 main categories such as opinions suggesting undergraduates on how to improve communication skills, opinions emphasizing importance of communication skills when performing as professional engineers and opinions suggesting improvements in engineering curricula. Results of this research will definitely raise the awareness of engineering undergraduates to recognize the value of communication skills which bond with their future profession. Engineering educators also can make use this research to make improvements to the curricula in order to improve the communication skills of undergraduates effectively.

**Keywords:** *Communication Skills, Young Engineers, Engineering Undergraduates, Opinions*

## **WETLAND RESTORATION BY DEVELOPING AN URBAN WETLAND PARK; A CASE IN KIRALA KELE, SOUTHERN SRI LANKA**

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Urban wetlands are important biotopes which provide natural and aesthetic landscape diversity in a built environment. Managing urban wetlands such a way that ecological and biological resources are conserved while satisfying human usage is a challenging task at present. This study attempts to formulate an appropriate wetland management scenario by employing a choice experiment for Kirala kele wetland in Southern Sri Lanka; a reputed urban wetland for rich biodiversity and scenic beauty. Kirala kele is quivering for a change as it has been subjected to numerous threats since past few years due to lack of a proper management scenario. Possibility of developing an urban wetland park in study site was considered in obtaining public preference for potential land use activities of the wetland park. We conducted 160 face to face interviews with respondents which are selected using random proportional sampling technique. Results suggest that majority prefer implementing an urban wetland park as a new wetland management scenario over the current situation. The research & educational value is the most important attribute which need to be considered in wetland management scenario design as it has the highest Marginal Willingness to Pay (MWTP) value. Then high MWTP for walking facilities and biodiversity were observed. But water recreational activities of the wetland park is found to be not significant. The information derived from the study could be helpful for policy makers to determine an appropriate wetland management scenario for Kirala kele and other similar wetlands in Sri Lanka.

**Keywords:** *Wetland management, Urban Wetland Park, Choice experiment, Willingness to Pay*

## DETERMINING ANTIOXIDANT ACTIVITY IN MILLET SPECIES GROWN IN SRI LANKA

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Usage of antioxidants in treating diseases and dealing with conditions related to aging is a major concern in scientific community. Finding a low cost edible sources of antioxidants is a main task attended by the researchers. Millet species grown in South Asian Region is considered a low cost source. The current study is focused on Millet Species Grown in Sri Lanka. Number of Millet grain samples namely Meneri, Rawana-Millet, Sweet Sorghum, Sorghum-ICSV-112, Oshada-Millet, White Finger Millet, Foxtail Millet and Kodo-Millet were collected on fields in Dry Zone of Sri Lanka. Antioxidant was extracted by incubating with solvent HCl (1%) in methanol overnight at 170rpm at room temperature. The residue was filtered out and the remaining filtrate was concentrated using rotary evaporation and N<sub>2</sub> flux consecutively. The powdered extract was analyzed for antioxidant activity using assays namely DPPH radical scavenging assay, ABTS radical scavenging assay, Total flavonoid content assay, Total polyphenolic content assay and Ferric Reducing Antioxidant Power (FRAP) assay against the standard Trolox. Sweet Sorghum recorded highest antioxidant activity except ABTS radical scavenging assay among the species analyzed and all the assays conducted recorded antioxidant activity comparable to the standard. Sweet Sorghum may be used as a good source for antioxidants but the ability to use as an edible source should be further tested.

**Keywords:** Millet, Antioxidant, Edible, Low cost

## THE KNOWLEDGE ON ADULT ADVANCED LIFE SUPPORT AND THE INFLUENCING FACTORS AMONG THE NURSING OFFICERS WORKING IN TEACHING HOSPITAL JAFFNA

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Advanced Life Support (ALS) given at the right time with accurate knowledge and skills is essential for improving mortality in Cardiac Arrest; by this means, nursing professionals must be well practiced, competent and confident to deal with medical emergencies. Therefore, this study aimed to assess the knowledge level and the influencing factors on adult ALS among the Nursing Officers working in Teaching Hospital Jaffna. Hospital based descriptive cross-sectional study was carried out, among all the staff nurses (490) working in Teaching Hospital Jaffna, during one month data collection period. Data was collected by a self-administered questionnaire. Data were processed in SPSS version 23. Chi squared statistical test and Fisher's exact test (2 tailed) were performed to identify the influencing factors. In this study; majority of the participants were female (76.1%) and most of them were diploma holders (81.3%). More than two-third of the nurses had not received formal in-service training on ALS at all. Overall, only 17.7% nurses had Good knowledge, approximately half of the nurses (51.2%) had Average knowledge and the knowledge score was inadequate among 31.0% of the total study population (n=326). This study also demonstrated the statistical significant relationship of several socio-demographic and educational factors related to the knowledge on ALS. This study illustrated that; although majority of the nurses had average knowledge level or more, knowledge inadequacy was there among significant amount of the study population. Knowledge deficit should be addressed properly to improve the outcome of the patient.

**Keywords:** Advanced Life Support, Knowledge, Factors, Nurses, Teaching Hospital Jaffna

## PERCEPTION OF GENERAL PUBLIC TOWARDS CORRUPTION AND TRANSACTION COST IN FINANCIAL SECTOR

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Corruption can be listed as one of key obstacle for the development process particularly in developing economies. One major sector where the corruptive activities happened massively but recorded rarely, is the Financial Sector. The cost of the corruption should be considered as a part of transaction cost of financial activities. But, at present it is doubtful that to which extent the corruption cost has been reflected within the transaction cost mainly due to the perception towards the corruption by general public. This study attempts to explore the corruption and transaction cost in financial sector in Sri Lanka which is based on primary data gathered through a structured questionnaire and interviews with 50 respondents within the Colombo district. The findings of this study remark that; influencing financial transactions using personal networks or social networks is not being perceived as a way of corruption by majority of respondents. Almost all the respondents of the study justify their involvement in corruptive activities claiming the ineffective financial sector made them doing so. Further, they strongly believe that influence by personal or social contacts or paying money, gifts or etc. to officers made their service faster and better. All these findings conclude that corruption in financial sector is a severe issue where the policy actions are needed to be taken. Specially, in the terms of effectiveness of the financial system, policy makers should take necessary actions to improve the efficiency and effectiveness of the system and the perception by general public towards corruption should be changed.

**Keywords:** *Corruption, Transaction Cost, Financial Sector, Perception of General Public*

## POLICY CHANGES AND CHANGING STRUCTURE OF PHARMACEUTICAL INDUSTRY – THE SRI LANKAN EXPERIENCE

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From late 1950s Sri Lankan government strives to regulate pharmaceutical industry of the country through legislative enactments. Given the complexity of the industry, how far the country has achieved its objectives is questionable. This is a descriptive and cross-sectional study which investigates registration data over a period of 28 years (1991-2019) in identified three periods as up to June 1991, 2010 and 2019. Data is analyzed to see patterns correlated with the legislative changes during the relevant period. The average ratio between a single drug molecules to product registrations was 1:4 in 1991 and 1:7 thereafter for 28 years. Annual growth of registrations from 1991 to 2010 was 2.8% and in 2010 - 2019 was negative 0.66%. This can be related with the introduction of national medicines regulatory authority act in 2015 and price ceiling in 2016. Domestic drug manufacturing was 9% (305), 3% (207) and 3.5% (227) respectively for the three periods. Domestic Parenteral product manufacturing has improved, but no sign of biological product manufacturing. Indian product dominance has been 26% (886), 40% (2778) and 59% (3836) respectively. Drugs imported from countries with strict high regulatory standards have been reduced from 34% (1172) to 4% (252). Importation from Asian countries has been increased from 33% (1126) to 81% (5210). Changing legislations has increased the importation of low cost pharmaceutical products, urging the need for strategic policies and regulations to maintain appropriate quality and efficacy. Domestic manufacturing seems to be slowly developing in terms of high technology products.

**Keywords:** *Pharmaceutical industry, Pharmaceutical legislations, Product registration, Importation, Manufacturing, Regulations*

## **A CASE STUDY ON THE ASSESSMENT OF SUPPLIER SATISFACTION ON CREATING SHARED VALUE PROGRAMS OF ORGANIC TEA PROCESSING ORGANIZATIONS AND THE MODERATING EFFECT OF CORPORATE IMAGE**

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Creating Shared Value (CSV) is a set of policies and practices that enhance the organization's competitiveness while advancing the economic and social conditions among communities which it operates. However, the question was to what extent the collaboration processes in CSV program add value for the parties involved, especially the suppliers. Thus, it was deemed appropriate to assess the satisfaction of the upstream node of the organic tea supply chain on the CSV programs. A field survey was conducted for data collection through a pre-tested questionnaire followed by structured interviews. The data were collected from the farmers who supply for two organic tea processing organizations offering CSV programs. The organic tea processing organizations were selected by purposive sampling. A sample of 105 organic tea farmers were selected using simple random sampling. Descriptive statistics, principal component analysis, linear regression, multiple linear regression, paired t-test and Pearson correlation were used for data analysis. Farmer orientation, reliability of the program, price satisfaction, long term expectations of the farmers and satisfaction on technical assistance were selected as the determinants of the supplier-satisfaction. Supplier satisfaction had a positive relationship with above determinants except the price satisfaction. The suppliers were strongly satisfied with the economic, ethical and environmental objectives of the program while creating a moderately strong correlation to the supplier satisfaction. The proposed model of this study revealed that corporate image has a moderating effect to the relationship between the supplier satisfaction, economic and environmental objectives. The study revealed that offering CSV programs were a good option to satisfy the suppliers of the organization.

**Keywords:** *Creating Shared Value, Supplier Satisfaction, Corporate Image, Organic Tea Industry*

## **ATTITUDE TOWARDS THE INTERDISCIPLINARY STUDIES IN HIGHER EDUCATION**

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Interdisciplinary approach is widely practicing nowadays in many university curriculums, as to produce capable graduates who may cater the emerging demand in the job market. As an alternative to specialized education, interdisciplinary approach in higher education sector receives more attention from responsible authorities due to providing a wider scope of knowledge and skills which require to the considered discipline. This study aims to address the gap identified in the literature; evaluate the attitude of the followers of the interdisciplinary approach of learning. A quantitative study will be designed using a purposive sample consist of undergraduate students who learn interdisciplinary subjects in the University of Ruhuna. The findings may reveal the attitude of students who follow the interdisciplinary courses through their curriculum and specifically the attitude towards their career development. The policy makers and implementers of this approach in the higher education sector can be considered the findings to evaluate the expected outcome and introduce necessary amendments and improvements. Future studies can be extended with parallel studies using graduated students and the industry professionals as to compare the actual expectations of the industry.

**Keywords:** *Interdisciplinary studies, Higher education*

## INVESTORS' DEMOGRAPHICS AND RISK TOLERANCE; EVIDENCE FROM SRI LANKA

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The purpose of this study is to examine the implications of investors' demographic information over their risk tolerance level. The researcher adopted a quantitative approach and surveyed, using structured questionnaire, such demographics as age, gender, income, civil status, occupation, financial literacy and investment experience of 291 house hold investors residing in Matale Municipal Council in Sri Lanka. The data on such demographic factors were associated with financial risk tolerance using such appropriate parametric and non-parametric tests as correlation analysis, t-tests, one-way analysis of variance and chi-square analysis. Findings revealed that the age of investors negatively associate with and their financial risk tolerance whereas that association is positive when it comes to income, financial literacy and investment experience. The study also informs that civil status does not associate with investors' tolerance of financial risk. The findings indicate that financial risk tolerance of male investors is more than that of their female counterpart.

**Keywords:** *Demographic Characteristic, Financial Risk Tolerance, Financial Literacy and Investment Experience*

## MANAGEMENT OF A CASE WITH GRADE II CHRONIC LATERAL ANKLE SPRAIN USING THREE TRACK CLINICAL REASONING

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Clinical reasoning is a process where clinicians are using their knowledge, cognition and metacognition to assess, diagnose, planning and treatment of patients. Deductive reasoning, inductive reasoning, three track reasoning and narrative reasoning are most commonly used clinical reasoning processes. Hence, aim of this study was to interpret a clinical case with type II chronic lateral ankle sprain using various types of clinical reasoning processes and find out the most suitable process. Diagnosis of the condition, goal setting and treatment planning, application and adjustment of treatments according to the patient requirements is considered as the procedural reasoning, interactive reasoning and conditional reasoning of three tracks reasoning process respectively. Hence procedural reasoning explains the concept of hypothetical deductive reasoning and conditional reasoning explains the narrative reasoning those clinical reasoning processes were excluded from the study. Inductive reasoning was excluded since five common elements of pattern recognition; proper timing, results, reliance, basis and direction not applied in the diagnosis and management of the condition. According to the analysis, three track reasoning process has been used to manage this patient combining with International Classification of Functioning (ICF). The study was concluded that clinician's bio medical and clinical knowledge as well as the patient's physical, psychological and social information have to be considered to find the most appropriate clinical reasoning process since most of the processes are overlapping at some stages.

**Keywords:** *Clinical reasoning processes, Ankle sprain, Patient management, Three track reasoning, International Classification of Functioning (ICF)*

## **TO FIND OUT THE LEVELS OF SOCIO-ECONOMIC, DEMOGRAPHIC CONDITIONS AND SPORT PARTICIPATION AMONG 8-14 YEARS CHILDREN IN THE ATTANAGALLA DIVISION, GAMPAHA DISTRICT, SRI LANKA**

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Sport participation makes an important contribution to children's and adults overall physical activity. The number of studies that focus on factors influencing the sport participation of children and adults are limited. The present study examines, identifies the socio-economic (economic status, parents' influence, peers and external party influence, sport facilities and school contribution) and demographic (age and gender) factors which affect sport participation. A random sample of families with children in the age group between 8-14 years, who live in Attanagalla division, has been used as the target population. The data were collected based on questionnaire and semi-structured interview. Microsoft excels and Mann-Whitney tests were used for data analysis. Economic factors and parents' assistance that have a significant influence have been examined throughout the survey (p-value 0.0322), (p-value 0.0330). Demographic influence has a high impact on male participation and it is higher than female participation (male 58% and female 42%) and different age categories that depict different participation rates (8-10 years 17%, 10-12 years 32% and 12-14 years 51%) have been identified. A sample of hundred and forty six individuals has been selected for the research but it does not display the perceptions of the whole population about sports participation. Even though there were unavoidable limitations it was attempted to come to valid conclusions. Finally the level of socio-economic and demographic conditions and how significantly do they influence children's sport participation have been understood within the framework or scope of this research.

**Keywords:** *Socio-economics, Demographic, Sports participation, Physical Activity*

## **RELIGIOUS INVOLVEMENT IN YOUNG ISLAMIC WOMEN PARTICIPATION IN PHYSICAL EDUCATION, SPORTS AND PHYSICAL ACTIVITIES**

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This study is to identify the relationship between young Islamic women involvement in physical education, physical activities and sports. Today, limited attention has been paid to the relationship of young female Muslims and sports. This relationship can be noted as a social problem, and therefore need a specific attention to this problem. This study examines how a Muslim female students display their participation in physical education and sports, how their Islamic background influences of the way of the precise their engagement with the field of sport. Being a Muslim young woman and participating in sport is getting as a challenge of their ethnic identities. Young Muslim women clearly positioning within the framework of their ethnic identities are not interested in sports because they not seen it as a respectable femininity. According to the previously reported guidelines and results, the methodology was constructing for this systematic review. All the original data in this article were collected from published articles in research gate and Google scholar. Articles were searched under the topics of "religious involvement in Muslim female's sport and physical education" and "Muslim Female Participation in Olympics". Results show that the religious involvement has positive attitudes toward female participation but extensive parental influence is important and also expresses that Muslim girl's participation is less because of them are in struggle between their identity as Muslims and dress codes as well as the sporting requirements and in the other hand mixing or interaction with the opposite gender and doing exercises on Ramadan.

**Keywords:** *Muslim, Islam, Female, Physical Education, Physical Activities, Sports*

## THE EFFECT OF BMI BASED NUTRITIONAL STATUS ON LUNG FUNCTIONS OF HEALTHY ADULTS IN SRI LANKA

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Respiratory system is one of the most important systems of the body which can be affected by different physiological and anatomical changes. There are claims that nutritional status affects the lung function parameters of individuals. One of the key methods of categorizing nutritional status is Body Mass Index (BMI). Hence objective of the study was to assess influences of BMI based nutritional status on lung functions among Sri Lankan adults. Spirometric data of 509 subjects (293 males and 216 females) aged between 20 and 35 years were collected based on Underweight (<18.5), Normal weight (18.5-22.9), Overweight (23.0 -24.9), Pre-obese (25 -29.9) and Obese (30-40) nutritional status categories. Variations of Pulmonary function test results; Forced Vital Capacity (FVC), Forced Expiratory Volume in One Second (FEV1), Peak Expiratory Flow Rate (PEFR), FEV1/FVC % with those categories were analyzed using non parametric tests. Results show significant difference of FEV1/FVC% ( $p < 0.05$ ) among categorized male groups. FEV1/FVC% significantly higher in underweight and normal weight groups than overweight, pre-obese and obese groups. Significant difference ( $p < 0.05$ ) of PEFR were identified among female categories. Pre-obese group shows significantly higher ( $p < 0.05$ ) PEFR than underweight and normal weight groups. The study concluded that though there is a significant different of PEFR among female categories and FEV1/FVC% among male categories, there no significant difference of FVC and FEV1 spirometric values among BMI based nutritional categories of healthy Sri Lankan adults.

**Keywords:** BMI, Nutritional status, Lung function, Healthy adults

## GEO TOURISM IN SRI LANKA: A SURVEY OF POTENTIAL IN GEO TOURISM IN SRI LANKA

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Geo tourism means, Geography based tourism. Sri Lanka is one of the main countries which have unique features to attract tourists to the country. This survey is conducted to identify the potential of geo tourism and understand the possibilities to promote the concept of geo tourism in Sri Lanka. The main objective of geo tourism is to enhance and sustains the geographical features in a country. We have enough geographical elements to promote geo tourism in Sri Lanka. Due to that reason, the survey is conducted to find out the possibilities to promote geo tourism in Sri Lanka. The survey is conducted in Kandy, Kithulgala and Sigiriya areas. The primary data collect by giving a methodological questionnaire to tourists. The sample is 25 tourists from various countries and locals. Secondary data collect from books magazines and newspapers which are related to this topic and collect data from the villagers. Outline of this research discusses about the history of Sri Lanka and tourism industry. Data analyze contribute to justify the main objective of the research. Conclusion is that there is a huge potential to develop geo tourism in Sri Lanka and we can consider that geo tourism is not a niche market and it is a mass market which collect all the typologies together.

**Keywords:** Sri Lanka, Geography, Geo tourism, Potential

## FEMINIZATION OF AGRICULTURE: CHANGING TRENDS IN INDIAN AGRICULTURE

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Agriculture sector as a whole has developed and emerged immensely with the infusion of science and technology. But this latest emergence is not capable of plummeting the ignorance of women labour as an integral part of this industry. In developing countries like India, agriculture continues to absorb and employ female work force but fails to give them recognition of employed / hired labour. Long standing obstacles faced by rural women in terms of limited access to productive resources (Land, Credit, Inputs, Transport, Extension Services, Storage and Technical Assistance) prevent them from adopting new technologies or encoring them economies of scale. The high levels of women employed in this industry and their segregation into certain tasks and occupations reduces production costs because women's wages are lower than men's and their employment is highly temporary. This research involves quantitative approach. This paper is based on both secondary & primary data. A total of 100 women farmers of Western belt of Odisha will be selected & their participation in agricultural activities other than daily household chores, factors responsible for participation in different agricultural activities & their recognition or status as agriculturist will be examined through questionnaire method. This paper examines whether women's participation in income-producing activities, whether as wage workers or as family workers in cash cropping, contributes to empowerment and improves their status within the household. This paper concludes that women's growing contribution of labour in agriculture adds to the already heavy work burdens of most rural women, thereby further undermining their well-being, and suggests policy implications for their upliftment.

**Keywords:** *Agriculture, Women, Feminization, Labour, Participation*

## COMPARISON OF PHYSICAL ACTIVITY LEVELS AMONG ADVANCED LEVEL STUDENTS' AT NATIONAL SCHOOLS IN GAMPAHA EDUCATIONAL ZONE

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Energy expenditure as a whole is what researchers can determine how much spends on energy in their body. In Sri Lanka there is lack of enrolment to physical activity and exercise. This leads to major problem of diseases such as; cardiovascular diseases, diabetics, cancer, chronic respiratory diseases etc. This study examines the physical activity levels among advanced level students' at National schools in Gampaha Educational Zone. Three hundred (300) participants out of six thousand three hundred fifty (6350) students were considered as sample (N=300). A Global Physical Activity Questionnaire was considered. The domain was mainly concerned about activity while work, travel from places, recreational activities. Results, briefly mentioned 15% of subjected students' were in high Physical activity level, 37% were in moderate Physical activity level and 48% were in low physical activity level. Overall students' physical activity levels was at moderate level. Descriptive statistics of the study indicates that male physical activity level mean was 986.2 and female mean was 563.1. According to the Mann-Whitney test results significant difference between in physical activity levels of male and females. Students had some vulnerable risk of having non- communicable diseases. Results of this study male and female must increase and maintain their physical activity levels. Continues program for minimum 90 minutes or more to increase moderate to vigorous physical activity to have a healthy physical activity levels as recommended for the school age youths.

**Keywords:** *Physical activity levels, Non communicable disease, Energy expenditure*

## THE KNOWLEDGE ON TRACHEOSTOMY CARE AND INFLUENCING FACTORS ON IT AMONG FINAL YEAR COLLEGE OF NURSING STUDENTS IN NORTHERN PROVINCE, SRI LANKA

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Maintaining the airway considered as the first step of treatment in all patients who is in a critical condition incompatible with life and have suffered from difficulty in breathing. Airway assessment and management are the primary responsibilities of the nurses in a patient with a tracheostomy. Therefore, enhanced knowledge level of the students regarding tracheostomy care is very important to minimize the future complications and mortality. Thus this study aims to assess the knowledge on tracheostomy care and influence of educational, personal and hospital related factors on it among final year college of nursing students in Northern Province. It is an institutional based descriptive cross sectional study which was carried out among all the final year nursing students studying at College of Nursing, Jaffna and Vavuniya. The data was collected by using self-administered questionnaire. Data were processed in SPSS version 23. 137 participants were participated in this study. This study results revealed that 19% of students had good knowledge, 73.7% of students had adequate knowledge and 7.3% had poor knowledge. Mean knowledge level was 61.05. The results of the present study show that, majority of the students (73.3%) had satisfactory knowledge level on tracheostomy care. Present study shows that, there is no any association between educational factors and the knowledge of the students regarding tracheostomy care. However when considering the personal and hospital related factors respectively, students wish on learning tracheostomy care (P value = 0.042) and staff support (P value = 0.01) have statistically significant association on the knowledge of the students.

**Keywords:** *Tracheostomy care, Knowledge, Factors, Nursing students*

## STATISTICAL METHOD TO AVERAGE RAINFALL ON A CATCHMENT AREA

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**Theissen Polygon Method (TPM)** is used to determine the **Average Rainfall on a Catchment Area (ARCA)**. Using higher number of **Rainfall Stations (RS)** in TPM increase the accuracy of ARCA. Missing data is a possible event in RS. Hence using large number of RS in TPM leads to possible missing estimated ARCA. Objective of the study was to find a **Statistical model (STM)** (with less RS) for ARCA determined from TPM. **Daily Rainfall Data (DRD)** of 11 RS (Balangoda, Alupola, Deepadena, Eheliyagoda, Galathura, Halwathura, Hapugastenna, Keragala, Wellandura, Ratnapura, Landsdown) from January-2001 to December-2006, at Ellagawa-catchment area in Kaluganga was collected from Dept. of Meteorology. For selected 100 random days ARCA was calculated using TPM and using above 11 RS. 22 days were with missing DRD at some RS and were removed from the analysis. Rest of the data were used in the best subsets in regression analysis and found that 96% of the variation of the ARCA calculated by TPM (using 11-RS) can be explained by the DRD in 5-RS at Alupola, Galathura, Keragala, Ratnapura & Landsdown. All the days (excluded the 100 random days) from January-2001 to December-2006 was used for model testing. Compared the estimated ARCA at Ellagawa from STM and TPM (using 11-RS). Found that 50% of the (ARCA-estimated from STM: ARCA estimated from TPM) are in between 0.75 and 1.25. Also compared the estimated ARCA at Ellagawa from STM and TPM using 5-RS; Alupola, Galathura, Keragala, Ratnapura & Landsdown. Found that STM is more accurate.

**Keywords:** *Theissen Polygon, Average Rainfall, Catchment Area, Statistical model*

## EVALUATION OF LARVICIDAL EFFECTS OF *PARTHENIUM HYSTEROPHORUS* L. LEAF EXTRACTS AGAINST *AEDES AEGYPTI* LARVAE USING DIFFERENT SOLVENTS

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Plant extracts can be used to control the larvae of dengue mosquito. The study was conducted to evaluate the larvicidal effects of *Parthenium hysterophorus* L. (*Parthenium*) leaf extracts against *Aedes aegypti* larvae using different solvents. Dried powder of leaves was subjected for sequential extraction using hexane, ethanol and water for 24 hours separately in Soxhlet apparatus and evaporated to obtain crude extract. Five different concentrations (0.1% to 0.5%) were prepared from stock solutions based on preliminary study. *Aedes aegypti* larvae were introduced (n=10) in triplicates. Mortality was observed after 48 and 72 hours of exposure. Mean larval mortalities were compared for different concentrations and exposure time using Duncan Multiple Range Test (DMRT). LC<sub>50</sub> and LC<sub>90</sub> values were determined for each extract at 48 and 72 hours. The larval mortality was significantly increased with the time and the concentrations of the leaves extracts ( $P < 0.05$ ). There were correlations between concentrations and probit mortalities in each extracts ( $R^2 > 70\%$ ). The highest larval mortality was observed in the water extract at 48 hours (LC<sub>50</sub> -146.43ppm and LC<sub>90</sub> - 389.71ppm) and in ethanol extract after 72 hours (LC<sub>50</sub>-132.84ppm and LC<sub>90</sub> -329.30ppm). Hexane extract showed low larval mortality at each time. Less than 10% mortality rate was observed in the control. As larvicidal activity was observed in all studied solvents, sequential extraction of leaf extracts using all solvent is effective and use of water as a solvent is more economical and applicable. Water leaf extracts of *Parthenium* has potential to be utilized as a larvicide to control *Aedes aegypti*.

**Keywords:** *Parthenium hysterophorus*, *Aedes aegypti*, Larvicide, Sequential extraction

## APPLICATION OF GEOMETRIC BROWNIAN MOTION MODEL TO SIMULATE THE SHARE PRICES IN COLOMBO STOCK EXCHANGE

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Investors buy stocks with the intention that it will yield income from dividends and growth, in value. The simulation is just an application of the Geometric Brownian motion, which is a particular type of Wiener process. Wiener process is explained dust or gas-particle moments. The Geometric Brownian Motion is a special type wiener process that can be used to simulate stock price moments. The main objective of this study is to forecast future stock prices by using the Geometric Brownian Motion model and this research considers the validity of this model in Colombo Stock Exchange. Closing share prices from 2014 to 2018 are obtained for a sample of six companies and simulated them using the Model. The volatility and annual return determined by using historical stock price data of the company. The stochastic process, in turn, models the random behavior of a stock price in continuous time. The accuracy of the model was measured by using the Mean average percentage error (MAPE) value. The MAPE values are between 0% and 10% implies that the GBM model is highly accurate. In the selected sample Commercial Bank (5%), Dialog Axiata (1.05%), Nestle Lanka PLC (1.1%), Ceylon Tobacco (1.027%) shows highly accurate results and Hatton National Bank (14.8%), John Keels Holding PLC (13%) implies Good accurate results. Results revealed that out of six companies, four companies show highly accurate results and two companies show good forecasts. This research provides the validity of Geometric Brownian Motion model in Colombo Stock Exchange.

**Keywords:** *Geometric Brownian Motion Model*, *Simulation*, *Share Prices*, *Colombo Stock Exchange*

**REVERSE APPROPRIATING NATIONALISM:  
LAPULAPU AS NATIONAL SYMBOL IN FILIPINO MARTIAL ARTS**

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The 1970s and 2000s saw growing interest and discourse between practitioners of Filipino Martial Arts (FMA) and state leaders on nationalism and national identity. The discourse sought to define these two concepts around the practice of FMA. The entire project culminated in the signing of Republic Act 9850 in 2009 which declared Arnis (a type of Filipino Martial Art) as the country's national symbol, sport, and martial art. Presently however, getting different practitioners to collectively implement government programs on FMA remains arduous. While the consensus among practitioners was congruous with the nationalizing agenda of the state, a main source of tension between practitioners was that they did not want their individual identities to be overshadowed by the national one that was being articulated. Types of FMA are deeply embedded in more localized socio-cultural realities, as well as enmeshed in delicate politics of martial prestige and reputation. Taking from the works of Hobsbawm & Ranger (1992), Ivy (1995), Smith (1986, 1991), and Pemberton (1994) on invented tradition, national identity, and national symbols, this paper argues that as the state appropriated FMA for nationalism, FMA practitioners used the project to situate and rationalize themselves in the nation. This paper analyses how FMA practitioners appropriate the pre-colonial hero *Lapulapu* as an FMA symbol in various ways such as congregating at *Lapulapu* monuments, representing him at cultural performances, and adopting his image in trophies and logos. This paper argues that practitioners made sense of Filipino national identity by articulating their martial identities through *Lapulapu*.

**Keywords:** *Nationalism, National Identity, Invented Tradition, Reverse Appropriation*

**IMPACT OF GREEN BANKING INITIATIVES ON CUSTOMER SATISFACTION;  
WITH SPECIAL REFERENCE TO PUBLIC SECTOR COMMERCIAL  
BANKS OF SRI LANKA**

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With the substantial trend towards greening the industry, banks introduce innovative green banking initiatives expecting their customers to be satisfied with them. Customers consume features of any product or service. Determining the impact generated by features of such initiatives on customer satisfaction, is important to be identified by bankers who are novel to the field of green banking in countries like Sri Lanka. Present research analyzed the impact of customer satisfaction with different features of green banking initiatives on overall customer satisfaction with green banking. Accordingly, present study has identified four main features of green banking initiatives namely; Security and trust, Ease of Use, value creation and Environmental & Social concern. Data were collected from 247 customers of public sector commercial banks. Structured questionnaire was used to collect data and random sampling technique was implemented. Multiple regression analysis and descriptive statistics have been used as data analysis techniques. Findings depict that all four features significantly influence the customer satisfaction on green banking. Security & trust and ease of use features have the highest impact on customer satisfaction followed by environmental and social concern features and value creation features respectively. It is revealed that none of the above features of green initiatives have satisfied the customers. Elder customers and less computer literate customers have less satisfaction on each feature in comparison to others. Analysis on Environmental & Social Concern features of green banking initiatives adds novelty to the present study.

**Keywords:** *Green Banking, Features of Green Initiatives, Customer Satisfaction*

## **NARRATING LOCAL MEDICINE IN COLONIAL ODISHA: SOME ASPECTS OF TRIBAL HEALTH & EPIDEMIC DISEASES**

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Odisha was a tribal dominated state. The most of people are tribals which inhabited in hill areas. Important tribes were Kandhas, Santals, Mundas, Gadbas, Hos, Bhuyans, Koyas, Juangas, Parajas, Sauras, Kols, Bhumijis, and the Bondas. The tribes of Orissa, their economy and colonial organization as well as belief and practice bear great similarity in the area. The changes and shifts of tribal life reflected in the indigenous disease, health and medicine in the state. The indigenous communities had the vision to develop health relating to disease and medicine. The aspect of health was considered vital and gave more importance to the medicine men and women. The tribal aspects of disease were specifically based on magic, spirits and ghosts. Another belief was that God sent diseases because the Earth was getting over crowded by human beings. The Didayis felt that *Mapru* (God) sent epidemics to earth in order to prevent it from over population. In this paper I have focused to analyze various diseases and their methods of eradication. The tribals of Odisha attacked by various disease like Small Pox, Cholera, Kalazar and Malaria during colonial period. But their practices basically depended on god and goddess for removal of diseases. So in this article I focused on what the colonial government intervened in tribal health and what are the responses of tribal people.

**Keywords:** *Tribal Disease, Medicine, Colonial Government, Epidemics*

## **KNOWLEDGE ON MANAGEMENT OF SNAKE BITES AND FACTORS INFLUENCING ON IT AMONG NURSING OFFICERS WORKING IN GOVERNMENT HOSPITALS OF JAFFNA DISTRICT**

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Snake bite has been recognized as a neglected tropical disease by the WHO. Envenoming is a significant public health hazard in Sri Lanka which is under tropical region. Snake bite victims have been being managed mainly by doctors and nursing officers. The effective outcome on required patients depend on level of knowledge of healthcare providers. Thus, this study was designed to assess the knowledge and to describe the association of educational, work related factors of nursing officers who are working in government hospitals of Jaffna district. A descriptive, cross-sectional study was conducted among 424 nursing officers working in government hospitals of Jaffna district during the data collection period from October 2018 to November 2018. A pre-designed and validated questionnaire was used for assessment. Data were processed in SPSS version 23. The mean age of the study participants was 32.81. Among the study participants only 8.4% had good knowledge, nearly 35% of the participants were in average knowledge level and majority of the study participants (56.1%) had poor knowledge. The knowledge on management of snake bites significantly influenced by the factors such as level of basic training, special training, type of unit, support from staff, high number of patients, ethical barrier, distraction and interruption, period of lecture hours, attended number of training programmes and educational level. Lack of knowledge among participants indicate the need of frequent updates to gain the knowledge on snake bite management. Relevant health institutions should take appropriate measures to ensure that nurses have the appropriate knowledge and skills to manage the snake bite.

**Keywords:** *Snakebite, Management, Knowledge, Nurses, Jaffna*

## ASSESSMENT ON ALGAL DIVERSITY OF BATIGAMA, SRI LANKA PRIOR TO SOUTH-WEST MONSOON-2019

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Present study was conducted at Batigama, Dikwella algae bed to investigate the diversity and abundance of marine macro algae species before the start of South West monsoon, March-April 2019. Batigama (5.9650<sup>0</sup> N, 80.6854<sup>0</sup> E) situated at southern coast of Sri Lanka is considered as an important study site for its diverse algal composition. During the study period (March –April 2019) first week and last week of each month, a quadrat (0.5m x 0.5m) was placed at 30 sampling locations. Algal identification was carried out in situ and at the faculty of fisheries and ocean sciences laboratory using standard algal identification guides and keys. Shannon wiener diversity index (H) were used to characterize species diversity in each month respectively. In March H was recorded as 2.22 and 1.17 and in April H were 2.37 and 2.39 respectively. Sum of 32 algal species belong to 18 families was identified with highest abundance of *Ulva lactuca* (March -15.5% and 24.0%, April-19.3% and 23.6%) followed by *Sargassum* sp.(March-13.0% and 18.2%, April-7.8% and 9.06%) while lowest abundances were *Chaetomorpha antennina* (March-0.2%, April-0.1% and 0.2%) and *Cladophora herpestica* (April-0.1% and 0.1%). *Ulva lactuca* and *Sargassum* sp. were dominating species at Batigama algae bed and *Caulerpa racemosa* was the only species dominating in submerged adjacent waters.

**Keywords:** *Abundance, Batigama, Diversity, Quadrat, Species*

## MEDICAL STUDENTS' ACHIEVEMENT OF LEARNING SKILLS IN VARIOUS LEARNING METHODS - A SYSTEMATIC REVIEW

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Medical Education has changed worldwide and the Medical teachers are expected to reconsider the way of teaching and learning methods. Student and teacher centered learning methods are implemented in a hybrid way in most of the universities. Our aim was to analyze students' achievement of learning mainly critical thinking, team work, self-directed learning and deep learning through Interactive lectures, Problem-based learning (PBL) and Team-based learning (TBL). The relevant full texted articles in the last five years were searched using Pubmed/Medline and three relevant articles were selected for the meta-analysis. The searched articles were imported to Review manager 5.3 version for Meta-analysis. The Meta-analysis among Interactive lectures, PBL and TBL showed that PBL enhances critical thinking (Odds Ratio 54.29, CI 95%) and self-directed learning (Odds Ratio 79.88, CI 95%) while TBL increases the team work (Odds Ratio 22.62, CI 95%). The analysis between PBL and Interactive lectures revealed that Interactive lectures help deep learning (Odds Ratio 95.60, CI 95%). Critical thinking, Team work, Self-directed learning and Deep learning are crucial for continuous professional development among health care professionals. Each teaching methodology in the analysis showed contribution in the development of various skills. Literature shows that PBL is incorporated in the Medical curriculum to uplift the critical thinking and self-directed learning among students which is similar to our findings. A hybrid teaching methodology including Interactive lectures, PBL and TBL may help the health care professionals in continuous professional development.

**Keywords:** *Interactive lectures, Problem-based learning, Team-based learning, Critical thinking, Self-directed learning, Deep learning*

## **RELATIONSHIP OF PAIN DURATION AND PAIN INTENSITY WITH DISABILITY AMONG CHRONIC NECK PAIN PATIENTS IN SRI LANKA: A CROSS SECTIONAL STUDY**

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Neck pain is the fourth leading cause of disability in daily life. It is critical to identify the relationship of pain intensity (PI), pain duration (PD) with disability as it is not fully understood. The aim of this study was to investigate the relationship of PI and PD with the disability. The sample of the study was chronic neck pain patients 112 (male 27, female 85) aged 20 -70 years attending the Rheumatology clinic at the Colombo South Teaching Hospital and National Hospital Sri Lanka. PI was measured by a visual analog scale. Neck Disability Index questionnaire was used to assess the functional disability. To determine the relationship of PI and PD with disability Spearman's correlation coefficient was used. Percentage 90 patients were above 40 years of age. PD was ranging from 3-216 months with an average of 33 months duration. Percentage 50 (56/112) graded the pain to be the worst possible, 41.1% (46/112) graded the pain as severe and 79.5% (89/112) had a severe neck disability. High level of PI had increased level of disability. A positive and a moderate association between neck PI and disability was evident. No association was seen between PD and the disability. The findings were compatible with published previous studies where a moderate, but a strong association between neck PI and disability has been reported but PD not affecting the functional disability. PI is a strong indicator and PD is a poor indicator of disability. These results have inference for future clinical and epidemiological studies.

**Keywords:** Neck disability index, Pain intensity, Chronic neck pain, Pain duration

## **INVESTIGATION OF REDUCED HEAT TRANSFER DUE TO FOULING IN MULTIPLE EFFECT EVAPORATORS OF SUGAR MANUFACTURING PROCESS USING COMBINED EXPERIMENTAL AND MATHEMATICAL APPROACH**

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Cane sugar manufacturing is performed by extraction of juice, clarification of juice, concentration of clear juice, crystallization and drying. Juice concentration is accomplished by multiple effect evaporators. Fouling on the heat transfer areas (calandria) of the evaporators leads to weekly shut down of the processing plants. The objectives of this study are to analyze and quantify the rate of fouling, model the reduced heat transfer in calandria with fouling and thereby emphasize the increased energy efficiency with reduced fouling. The study focuses on two sugar factories operating quadruple effect evaporators and quintuple effect evaporators. Scale (fouling) samples were collected from each evaporator and chemically analyzed for major constituents. The rate of fouling was determined by chemically analyzing clear juice and syrups for 40 hrs before and after shut down. Mathematical model was developed in MATLAB 7.0 using balance equations for energy, material and species assuming that fouling occurs predominantly by particulate and precipitation fouling. The major constituent for fouling was detected as Calcium and the rate of fouling in terms of Calcium was 0.27 kg and 0.093 kg per ton of juice boiled, respectively in quadruple and quintuple effects. The model predicts the growth rate of fouling and temperature variation with time. The model compares the heat transfer in using electromagnetic ionization apparatus; a fouling reduction technique in quintuple effects. The model can further be improved by changing brix% of juice, inserting effect of convective heat transfer coefficient of cane juice and including effect of vacuum to final effect evaporator.

**Keywords:** Sugar, Evaporators, Fouling, Modeling

## IMPACT OF EMPLOYMENT DIVERSIFICATION ON THE AGRICULTURAL LABORERS IN INDIA

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Agricultural laborers are the laborers who possess a small portion of cultivable land or do not have any land at all and hence engage in another person's land for wages in money, kind or share (Census, 2011). The NSSO survey (70th round of Situation Assessment Survey of Agricultural Households, 2013) reveals that 56 percent of the agricultural laborers still possess less than 0.01 hectares of land, which is far below the requirement to maintain a minimum standard of living. To overcome the socio and economic instability and rising level poverty, agricultural laborers look for additional sources of income from the on-farm, non-farm and non-market activities. In this paper, we have tried to estimate the poverty level among the agricultural laborers in West Bengal based on a primary dataset by calculating monthly per capita consumption expenditure based on the adult equivalent approach. The dataset having a sample size of 405, is randomly selected backward block - Bhagawanpur-1 in the district of Purba Midnapur in West Bengal, India. We have then examined the possible factors which can reduce the poverty level among the agricultural laborers in our study area. The result shows that Simpson and Berry's diversification indices both are negative and have a significant effect on the poverty level of agricultural laborers. Possession of landholdings, usage of family laborers, fewer unemployed days of the respondents, and female participation in the Self-help group are other important factors significantly affecting the income of a household in our study area.

**Keywords:** *Agricultural labor market, Poverty level, Diversification index, Logit regression analysis*

## ANTIBIOTIC-ASSOCIATED DIARRHOEA IN HOSPITALIZED ADULT PATIENTS OF MEDICAL AND GENERAL SURGICAL UNITS OF TEACHING HOSPITAL, KARAPITIYA, GALLE

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Antibiotic-associated diarrhoea (AAD) is a known adverse effect of antibiotic administration. It can be defined as a kind of diarrhoea which arises with the use of antibiotics for different purposes. Even though antibiotics are commonly prescribed, epidemiology of antibiotic-associated diarrhoea in Sri Lanka is poorly documented. This study was conducted to evaluate the prevalence and the factor influencing Antibiotic-Associated Diarrhoea in hospitalized adult patients in Medical and General Surgical wards of Teaching hospital Karapitiya.

A prospective descriptive cross-sectional study was conducted from March to April 2018. A total of 510 adult patients, who received antibiotics in the surgical and medical wards were enrolled for the study and followed-up, until their discharge from the hospital and data collected using questionnaires. Data was analysed using SPSS (version 22) software. 13.7% developed AAD, 14.7% developed mild diarrhoeal illness, and 71.6% didn't develop any diarrhoeal symptoms. The mean age of patients who were receiving antibiotics was 49 years, and 54% were male. Prevalence of AAD was influenced by the age of the patient, length the of hospital stay, number of antibiotics taken, duration of antibiotic therapy, number of co-morbid illnesses, use of enteral feedings, abdominal surgeries, use of intravenous only antibiotics, use of antibiotic combinations, the total number of antibiotics and use of some concurrent medications. In conclusion, this study shows that AAD is seen in our country even though the prevalence remains low in the selected wards of the Karapitiya Teaching hospital when compared to the other countries.

**Keywords:** *Adults, Antibiotic-Associated Diarrhoea (AAD), Prevalence, Risk Factors*

## **AUTOMATIC FETAL HEAD SEGMENTATION USING SPCEIAL FEATURES IN ULTRASOUND IMAGES**

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The gestational age is one of the key factor requires to monitor the healthy growth of fetal during the development stage. The manual approach to extract the biometric features such as head circumference (HC) from the ultrasound images of a fetal head to determine the gestational age is very tedious and time consuming task. Therefore computer vision experts are developing algorithms to automatically measure the gestational age. However the precise segmentation of HC in the ultrasound images is very challenging task in the field of biomedical image analysis. This paper propose a multi-intensity level thresholding to identify the high intensity region and the region of interest (HC) is localized through the confident level, which is the overlapping between the identified high intensity regions. Further additional geometrical constrains are added to localize the curved region of the HC and ellipse is fitted to get initial border mark around the HC. The preliminary testing gives promising results and in 80% images the ellipse based border marking capture the HC. Intensity based approach is very challenging in ultrasound image due the spackle property of the ultrasound scan. Therefore still it is a challenging research in the field of biomedical image analysis. The future study will focus on the fine tuning of the initial border mark to exactly segment the HC region and measure the gestational age. Further the study will be extended to tune the parameters to increase the localization ratio.

**Keywords:** *Threshold, Gestational age, Head circumference, Multi-intensity*

## **AWARENESS AND PERCEPTIONS OF PHARMACISTS ON DISPENSING ERRORS**

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Errors may happen during the dispensing process and result in patient harm. Dispensing errors (DE) are preventable by error-proofing the system and through vigilant pharmacists. This study focused on assessing awareness and perceptions on the prevalence, nature and possible causes of DEs among pharmacists in selected hospitals in Sri Lanka. This was a descriptive, cross sectional and multi-center study where all pharmacists in three hospitals (one tertiary and two secondary care) in three different districts were interviewed (N=48) using pretested and validated (content and face) interviewer administered questionnaire. Data was analyzed using IBM SPSS (version 25.0). The questionnaire assessed perceptions on the prevalence, types, and possible causes of DEs. Most pharmacists were within the age 20-40 years (67%) and 54% were women. Most pharmacists agreed that DEs could happen (90%) in Sri Lanka while the rest (10%) stated they had 'no idea' about DEs. The majority of pharmacists (62%) agreed the possibility of them committing a DE in the current hospital setup. Over 90% of pharmacists correctly identified the different types of DEs. Missing or wrong medicine information on dispensing labels (<10%) and dispensing the incorrect number of medicine units were not identified as DEs by a few (10%). Among many reasons, pharmacists perceived that poor hand writing of prescribers (92%), similar or confusing medicine names (85%), dispensing to incomplete prescriptions (83%), and over worked pharmacists (81%) as main causes for DEs in Sri Lanka. These concerns must be urgently addressed by medical administrators to ensure medication safety of patients.

**Keywords:** *Dispensing, Errors, Pharmacists, Awareness, Causes*

## **A SYSTEMATIC REVIEW ON THE EFFECTS OF MEDITATION ON LENGTH OF HUMAN TELOMERES IN HEALTHY INDIVIDUALS**

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Meditation creates a clear, stable, and calm mind by training attention and awareness. Empirical evidence shows that meditation practices such as insight, mindfulness (MM), Zen (ZM), loving-kindness (LKM), and heartfulness reduce the shortening in human telomere lengths (TL), thus delaying cellular aging. This systematic review investigated the effects of meditation on TL. PubMed, Google Scholar, and Scopus were searched using the terms “telomeres”, “telomerase”, “meditation”, and “mindfulness”. Randomized controlled-trials (RCT) and case-control studies (CCS) which recruited healthy participants were selected. The intervention groups in RCT and meditators in CCS practised various meditation techniques. The comparison factors were: pre-and post-meditation TL difference in RCT and TL of meditators and controls in CCS. Two reviewers using a pre-designed data collection form independently extracted data. Out of 62 articles, two CCS with 42 controls and 35 meditators practicing either ZM or LKM, and one RCT with 142 participants who practised either MM or LKM for 12 weeks were eligible for inclusion. All three studies had low risk of bias. One CCS showed female LKM meditators had significantly longer median relative TL than controls ( $p=0.007$ ). The second CCS showed ZM meditators had significantly longer median TL than controls ( $p=0.005$ ). In the RCT, LKM group had a significantly smaller decrease in the TL ( $p=0.024$ ) than controls, and the MM group showed no significant differences ( $p=0.37$ ). As this review included only few studies, strong conclusions cannot be made. However, LKM and ZM techniques were shown to reduce TL shortening. More RCT are needed to investigate the effects of meditation on TL.

**Keywords:** Zen meditation, Loving-kindness meditation, Mindfulness meditation, Telomere lengths

## **ETHNIC AND POLITICAL DRESS OF WOMEN: SOCIO-CULTURAL INFLUENCES AND ARTISTIC REVIEW IN SRI LANKAN CONTEXT DURING AND AFTER POSTCOLONIAL PERIOD**

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Sri Lanka was governed by three nations and British impact was enormous on dress culture of women during early 20<sup>th</sup> century. However, after independency in 1948 it was dramatically changed due to the patriotic influences on female dress and highly impacted on ethnic and political dress of women. That was a turning point of female dress fashion and this study focused to analyze Sri Lankan women's dress culture and its influencing factors during and after postcolonial period. The analysis of this study is based on how and why the dress of women who lived during and after postcolonial period was changed in style. Further, argued the causes that were affected to change the dress code and different kind of dress preferences of women. The objectives of this study are to examine the influences of dress fluctuations and style preferences of women with special reference to political and ethnic dress. Inductive qualitative methodology was determined as data analyzing process and multiple methods used to gather the data. As conclusion, predicted ethnic and political dress fashion of female in Sri Lanka during and after postcolonial period.

**Keywords:** Women, Fashion, Sri Lanka, Ethnic and Political Dress

## **SOCIO-CULTURAL AND ECONOMIC STATUS OF WORKERS OF BHERIES OF EAST KOLKATA WETLAND - A CASE STUDY OF KHANABERIA AND BORO DHAL**

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East Kolkata Wetland (EKW), is the largest sewage fed aquaculture system of the world and the natural sewage treatment plant of Kolkata, where a large number of local people are involved as workers in the sewage fed fisheries or 'bheri'es for their livelihood. The objective of the paper is to understand whether the variation in explanatory variables viz. socio-cultural-economic, do explain the wellbeing of the workers. It also identifies the significant variables that affect the standard of living of the respondents and to form a causality diagram of their livelihood. Data are collected from primary sources with structured questionnaire administered to the respondents of the two bheries. To capture the association between the variables, we have used chi-square, paired T test, correlation and regression. The study found that there exist a positive association and uni-directional correlation between the satisfaction level of job and income of the workers of Khanaberia and Boro Dhal. However, average satisfaction regarding work place is significantly higher than income at 5% level of significance. It has been observed that different types of jobs performed in the work place create significantly higher satisfaction than income at 3% level of significance. One significant observation has been found out that women participation as fishery-worker is nil. Workers employed in the *bheries* are deprived of basic amenities of life like education, communication and health. EKW, the kidneys of Kolkata, is the principal source of fish and vegetables for Kolkata. However, reciprocity cannot be found in terms of basic facilities of socio-cultural-economic standard.

**Keywords-** *Socio-Cultural-Economic Status, Bheries, EKW, Khanaberia, Boro Dhal*

## **THE IMPACT OF AN INTERMEDIATE LANGUAGE IN LITERARY TRANSLATION: A STUDY BASED ON FRENCH LITERARY WORKS TRANSLATED INTO SINHALESE**

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Each year, hundreds of literary works of renowned international authors are being translated into Sinhalese on popular demand. However, much of these literary works which are written in languages other than English are not always translated directly from the source text. In such instances, English acts as an Intermediate language (L2) between the source (L1) and target (L3) languages. A literary translation is always at a risk of being filtered or losing originality due to cultural and language structure differences of the source and the target. Hypothetically the presence of an intermediate language would enhance that risk as the translator of L3 is entirely dependent of the translator of L2. This could result in misinterpretation or incomprehensibility of the source text. For the purpose of this study, aforementioned hypothesis is explored by close analysis and comparison between the French (L1) source text "La Porte Etroite" by Andre Gide, its two Sinhalese (L3) translations ක්‍රි. සං. ධ්වනියා (*kheda sandhwaniya*) by Rev. Mandawala Pannawansa Thero and පටුයි වාසල් දොර (*patuy waasal dora*) by J.A.Ariyaratna. While the first has been translated to L3 from L1, the latter has been translated to L3 from the English (L2) translation "Strait is the Gate" by Dorothy Bussy. The analysis of the texts is conducted based upon grammatical, cultural aspects and factual accuracy. The study seeks to conduct a comparison between the two Sinhalese (L3) translations to determine as to what extent the presence or the absence of an Intermediate (L2) language affect the quality of the translation.

**Keywords:** *Filtration, Intermediate language, Misinterpretation, Literary translation, Source text, Target text*

## **POLICIES TO RESOLVE FARMERS' WOES IN INDIA**

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This paper addresses the issue of food security in a country like India. This paper shows that under conditions of free market in a country like India, food output is likely to be substantially less than its potential level given the stocks of available land and agricultural infrastructure. Because of very poor bargaining strength of the farmers in both the product and credit market, they get caught in a perpetual debt trap. This makes food output substantially less than its potential level. This paper also reveals the fragility of food supply under free market conditions. It also formulates policies that the government can adopt to raise food output to its potential level and to reduce the fragility of food security. It shows that the policy of loan waiver will not improve either farmers' economic conditions or the state of food security. To improve food security and farmers' economic conditions, government has to intervene either in the product market with food procurement program or in the credit market with suitable credit cum interest rate policies or both.

**Keywords:** *Food Security, Farmers' Debt, Procurement Policy, Credit Policy*

## **CONTRIBUTION OF SECONDARY EXPENSES BASED EMISSIONS ON TOTAL CARBON FOOTPRINT: A CASE STUDY IN BALANGODA DIVISIONAL SECRETARIAT DIVISION**

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Contribution of carbon on global climatic changes is considerably high all over the world. Daily human activities substantially contribute to the global carbon account. Therefore, the present study focused on identification of major drivers and spatial differences of household carbon emissions in Balangoda Divisional Secretariat Division, Sri Lanka. Six local administrative divisions were selected for study, representing low, moderate and high emissions. Prevailing population distribution, household fuel and electricity consumption, land surface temperature and Normalized Difference Vegetation Index (NDVI) of area were considered in determining different magnitudes in distribution of carbon encouraging factors in selecting study area. Pallekanda and Massenna, represented low, Ellepola and Jahinkanda; moderate and Balangoda and Pettigala represented high carbon emission potentials. A total of 251 households representing 10% of total households were selected using stratified sampling method. Questionnaire survey covered consumption of electricity, fuel, transportation and secondary expenses. Results revealed that secondary household expenses contribute 80% for emission and it included expenses on food, vehicles, education, health and recreation. Secondary expenses based emissions from Balangoda ranked in the first 101.04 MTCO<sub>2</sub>e, Pettigala 97 MTCO<sub>2</sub>e and Jahinkanda 63 MTCO<sub>2</sub>e. Results of Principal Component Analysis (PCA) highlighted that the secondary expenses related to food, education and health are prominent in carbon emission. It further revealed that the monthly average expenditure on food in more than 75% of households in these three GNDs is more than Rs. 35000. Findings of this study is an eye-opener for the general community to maintain their daily necessities in an environmental friendly manner.

**Keywords:** *Climate change, carbon emission*

## COORDINATION, COOPERATION AND GRADUATES' EMPLOYABILITY

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Nowadays, the main role of the university is to produce employable graduates since the graduate unemployment becomes as a burning problem in Sri Lanka. The relationship among the stakeholder creates a space for mutual discussion and argument in order to have effective and efficient coordination and cooperation (Hebermas, 1984 & 1987). The purpose of this paper is to understand the levels of coordination and cooperation among various stakeholders of the state universities in Sri Lanka. Particularly, between academics and industrialists, academics and administrators and academics and students. This empirical study was undertaken qualitative embedded case study to investigate the phenomenon with the sub theme emanating from data are the forum for dialogue, trust, commitment of stakeholders to achieve a common goal and mutual expectations. Based on the empirical evidence of the study, it is concluded that absence of forum for dialogue, lack of trust and commitment of stakeholders are the main reasons to achieve a common goal and a mutual expectations which resulted to lack of coordination and cooperation among the main stakeholders of the state university.

**Keywords:** *Employability, University, Coordination and stakeholders*

## ANALYSIS OF QUALITY OF GROUNDWATER BY USING MULTIVARIATE STATISTICAL ANALYSIS -CASE STUDY MEDAWACHCHIYA AREA

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Human health is affected by water quality in various ways. Researchers revealed that prevalence of Chronic Kidney Diseases with uncertain etiology (CKDu) may have caused due to the quality of drinking water and the causative agent of that is still uncertain. There were many efforts to solve the problem by considering effect of individual parameters. Therefore, present study was focused to identify the quality of groundwater in Madawachchiya area with high prevalence of CKDu by considering multiple parameters than single ones. The study area with 750Km<sup>2</sup> was divided in to 30 quadrats and middle point of each was taken as a sampling location. Study was conducted for two years and twenty-four water quality parameters were analyzed. Data analysis was performed by using multivariate statistical analytical technique as a tool. Hierarchical cluster analysis was used to identify clusters of sampling locations with similar characteristics using a dendrogram. Pearson correlation was used to identify the relationship between the parameters and principle component analysis (PCA) was used to identify the major factors that affect the water quality in Medawachchiya area. Cluster analysis indicated four clusters as Low, Moderate, High and very highly polluted water sources in the study area. Analysis indicated presence of three low polluted, eight moderately polluted and nineteen high and very highly polluted water sources. EC, total hardness, total alkalinity, Na, Ca, Mg, Cl, K and sulfate indicated strong and moderately positive correlations. According to the factor analysis, pollution of water in the study area are based on two major factors; a hydro-geochemical influencing factor and agrochemical influencing factor.

**Keywords:** *Groundwater, Water quality, Cluster analysis, Correlation, Factor analysis*

## **REDISCOVERING SMALL CULTURES: A CASE OF DEPENDENT CASTES IN DALIT COMMUNITIES IN TELANGANA STATE OF INDIA**

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India has been a haven for caste practice for centuries. The mushrooming of castes, sub-castes and dependent castes can be attributed to varna system. Foreign governance in India could not eradicate this evil which defied even the social struggles launched by Dr.B.R.Ambedkar, the architect of the Indian constitution. The social struggles which created awareness lead the untouchable millions to embrace Buddhism. The rest follow Hinduism.

The dependent castes are basically artistes who in their special costumes perform *Yekshagana* and the story of Yellamma using their traditional musical instruments. They are also known as Chindu artistes or Chindu Madigas. The *Yekshaganam* that they perform is called Chindu *Bagotham* or Chindu *Bhagavatham*. In their performance, they create aesthetic pleasure from the stories taken from the *Bhagavatham*. These artistes as cultural representatives are rated and treated as inferior in the caste hierarchy within the Dalit community.

In this backdrop, this paper would examine the social, cultural and economic relations of the dependent castes with the patron castes. It also looks at the artistic performances of the dependent castes with historic significance in the cultural formations of small castes. It also explores how the growing technology in film industries has become onslaught on the vanishing dependent Dalit communities.

**Keywords:** *Varna, Dalit, Chindu Madiga, Buddhism, Culture, Yekshaganam*

## **A MULTI-LEVEL DESCRIPTIVE STUDY ON UNDERGRADUATES' ACADEMIC LITERACY IN ENGLISH MEDIUM DEGREE PROGRAMMES**

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The work of many poststructuralist linguists has viewed the notion of Academic Literacy (AL) critically. This critical approach has also led its way to view academic literacy as a social practice in contrast to the existing dominant cognitive approach to academic literacy. In the Sri Lankan Higher Education (SLHE) context, there is an observation about the nonattendance, while the need to achieve quality outcomes of academic literacy in English Medium Degree Programmes (EMDP) remains uncritiqued. The aim of this study is to critically analyze the notion of academic literacy in SLHE with a view to identifying the macro, meso and micro level challenges that hinder undergraduates gaining AL. The identification of multi-level challenges has been achieved by three means: (a) inquiring into the policy level decision-making official documents of SLHE, (b) analyzing the views of larger university academic population, and (c) observing the existing pedagogical practices within various English medium study disciplines in three state universities of SLHE. A Qualitative Content Analysis (QLCA) has been applied to analyze reported data. This paper discusses the dominant theme out of three major themes identified in the analysis: the autonomous understanding of academic literacy, leading to the perception of the mediating language simply as a tool of communication, giving rise to an overriding practice. The aforementioned practice prevents subject lecturers from reflecting on their own disciplinary norms which may hinder undergraduates gaining academic literacy: a major challenge among many others.

**Keywords:** *Academic literacy, English medium degree programmes, Sri Lankan higher education, Cognitive/ Social approach*

## DEVELOP ABDOMINAL MUSCLE ENDURANCE OF THE NETBALL PLAYERS IN SABARAGAMUWA UNIVERSITY

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Netball is one of the most competitive worldwide games in Sri Lanka. The University level Netball provides a good foundation to Sri Lankan Netball. The purpose of this research was to effect of 8 week Endurance training program with developing abdominal muscles endurance performance in Sabaragamuwa University Netball Pool. 10 weak players were selected as experimental (EG,  $n = 10$ ) group by doing a pilot study. 8 week training program was applied by the researcher to practice for developed abdominal muscles endurance capacity training three times a week for 8 weeks. Abdominal exercises for training sessions were given for the group to develop abdominal muscles endurance capacity. Used to test battery, observations, photographs, were used to gather data. Minitab 17 software (version- 6.1.7600 Build 7600) and Microsoft excel 2007 were used to analyze pretest, posttest to get the progress of the research. The results were taken by giving 2 attempts by both tests. Paired T test was used to determine the effect of the training program. The test statistics has showed as  $p=0.000$ . According to the calculation the p-value of treatment group is  $< 0.05$  and therefore, there is a significant difference between pretest, posttest of treatment group. According to overall analyzed data positive influences of abdominal muscles endurance capacity greatly affected on high level performances of Sabaragamuwa University Netball pool.

**Keywords:** *Netball, Muscles endurance, Abdominal, training session, capacity*

## UNDERSTANDING THE INFLUENCE OF WORK VALUES ON WORKPLACE COMMUNICATION ENVIRONMENT AND JOB QUALITY: FROM THE PERSPECTIVE OF TERTIARY STUDENTS

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Work values have not been explicitly linked to expectations of job quality and workplace communication environment. The purpose of this study is to investigate the relationship between work values and expectations in terms of job quality and workplace communication environment of undergraduate students. Whether there are significant differences in terms of work values, job quality and communication environment among cultural and demographic variables was also examined. A survey of 795 undergraduate students in China, Thailand, and United Arab Emirates was conducted. SEM and a series of one-way ANOVA tests was carried out. The results show that work values have significant effects on job quality expectations and workplace communication environment. This study also identifies extrinsic values as the most important work values of our future job market entrants. The findings suggest that job seekers are more likely to choose jobs and workplace communication environment that are similar to their personal work value orientation. Cross mean comparison showed differences in culture, gender and work experience between the three samples in the variables under investigation. The study underscores the importance of job quality and communication environment as important motivators in the workplace. Practical implications for management and counseling are offered.

**Keywords:** *China, Communication environment, Job quality, Thailand, United Arab Emirates, Work values*

## AN ANALYSIS OF HINDI FILM STORIES AND ITS ROI

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The linguistic narration which turned into pictorial narration, and textual heteronomy whose primary symptom is the absence of an integral narrative structure, produced 'all inclusive film structure'. Indian film industry is as heterogeneous and hybrid as any other Film industry in the world and story too occupies a place with other components like anywhere else, even then why majority of the films are not yielding much desired results.

Much has been debated and glorified about 'dominance of a single ideological master narrative', 'observably pervasive of the Indian cultural environment', 'historical contingency' and 'outside influences' and 'frequent borrowings of elements' etc., the debate has been multi-fold and entering in story writing sphere disguising as 'context free' and 'context sensitive'. Despite the fact that the amount of scholarly research in this area is rapidly growing, its impact on practice has not been as significant as in other components. The ever evident narrative literature, the Indian cinematic convention exhibits 'oral' and 'non-literal' mindset till date. Central to the Indian discourse are notions of extravaganza, tamasha, focus on emotions, ecstasy and despair.

The paramount pressure of RoI (Return on Investment) has jolted the knees of film industry more than before because of the polymorphic prerogative, and, sepulchral predicament does not fulcrum. Our way of storytelling needs revision, the explorative approach of this paper is to give a clear and comprehensive account of story structures, returns in terms of economics, blurred and now restructuring causality, and picking shared similar patterns.

**Keywords:** *Hindi Film Industry, Bollywood, Oral Tradition, RoI, Film Business, Story, Plot Causality, Restructure*

## IMPACT OF TECHNOLOGY IN HIGHER EDUCATION AND STUDENT CENTERED LEARNING

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Novel trends and improvements in technology have become highly influential factors in higher education during this digital era and these advances in the digital technology have paved the way for a higher input and a productivity in learning. Technology has made information accessible and transmittable from anywhere to anyone and specifically, this ample availability has made learners more autonomous in the learning process by now. Traditionally the education system within Sri Lanka is more teacher- centered and in length is limited to printed materials. Thus, there is an observable inefficacy within the students in meeting with the demands created by the workforce and knowledge spectrum within this highly digitized era. This article explores the effectiveness of using technology in higher education specifically in places where student centered learning is promoted and it describes the mechanism of generating and acquisition of knowledge mediated through technology. Taking diverse measurements of student performance into consideration this research will demonstrate how technology mediated learning promotes student centered learning where by the learner autonomy is heightened when properly aligned with the objectives and aims of any particular course module prescribed for the learner. Herein, the ability to get instant feedback, ability to revisit the learning source and the opportunity for students to take their own initiation in the process of learning were recognized as vital features which were in other words the benefits of learning mediated through technology.

**Keywords:** *Student- centered learning, Instant feedback, Technology, Learner- autonomy*

## FACTOR AND IMPACT ANALYSIS ON PERFORMANCE OF THE HEALTHCARE SYSTEM IN SRI LANKA

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The public sector under the Ministry of Health runs the largest number of hospitals and the inpatient segment in Sri Lanka. Health indicators in the country are remarkably high in the Asian region and some indicators are as high as developed countries. Although the public sector operates the largest network of hospitals and preventive care institutions, there are considerable disparities in perceived quality and availability of public healthcare provision in district levels. The resulting imbalance of utilization has led to long waiting lists, overcrowding in tertiary healthcare institutions and low health performance indicators in some districts. Therefore, this paper analyzes the impact of various factors on the performance of the health sector in Sri Lanka. The study examines the regional characteristics correlation among human resources, physical resources, health expenditure per capita, and performance using secondary data gathered through reports published by governmental and non-governmental organizations and international agencies between 2010 and 2015. Findings suggest that in the districts where human resources to population ratio are less, health indicators are significantly lower. In addition, increasing health expenditure does not give a positive impact on health performance indicators when human resources are not available. Therefore, the government should focus on reducing the disparities among districts according to the available resources and population without spending more unnecessarily.

**Keywords:** Human resources, Physical resources, Health expenditure per capita, Performance

## CARDIORESPIRATORY ENDURANCE AMONG SRI LANKAN TRADITIONAL DANCERS

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There are three main styles of Sri Lankan traditional dance: Kandyan, Low country, Sabaragamuwa. This dance forms differ in their styles of body-movements and gestures. The Kandyan Dance is traditionally performed to drum beating only. The Sabaragamuwa dance style is performed to worship the God of Saman. Dances in low country are highly ceremonial. Cardiorespiratory endurance measures how well the body performs during long periods of exercise. A person with high cardiorespiratory endurance can sustain high-intensity activities over an extended period without getting tired. This study examines that the action taken to “Cardiorespiratory endurance among Sri Lanka traditional dancers”. Therefore, this study thirty (N=30) female traditional dancers (age 21/24+. 1) randomly selected as subject (kandyan-10, Low country-10, Sabaragamu -10). Subjects were taken from Negombo zonal dance academies. Data were gathered by doing pre-test and pre-test by using 20m Multistage Fitness Test (Beep Test) and observation. Especially develop cardiorespiratory level in dancers by doing several dance activities and cardiorespiratory training schedule within the course of 08 weeks. Training had done every morning one hour six days per week. Paired t test was used to analyze the data by using MS Office and one way Anova test. According to the pre-test and pre-test there was significant difference between cardiorespiratory endurance and the P value is 0.000 (P<0.05). Monitoring of these measures enhances our understanding of dancers’ cardiorespiratory endurance level and assists with the identification of areas where additional supports are required.

**Keywords:** Traditional dance, Cardiorespiratory endurance, Fitness

## ADAPTABILITY OF SRI LANKAN PADDY FARMERS ON SEASONAL RAINFALL VARIABILITY

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It is now evident that climate in Sri Lanka has undergone significant changes and rainfall variability has become a critical factor in paddy cultivation as the principal cropping seasons follow the rainfall pattern. Therefore, objectives of the study were to evaluate the existing adaptation strategies followed by paddy farmers and to suggest most appropriate adaptation strategies through farmers' knowledge. The research based on primary data from paddy farmers and 11 administrative districts of the country were considered. Qualitative statistical method of preference ranking method and quantitative statistical methods of percentiles and one proportion significant test were used for the data analysis. According to the first priority of the preference ranking method, about 30% of the paddy farmers have shifted to other crop productions. Another 27% of the farmers have made adjustments by changing the crop calendar to match with the rainy seasons. Considering suggestions given by the paddy farmers to increase their adaptation capabilities, the main suggestion (32%) was related to the repair of old tanks and canals in order to increase water storage capacity. Another 25% suggested an accurate crop calendar to match with the rainy seasons. The study concludes that statistically insignificant proportion of the sample follows adaptation strategies as well as receives external support to minimize the adverse impact of seasonal rainfall on paddy production. Therefore, it is vital to facilitate well-coordinated and continuous support from the government and other relevant authorities with the aid of farmers' knowledge.

**Keywords:** *Rainfall variability, Paddy cultivation, Adaptation strategies, Paddy farmers, Preference ranking*

## ENVIRONMENTAL CONSEQUENCE OF PHOSPHORUS FERTILIZER IN PADDY FIELDS ON WATER RESOURCES: THROUGH GREY WATER FOOTPRINT APPROACH IN LOW COUNTRY INTERMEDIATE ZONE, SRI LANKA

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A study was carried out to determine Phosphorus leaching losses from paddy field through Grey Water Footprint approach for four consecutive growing seasons from 2015 to 2016 under normal agronomic practices in Low Country Intermediate Zone, Sri Lanka. Two experimental sites; one in Rice Research and Development Institute (RRDI) which was well managed with controlled run-off losses and the other in a farmer site which had not received sufficient amount of water and run-off control were selected for the study. Leached water just under the root zone were collected through out each cropping season by lysimeters which were arranged in a randomized block design with three replicates, subjected to analyze total phosphate content. The study was revealed that quantified leached total Phosphate amount for RRDI and farmer plots were  $1.5 \pm 0.3$  kg/ha and  $1.1 \pm 0.2$  kg/ha respectively. Leaching losses of phosphorous from each study site for each cropping season represent around 1 kg/ha in the given settings without showing statistically significant differences. In addition, the highest concentration of total phosphate in leached water was not exceeding 0.9 mg/L which is below the threshold value of phosphate in drinking water, 2 mg/L. The quantified phosphorous fertilizer induced Grey Water Footprint (GWF) values were  $131 \pm 23$  m<sup>3</sup>/ton and  $158 \pm 35$  m<sup>3</sup>/ton correspondingly for RRDI and farmer fields. Quantified values of GWF depict the potential environmental impact and disastrous way of the freshwater pollution of non-point source pollution by paddy cultivation which would be adversely affected to the nearby water resources.

*Rice Research and Development Institute and Coconut Development Authority are gratefully acknowledged.*

**Keywords:** *Grey water footprint, Paddy, Phosphorous leaching*

## **BUSINESS COMMUNICATION AS TOOL IN RAPID EXPANSION OF SUSTAINABLE E-COMMERCE IN INDIA**

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This paper establishes the relationship between e-commerce and maintainability factors in the business associations. The creator has likewise demonstrated the medium to the high positive effect of e-commerce on a clear lion's share of twenty supportability components belonging to environmental, economic, social and general areas as per the sentiment survey. Given the effect of e-commerce on manageability factors, with an overall mean score of 3.61 out of the greatest rating of 5 out of an assessment survey, consequently the respondent generally believes that the e-commerce does have a positive effect on the overall maintainability of an association. The supportability variables are arranged in the metrics that can be adopted by a business manager for measuring the extent of the e-commerce effect on the maintainability of a business association. E-commerce managers may likewise use the discoveries of this investigation to increase further knowledge into manageability aspects of e-commerce activities. The creator urges businesses to leverage e-commerce to create sustainable arrangements that address customer, environmental and societal value expectations. The creator has appeared in the measurable investigation, that overwhelming larger part of the maintainability factors (economic, environmental, social) is positively correlated with each other. Therefore, business practice will be congruent and compatible with the business initiatives for environmental and social responsibility. Furthermore, the creator urges businesses to leverage e-commerce for economic reasons, yet these activities will likewise help meet environmental compliance.

In recent years, inferable from powerful development in e-commerce business, customers are experiencing "empowerment" in marketing. That is, the market players offer high-end items at competitive prices, yet additionally compete among themselves to fulfill customer needs through assured and timely home delivery of items (with guarantee) just as return of products (after delivery) at no expense to customers. Building client trust through a secured online payment system utilizing high-speed internet has likewise helped drive up sale of merchandise and supply of services, both tangible and intangible. Access to technology, idiot proof system of co-ordinations, and huge investments are required to set up such arrangements. However, by virtue of increasing customer demand for limits laced with best services, net revenues would be negligible. Therefore, just the high-ticketed players who have access to capital, technology and the means to develop or hire adequate infrastructure would continue. Further, development in e-commerce industry pulls in mergers what's more, acquisitions, which is already in sight and may accentuate. Merger and obtaining as a strategic choice for keeping up competitive advantage will help expand the skylines of e-commerce and acquire basic changes the economy. The existing laws, through steady evolution, are attempting to cope with legal, duty, competition and other regulatory issues; all the same, these issues will keep going to the fore until acceptable new understandings inside national and international locales emerge.

**Keywords:** *Business tool, E-commerce, Sustainable business, Business communication*

# Poster Presentations

## **SEIR EPIDEMIC MODEL: MATHEMATICAL FORMULATION FOR STOCHASTIC MODEL**

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Mainly, three different types of stochastic model formulations have been discussed: discrete time Markov chain, continuous time Markov chain and stochastic differential equations. In this paper, mathematical formulation for Susceptible-Exposed-Infected-Recovered (SEIR) epidemic model is presented using stochastic differential equations with fixed delay ( $\omega$ ), death rate and time dependent transmission rate ( $\beta(t)$ ). Exposed period between being infected and becoming infective affects to the stability and disease free equilibrium state. Mathematical analysis is used to study the dynamic behaviour of this model and formulation of stochastic differential equation model with fixed delay ( $\omega$ ), death rate and  $\beta(t)$ . The threshold quantity  $R_0$  is calculated for the stability of equilibrium of SEIR model. MALTAB programming language is used for simulation purposes.

**Keywords:** SEIR epidemic model, Time dependent transmission rate, Latent period, Stochasticity, Markov chain model

## **EVALUATION OF DIRECT AND SIMPLE INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY METHOD FOR THE ANALYSIS OF CHLORINE CONTENT IN BOILER WATER**

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Presence of higher level of Chlorine in Boiler water over the controlled margin (<500 µg/L) leads excessive weakening of the bond between inner surface of the Boiler tube and Magnetite (Fe<sub>2</sub>O<sub>3</sub>) layer results intense corrosion and cracking. Hence, the Analysis of Boiler water Chlorine in thermal power plants highly recommended as a good preventive action to minimize the Boiler tubes corrosion. Inductively Coupled Plasma Mass Spectrometer (ICP-MS) considered as one of the riotous analytical tool for elemental analysis in the world. Utilization of ICP-MS to analyze Chlorine; put away the time consuming for sample preparation, chemical wastage, calibration errors, personal errors and data inaccuracy of other commercially available analytical tools. A successful linear calibration curve was evaluated for <sup>35</sup>Cl isotope in the concentration range of 250 to 2000 µg/L (250 µg/L, 500 µg/L, 1000 µg/L, 2000 µg/L made from commercially available SIGMA ALDRICH 99-100.5% purity anhydrous KCl) with the association of Thermo Scientific ICAPRQ01423 ICP-MS and CETAC ASX – 560 Auto Sampler. The plasma of ICP-MS was set to 1550 Radio Frequency (RF) power and Helium Kinetic Energy Discrimination (KED) was used as the analysis mode. The coefficient of determination ( $R^2$ ) of the curve was 0.999 and Residual Standard deviation (RSE) was 3.258%. Hence the developed method helps to analyze the Chlorine by feeding the sample directly with Limit of Detection (LOD) 30.645 ppb.

**Keywords:** Chlorine, Boiler water, Inductively Coupled Plasma Mass Spectrometry, Direct

## METEOROLOGICAL VARIABLES BETWEEN SOUTHERN AND EASTERN PROVINCES OF SRI LANKA

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Though Sri Lanka is a large continental island, studies focusing in analyzing the variations of meteorological variables affecting the environment are scanty in local context. Main objective of this paper was to study the variations of meteorological dynamics in coastal and marine environments with respect to Southern and Eastern provinces of Sri Lanka. Data collection was performed from 2014 to 2018 for a period of five years obtained from Meteorological department. Include parameters analyzed Rainfall (mm), Temperature (°C), Windspeed (km/h) and Cloud coverage (OCTA). Median rainfall of Southern (101.35 mm) and Eastern (84.55 mm) provinces were not significantly ( $P>0.05$ ,  $N=360$ , Mann-Whitney) different. But the median temperature, cloud cover and wind speed of Southern (27.8°C, 5.1OCTA, 5.0 km/h) and Eastern (28.9°C, 4.5OCTA, 5.6 km/h) provinces were significantly ( $P<0.05$ ,  $N=720$ , Mann-Whitney) different. Rainfall showed higher variation (647.7 mm) between the replicates compared to other climate variables of air temperature, cloud cover and wind speed with respective range values of 6.5 °C, 5.8 OCTA and 13 km/h. Overall data suggest that the rainfall variation is a dominant factor effect to in the southern and Eastern provinces, The results conclude that the mean rainfall tend to be highest during the North East monsoon in Eastern province.

**Keywords:** Meteorological variables, Sri Lanka, Southern province, Eastern province, Rainfall

## THE EMERGING IMPORTANCE AND POTENTIAL APPLICATIONS OF ANTIMICROBIAL PROPERTY ENHANCED RUBBER MATERIALS

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Microorganisms are diverse and many types such as bacteria, fungi, protozoa are widespread and commonly found throughout many ecosystems around the globe. The disease spread and other detrimental issues caused by microbes have gained attention of scientists due to the seriousness of the threat. Even though initially antibiotics were used to fight against these organisms, growing antibiotic resistance has rendered many of the available antibiotics useless. The term “superbug” has been given to such antibiotic resistance bacteria. Thus, development of material having antimicrobial activity is of paramount importance. Since rubber is a widely used material, introducing antimicrobial properties to rubber is important to reduce disease spread, infections, food contamination and bacterial degradation of rubber. Incorporation of antibiotics and active phenolic compounds in to rubber has been practiced in the recent past. Chemical changes occurring in these compounds during incorporation to rubber have reduced the efficacy of such agents. Therefore, as an alternative, metallic nanoparticles have been introduced as antimicrobial agents. Among these nanoparticles, silver has topped the list. Several hypotheses have been suggested for the antimicrobial activity of silver nanoparticles. But there is a hesitation to use them in many applications due to suggested toxicity of them. Yet, they are being used in a wide range of fields including healthcare and food industry. This review has delved into current knowledge on such materials, shortcomings and potential future applications and further studies that should be done.

**Keywords:** Antimicrobial, Rubber, Silver nanoparticles

# Virtual Participants

## **THE IMPACT OF BEHAVIOURAL ELEMENTS OF JOB DESIGN ON EMPLOYEE ENGAGEMENT OF PUBLIC SECTOR ADMINISTRATIVE SERVICE OFFICERS OF SRI LANKA**

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As Sri Lanka Administrative Service officers demonstrate a significant impact on other public sector employees, it is important to study on the factors that affect their level of employee engagement. The purpose of this study is to determine the impact of behavioural elements of job design on the level of employee engagement of SLAS officers. 141 among 2384 SLAS officers are examined to identify the impact of each of the behavioural element tested in Hackman and Oldham's Job Characteristics Model on the level of employee engagement. Further, the level of employee engagement and the level of each of the five behavioural element embedded in the job of SLAS officers are measured in the study. The results indicates that 65% of the variance in employee engagement is explained by five behavioural elements of job design. It is also found that Autonomy, Task Significance and Skill Variety elements of job design are positively correlated with the level of employee engagement and Task Identity and Task Feedback elements of job design are not significantly correlated with employee engagement. The study also proved that SLAS officers are moderately engaged in their job, having moderately positive mean values for vigour, dedication and absorption elements. The level of Autonomy and Skill Variety elements embedded in the job of SLAS officers is at a moderate level and the level of Task Significance and Task Identity elements embedded in the job is at a high level. The feedback provided by the job to its holder is low.

**Keywords:** *Administrative Service, Behavioural Elements, Job Design, Engagement*

## **VIOLENT NOTES: IMAGES AND LYRICS IN M.I.A'S SONGS**

**S. D. Piyasena**

*Independent Researcher*

The Sri Lankan born British singer Mathangi Arulpragasam (M.I.A)'s music videos/ albums are very provocative and controversial. Also known as Maya, her songs have stood out for its promotion and/or use of violence in its lyrics and images. It is also very interesting that M.I.A's father Arul Pragasam, politically known as Arular, was one of the founding members of EROS (Eelam Revolutionary Organization of Students), a political group affiliated with the LTTE. This paper looks in to the kind of violent imagery and lyrics that have been used by her in her albums and songs. Do they promote violence or is she appropriating a kind of language, which is considered 'unfit' for a woman and using it as a tool of rebellion? Where does the promotion of violence fit in to in music? Is she using music as a medium to disseminate her ideologies? These are some of the questions that this paper will attempt to answer.

**Keywords:** *Gender, Images, Lyrics, Violence, Militarism*

## EVALUATION OF INTELLIGIBILITY AND NATURALNESS OF SYNTHESIZED SPEECH BASED ON ARMA MODEL

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The current objective in artificial speech synthesis is to improve the intelligibility and naturalness. The speech produced by some systems are often completely understood by listeners, but judged to be harsh, unnatural, and of low quality. Also, some systems are rich in naturalness, but lacks intelligibility. Improving both in one system is important for people with different disabilities. The main problem of a statistical speech synthesis systems is to find the dominant values of speech parameters to reconstruct the speech closer to the original. This paper presents a study carried out to evaluate the Auto Regressive Moving Average (ARMA) based speech synthesis model. The proposed method extracts speech parameters using ARMA model, where Steiglitz-McBride algorithm is used to estimate the zeros and poles of the system. Then speech signals were synthesized based on the dominant values of speech parameters using Sinusoidal Noise Model. The results show the average percentage of identification of words in all six categories of Diagnostic Rhyme Test (DRT) is more than 80%. Higher correlation between source signal and the synthesized signal were obtained. It is concluded that the ARMA method extracts most dominant values of speech parameters and Sinusoidal Noise Model synthesizes the speech waves with more intelligibility and more naturalness.

**Keywords:** *Speech Synthesis, Auto Regressive Moving Average Model, Diagnostic Rhyme Test*

## COMPOST PRODUCED FROM DOMESTIC ORGANIC RESIDUES IMPACT ON GROWTH AND YIELD OF *Ipomoea aquatica*

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Waste management issues are emerging at an alarming rate, especially in developing countries. Compost production is a prominent and sustainable method to reduce domestic organic residues. The objectives of the study were, analyze the chemical parameters of prepared compost and measure growth and yield of compost on *Ipomoea aquatica*. The different proportions of garden and kitchen residues (1:1, 1:2, 1:3, 1:4, 1:0 and 0:1) were used to produce the compost, namely C<sub>1</sub> to C<sub>6</sub> respectively. The pot experiment was designed in a completely randomized block with seven treatments including control and three replicates. Plant height, number of leaves and yield data were taken two, four and eight weeks after germination of *Ipomoea aquatica*. Minitab 17 was used to analyze the data. The chemical properties of compost such as pH (7.6 to 8.8), EC (2.4 to 4.5), phosphorous (1.7 to 4.7 %), nitrogen (1.3 to 2.3 %), potassium (2.8 to 7.9 %) were ranged within the reference limits of Sri Lanka standard 1246: 2003. C/N ratio of 1:3 type compost was 20.3 within the Sri Lankan standard (10 to 25). This study revealed that domestic organic waste could be used to produce the compost having favorable chemical parameters and increase the growth and yield of crops. 1:3 (C<sub>3</sub>) proportion of compost application was significantly increased the crop growth and yield than other ratios.

**Keywords:** *Compost, Chemical properties, Growth and yield, Ipomoea aquatica,*

**DEMOGRAPHIC IMPACT OF LABOUR MIGRATION TOWARDS EXPORT  
PROCESSING ZONES A STUDY ON KATUNAYAKE AND BIYAGAMA EXPORT  
PROCESSING ZONES, SRI LANKA**

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Location of an industry attracts employees from other parts of the country, sometimes even from overseas, changing the usual demographic pattern of that particular region. The Department of Census and Statistics (DCS), Sri Lanka (2012) has identified the location of the first and the two largest Export Processing Zones (EPZs) in Katunayake and Biyagama in Gampaha district as one of the causes for population increase in the district. Young male and female workers from different parts of the country temporally migrate to such regions seeking employment opportunities in EPZs. Thus, location of these EPZs would have probably influenced the demography of the particular regions by changing the size, distribution, growth and composition of the population. This study attempts to explore how the labour migration towards selected EPZs has affected the demography of the particular region. The 2012 census data relates to Katana (Katunayake EPZ) and Biyagama (Biyagama EPZ) Divisional Secretariat Divisions and statistics of Board of Investments (BOI) were used. The demographic impact was analysed at Grama Niladhari division level using formulas, graphs and maps. Relatively unusual patterns of population were found in the immediate neighbourhood of both EPZs in terms of total population (higher), distribution (more dense), growth (higher but minus growth) and more youths in both EPZs. More females were in Katunayake (Katana) and more males in Biyagama. Unusual growth, age structure and sex composition compared to the national and regional pattern were very significant in the immediate neighbourhood where the migrated EPZ workers live temporarily.

**Keywords:** *Export processing zones, Labour migration, Demographic impact, Immediate neighbourhood*