

Book of Abstracts
South Asia Conference on Multidisciplinary
Research 2018
(SAMR'18)



05 – 06 October, 2018

Colombo, Sri Lanka

2018

The International Research & Development Institution



Disclaimer

Abstracts of the South Asia Conference on Multidisciplinary Research 2018 (SAMR'18), Colombo, Sri Lanka on 05-06 October 2018, Print copies of the abstracts are provided for Conference Delegates only.

All views expressed in these proceedings are those of the authors and do not necessarily represent the views of and should not be attributed to “The International Research & Development Institution (TIRDI)”. The responsibility for opinions expressed in this publication rests solely with their respective authors and this publication does not constitute an endorsement by the “The International Research & Development Institution (TIRDI)” of the opinions so expressed in them. Use of the content of the Book without the respective author’s and the publisher’s specific written permission is not authorized.

The publishers do not warrant that the information in this report is free from errors or omissions.

Official website of the conference

www.samr.tirdiconference.com

Book of Abstracts of the South Asia Conference on Multidisciplinary Research 2018
(SAMR'18)

ISBN 978-955-3751-00-3

Copyright @ 2018 TIRDI

All rights are reserved according to the code of Intellectual Property Act No.36 of 2003 of Sri Lanka

Published by The International Research & Development Institution (TIRDI),

info@tirdi.org

Printed in Sri Lanka
October 2018

Academic Partner:
American University of Nigeria, Nigeria.

Organized By:
The International Research & Development Institution (TIRDI)

SAMR'18 Committee

Prof. T. S. G Peiris

(Conference Co - Chair SAMR'18)

Professor in Applied Statistics and the
Head of the Department of Mathematics,
University of Moratuwa Sri Lanka.

Prof. N.R. Abeynayake

(Conference Co - Chair SAMR'18)

Professor in Applied Statistics
Department of Agribusiness
Management, Wayamba University of
Sri Lanka and Immediate Past President
of the Institute of Applied Statistics, Sri
Lanka (IASL)

Prof. Hiran Amarasekera

(Keynote Speaker, SAMR'18)

Professor in Forestry and Environment
Science at the Department of Forestry &
Environmental Science, University of Sri
Jaywardenepura, Sri Lanka.

Hon. Wasantha De Silva

(Conference Convener, SAMR'18)

The International Research &
Development Institution (TIRDI),

Hon. J P Ayodhya

(Conference Coordinator, SAMR'18)

The International Research &
Development Institution (TIRDI),

Hon. Sudharshani Carmen

(Conference Secretary, SAMR'18)

The International Research &
Development Institution (TIRDI),

Advisory Board – SAMR'18

- Prof. Solehah Ishak** - Head of Post Graduate Program, University Technology, MARA, Puncak Perdana Campus, Malaysia
- Prof. Dejo Olowu** - Dean School of Law, American University of Nigeria, Nigeria
- Dr. C. J. A. Baduge** - University of Derby, United Kingdom

International Scientific Committee – SAMR'18

- Prof. T.S.G. Peiris (Sri Lanka)
- Prof. N.R. Abeynayake (Sri Lanka)
- Prof. Solehah Ishak (Malaysia)
- Prof. Dejo Olowu (Nigeria)
- Prof. Masarrat Haseeb (India)
- Prof. Mario C. Nierras (Philippines)
- Assoc. Prof. Sarah Lawson Welsh (UK)
- Dr. J.M.K.J.K. Premarathna (Sri Lanka)
- Dr. C. J. A. Baduge (UK)
- Dr. Sunethra Kankanamge (Sri Lanka)
- Dr. Puji Lestari (Indonesia)
- Dr. Ayesha Wickramasinghe (Sri Lanka)
- Dr. Ira Wirasari (Indonesia)

Table of Contents**Page No****KEYNOTE SPEECHES**

Role of Statistics in Scientific Research	<i>N. R. Abeynayake</i>	01
Upgrading Wood Based Industries in Sri Lanka with special reference to Moratuwa Furniture Cluster	<i>H. S. Amarasekera</i>	02

ORAL PRESENTATIONS

01	The concept of “Mobile Campus” to enhance learner experience: Case of Horizon Campus	<i>Mr. Sunesh Hettiarachchi,</i>	03
02	Developing the English academic reading skills of undergraduates	<i>Ms. E. Sulochana Neranjani</i>	04
03	Understanding Monotheistic Framework of History and its implications for a Sustainable Future	<i>Prof Aruna Sinha</i>	04
04	Characterization of High-and Low-Melting Fractions of Avocado Fat	<i>Dr. J. M. Nazrim Marikkar</i>	05
05	Development and Evaluation of a Particulate Matter Dispersion Model for Power Plants Based on the Geographical Significances	<i>Ms. I. Samanmalee Premadasa</i>	05
06	The Relationship Between Quality Of Sport Event And Customer Satisfaction A Study Of President's Gold Cup Volleyball Tournament – 2017	<i>Ms. S.D.S Jayalath</i>	06
07	Be Seated & Know Everything	<i>Mr. Lal Singh</i>	06
08	Oxidative stability of structured lipid produced from coconut (<i>Cocos nucifera</i>) and sesame (<i>Sesamum indicum</i>) oils by enzymatic interesterification using <i>Rhizomucor miehei</i> lipase	<i>Ms. Subajiny Sivakanthan</i>	07
09	Designing Life	<i>Mr. Lal Singh</i>	07

10	Taxonomy Formulation for Factors Affecting Time and Cost Overrun in Building Construction Industry in Sri Lanka	<i>Ms. S.N. Malkanthi</i>	08
11	Smallholder Entrepreneurship Development: Best practices of dairy farming	<i>Ms. R.A.C.H. Wijayasinghe</i>	08
12	Post-war Ethnic Reconciliation in Sri Lanka: Challenges and possibilities	<i>Ms. Jashmiya Kanagarathnam</i>	09
13	Assisting Bilingual Education Learners to learn intentional vocabulary by using Digital Memory Addressing Cards	<i>Mr. Ruchira Tharanga Kumara Gangahagedara</i>	09
14	Commercial Agriculture and Environmental Ethics	<i>Dr. Jailakshmi Kaul</i>	10
15	What Is Being Woman?: The Taslima Phenomenon In South Asian Literature	<i>Dr. M. A. Afzal Farooq</i>	10
16	Gender Based Violence: A Threat to Women's Reproductive Health in India	<i>Dr. Padmalaya Mahapatra</i>	11
17	Environmental Practices and Economic Success A study on Small and Medium-sized enterprises represented in high polluting industries in Sri Lanka	<i>Ms. R. A. C. H. Wijayasinghe</i>	11
18	Enhancement of the Biosolubilization of Eppawala Rock Phosphate with Biofilms	<i>Ms. JPHU Jayaneththi</i>	12
19	The relationship between geo-magnetic fields and mammal distribution	<i>Dr. P.S.B. Wanduragala</i>	12
20	Overview of Teenage Pregnancies in Two Urban Hospitals	<i>Dr. K. A. Sriyani</i>	13
21	A Study on Philosophy, Religion and Science	<i>Dr. Sudhakar Jally</i>	13
22	Development of Potential Traces For A Cycle Path Network To Improve Tourism Experience In Trincomalee, Sri Lanka	<i>Mr. KDP Damsara</i>	14
23	Evanescing Beauty and Viability of Coastal Beaches of Colombo District	<i>Mr. Sivakumaran Sivaramanan</i>	14

24	A comparative study of Kerala dance rituals and Low country dance rituals	<i>Dr. S. A. N. Perera</i>	15
25	A Medical Sociological Study On Stigma And Discrimination Among People With War-Related Disabilities In The Kilinochchi District	<i>Mr. Sriskantharaja Sivakanthan</i>	15
26	The Notion of Subject and Subject Positions in Sinhala	<i>Dr. M.G. Lalith Ananda</i>	16
27	A Study to Find Out the Reasons for the Degree of Students' Preference of the Bilingual Education Subjects in the National Schools of the North Central Province	<i>Ms Tharindra S. Abeynayake</i>	16
28	Improving the Palm Oil Properties to Use as an Alternative Hydraulic Oil	<i>Mrs T. K. K. S. Pathmasiri Dr(Mrs) G.I.P Perera</i>	17
29	Surface proteome analysis of exogenous ALV-A induced Liver Lymphoma in Dead Chickens	<i>Dr. Alka Tomar</i>	17
30	Exposition of Rhodomicrobium vanniellii using general morphological and biochemical features	<i>Ms. P D S Weerasingha</i>	18
31	Why do marine fishers break rules? Evidence from Southern Sri Lanka	<i>Ms. M. A. M. I. Perera</i>	18
32	Undergraduates' performances at Internship Training with special reference to the Undergraduates of BSc (Hons) in Information Technology at Horizon Campus	<i>Ms. G. Nipuni Upeksha</i>	19
33	Antifungal Activity of Different Parts of Nutmeg (Myristica Fragrans) on Fusarium oxyporum	<i>Ms. A. Yvonne L. Fernando</i>	19
34	Engineering Ethics- A Matter to Reconsider	<i>Mr. D.P.S. Wijesinghe</i>	20
35	A Corpus-based Critical Discourse Analysis of the 2015 Presidential Election News in Sri Lankan English Newspapers: 'The Sunday Times' and 'The Sunday Observer'	<i>Ms. B.G.D.S.Nandarathna</i>	20

36	Performance Evaluation of Vegetable Oil Based Metal Working Fluids (MWFs) in Flood and Minimum Quantity Lubrication (MQL) Techniques - Review	<i>Ms. W. L. R. Fernando</i> <i>Mr. N. Sarmilan</i>	21
37	Obstacles Faced in Translating Idiomatic Phrases and Strategies to Overcome Them	<i>Ms. D.G.T.A. Jayasinghe</i>	21
38	Effectiveness of turn taking and group work in reducing speaking anxiety in ESL classrooms	<i>Ms. Prathibha N. Gardihewa</i>	22
39	Impacts Of Psychosocial Factors On Sport Performance Across Career Stages Of Olympic Athletes In Sri Lanka	<i>Ms. K.M.S.M. Rathnayaka</i>	22
40	Effect of selected essential oils on reducing postharvest diseases in Papaya (<i>Crica papaya</i> L.) fruit	<i>Ms. Y.A. Sadhana Samithri</i>	23
41	An Algorithm to Detect Intrinsic Plagiarism	<i>Ms. Kavindi Pieris</i> <i>Mrs. W. M. L. K. N. Wijesekara</i>	23
42	Hybrid Optimization of Two-tier Logistics Framework for Cost-Benefit Analysis – A Systematic Review of Literature on Megacity Logistics	<i>Ms. Maneesha Dias</i>	24
43	Gender dependence of guessing in answering multiple choice questions in a physical chemistry course in the B.Sc. programme at the Open University of Sri Lanka	<i>Ms. M. N. K. de Zoysa</i> <i>Ms. K. D. V. F. Siriwardana</i> <i>Prof. G. Bandarage</i>	24
44	Improving Students' Oral Skills through a Cooperative Learning Approach	<i>Mrs. Keshani Abeysekara</i>	25
45	Environmental Microbial Communities For Efficient Cellulose Degradation	<i>Ms. Sandhya K Jayasekara</i>	25
46	The impact of Sodium fluoride (NaF) and citric acid as preservatives for in- vitro blood glucose and the impact in diabetic diagnosis	<i>Ms. Kobika Thillainathan</i>	26
47	Cooking effect on total phenolic content of different skin coloured <i>Vigna unguiculata</i> ssp. <i>sesquipedalis</i>	<i>Ms. C.K. Dalukdeniya</i> <i>Ms. K.M. Somawathie</i>	26

48	Comparison of Morphological Features of Second Cervical Vertebra Between Genders Using Computed Tomography	<i>Mr. T.S. Madhavan</i>	27
49	Effect of Selected Yoga Practices on Anaerobic Capacity of Varsity Soccer Players	<i>Dr. S. Joniton</i>	27
50	Improving Downstream Logistics Performance of Agricultural Supply Chains through Collaborative Digital Logistics	<i>Ms. Kalpani Sarathchandra</i>	28
51	A Study of Entrepreneurial Tendencies of Undergraduates	<i>Ms. M.H. Ravini Abhayarathne</i> -	28
52	Level of Trust in Different Types of Marriages: Analysis of Pakistani Marriages	<i>Ms. Binish Ikhlqa</i>	29
53	Effectiveness of eLearning Practices to improve the learning quality: Case of Horizon Campus	<i>Ms. Samantha Wickramasinghe</i>	29
54	Chemical composition, physicochemical and technological properties of selected fruit peels	<i>Ms. P. Gayani Imanthika Dias</i>	30
55	The impact of employer - employee relationship and practice of effective goal setting on the performance of millennial employees in small and medium scale IT organisations in Sri Lanka	<i>Ms. Kalani Wickramasena</i>	30
56	Stability of pigment extracts of purple yam as natural food colourants	<i>Ms. J.W. Amanda Sajiwanie</i>	31
57	Gender and Social Networking Behavior of Small and Medium Entrepreneurs in Sri Lanka	<i>Ms. K. Udani</i>	31
58	Optimization of workforce performance through smart human resource management and industry 4.0 concepts in the context of Sri Lankan apparel industry	<i>Ms. Madara Weerasekara,</i>	32
59	Variation of Infrared Absorption Spectrum of Sapphire with Temperature	<i>Mr. Sandun Illangasinghe</i>	32
60	First and Second Language Interference in Learning German as a Foreign Language – A syntactic analysis	<i>Ms. Malpathika Danansooriya</i>	33

- | | | | |
|----|--|--------------------------------|----|
| 61 | Utilization of lentic waterbodies by associated amphibians and agamids in montane cloud forests of Sri Lanka | <i>Mr. M. Chamara Prabhath</i> | 33 |
| 62 | Hemato-biochemical and immunological alterations induced by individual and combined effect of Fumonisin (FB1) and Ochratoxin A (OTA) in broilers | <i>Dr. Shahzad Akbar Khan</i> | 34 |

POSTER PRESENTATIONS

- | | | | |
|----|---|--|----|
| 63 | Learnings From Vernacular Architecture From Warm And Humid Climate | <i>Ar. Sanjana S Shetty</i> | 35 |
| 64 | Fatigue effect on hamstring muscle strength in soccer _ A systematic review | <i>Ms. Shyamali Kaushalya Fernando</i> | 36 |
| 65 | Intermediate Spaces | <i>Ms. Hasmitha Bhetalam</i> | 36 |
| 66 | Job satisfaction among state sector pharmacists in Jaffna district | <i>Ms. Kugatheepa Kaneshamoorthy</i> | 37 |
| 67 | An Introduction to Seir Epidemic Model With Delay and Time Dependent Transmission Rate (B(T)) | <i>Ms. N.H.E. Hasanthika</i> | 37 |

VIRTUAL PRESENTATIONS

- | | | | |
|----|---|--------------------------------------|----|
| 68 | Multi Agent Approach to Time Based Vehicle Arrangement in a Taxi Company | <i>Mr. D. Asanka Priyasad Peiris</i> | 38 |
| 69 | Tools Proposed to Measure Effectiveness of Human Resource Function in an Organization: Learnings and Insights | <i>Mr. Himanshu Sinha</i> | 38 |

Keynote Speeches

Role of Statistics in Scientific Research

N.R. Abeynayake

*Department of Agribusiness Management,
Wayamba University of Sri Lanka*

Statistics provides scientific tools for representative data collection, appropriate analysis and summarization of data and inferential procedures for drawing conclusions in the face of uncertainty. Statistical tools have wide applicability to almost any branch of science dealing with the study of uncertain phenomena involving aggregates. It has also been established that many apparently deterministic processes, on closer scrutiny, turn out to be inherently stochastic in nature.

Scientific method entails formulation of hypotheses from observed facts followed by assumptions and verification repeated in a cyclical process. Facts are observations which are taken to be true. Hypothesis is a tentative conjecture regarding the phenomenon under consideration. Assumptions are made out of the hypotheses through logical arguments which in turn are verified through objective methods. The process of verification may lead to further hypotheses, deductions and verification in a long chain in the course of which scientific theories, principles and laws emerge.

The two main features of scientific method are its repeatability and objectivity. Although this is rigorously achieved in the case of many physical processes, biological phenomena are characterized by variation and uncertainty. Experiments when repeated under similar conditions need not yield identical results, being subjected to fluctuations of random nature. Also, observations on the complete set of individuals in the population are out of question many times and inference may have to be made quite often from a sample set of observations. The science of statistics is helpful in objectively selecting a sample, in making valid generalizations out of the sample set of observations and also in quantifying the degree of uncertainty in the conclusions made.

Two major practical aspects of scientific investigations are collection of data and interpretation of the collected data. The data may be generated through a sample survey on a naturally existing population or a designed experiment on a hypothetical population. The collected data are condensed and useful information extracted through techniques of statistical inference.

When analysts use statistical procedures correctly, they tend to produce accurate results. In fact, statistical analyses account for uncertainty and error in the results. Statisticians ensure that all aspects of a study follow the appropriate methods to produce trustworthy results. These methods include: Producing reliable data, analyzing the data appropriately, Drawing reasonable conclusions.

Keywords: *Uncertainty & error, Hypothesis, Reliability & objectivity*

Upgrading Wood Based Industries in Sri Lanka with special reference to Moratuwa Furniture Cluster

H S Amarasekera

*Department of Forestry and Environmental Science,
University of Sri Jayewardenepura, Sri Lanka*

The wood-based industry is one of the oldest industries in the country that provides livelihood to many people in both rural and urban areas. However, the industry has been in a state of deterioration in terms of quality and competitiveness due to inadequate wood supply in term of quality and quantity, unfavorable business climate, scarcity of trained manpower, lack of market opportunities, research support and finances for investments to improve the industry.

There are around 1700 industries in Moratuwa wood based furniture cluster and it has been in existence for many decades. This industry has deteriorated over the years and is currently incapable of producing furniture of high quality for the export market. However large firms in the cluster use advanced technology and have a totally integrated production process with saw mills, timber seasoning and treatment facilities indicating that it is an organized cluster that can be upgraded to an innovative cluster by implementing a comprehensive development program.

There have been several initiatives on development of wood working industry and timber utilization research on timber processing have yielded data towards up scaling and redefining the small timber manufactures in Sri Lanka. The key options that can be adopted to improve the industry are to improve utilization of available sustainable timber resources to increase the supply of raw materials to the Moratuwa cluster, improve product quality, increase marketability of products and minimize environmental pollution. Selected industries in this cluster can be upgraded into international standards by introduction of new technology and transfer of knowledge, providing systematic training in the area of improving furniture designing, timber preservation, seasoning and machine maintaining capabilities.

Achievement of productive wood products industry will make a significant contribution towards employment generation and increasing the percentage of contribution to GDP by Timber based products.

Keywords: *wood industry, furniture, forestry, timber, development plan*

Oral Presentations

The concept of “*Mobile Campus*” to enhance learner experience: Case of Horizon Campus

Sunesh Hettiarachchi¹, Samanthi Wickramasinghe²,

1. *Tech Computers, Sri Lanka*

2. *Faculty of Information Technology, Horizon Campus, Sri Lanka*

Horizon Campus is one of the leading private higher education institutes in Sri Lanka with the national and international recognition. There are five (5) faculties with nearly 2000 undergraduate and postgraduate students who are studying in different degree programs.

There are many academic related events and extra-curricular activities are organized by the administration as well as student council in the campus. The fulltime students participated in most of the events whereas less participation of part-time students due to poor communication mechanism. Moreover, most of the students do not have a proper method to record special events such as examination dates, assignment submission deadlines, lecture schedules, due course fees details.

With the development of the modern technology, the majority of students use smart mobile phones. Therefore, this research has been designed to identify the influencing factors for the successful implementation of “*Mobile Campus*” concept to resolve the above problems while enhancing learner experience. Fulltime and part-time students have been selected for the questionnaire survey and interview. The linear regression model, correlation analysis, and descriptive analysis were used to analyze data. During the data analysis, the factors (Student Public Service Management, Academic Management, Administrative Management and Financial Management) have been identified as the influential factors.

The research outcomes revealed, the Student Public Service Management which includes event schedules, maps, shuttle tracking should be well communicated as it has a higher significant impact to enhance the learner experience whereas Academic Management, Administrative Management and Finance Management have a less significant impact.

Keywords: *Mobile Campus, Learner Experience, Smart Campus, Academic Management, Student Public Service Management and Administrative Management.*

Developing the English academic reading skills of undergraduates

Neranjani E.S.

University of Colombo

Competence in academic reading in English is essential for the academic development of all the undergraduates in the rapidly advancing global knowledge. However, a study on Bachelor of Education undergraduates in the Faculty of Education revealed that majority of the students had not developed Basic reading competencies in English to read and understand the main points of an academic article or to summarize a simple academic article in their own words. Therefore, this study was conducted as an action research to identify the reasons for the above problems and find strategies to develop their academic reading skills of skimming, summarizing and guessing the meanings from the context. Reading issues of the students were identified through administering a test, classroom observations, questionnaires, interviews and the reflections of the researcher and the identified issues were addressed through an intervention, by implementing various strategies of reading in the classroom. Reasons for the lack of academic reading competencies were due to inappropriate strategies used in the schools and the irrelevance of materials used in the English courses in the University to develop the reading skills. Thus, the subject content was used as reading materials in the intervention and the post-test confirmed a significant development of the students in skimming, summarizing and guessing the meanings from the context. Using discipline specific reading material in language classes is successful in the development of academic reading skills and content knowledge.

Keywords: *academic reading skills, content material*

Understanding Monotheistic Framework of History and its implications for a Sustainable Future

Dr. Aruna Sinha,

Professor Emeritus in History, Faculty of Social Sciences, BHU, Varanasi

This paper attempts to understand 'History' as a means for creating knowledge for a sustainable future. Conventionally, the discipline of history (as we see it today) has been developed in the past few decades on the analogy of western science and alien paradigms, with which the colonized societies, so to speak, do not have any familiarity in terms of their own understanding, traditions, institutions, practices and cultural norms. Consequently what they imitated (especially the scholars) was not a model that they themselves developed; rather a model of understanding – that evolved out of the 'package of received knowledge' from their colonial rulers, thus leaving the field of history barren as ever, a "dwarfed discipline" (as one eminent scholar has indicated) incapable of providing fruitful insights to a society that itself looks to these intellectuals for creating knowledge for sustainable future to ensure its own survival. Not to say that the subject, ipso facto, failed to generate any substantial interest over all these years – for we find 'post modernism' occurring as a fashionable concept in recent decades to counter the existing epistemologies and modes of cognition in the field of social sciences. Post Modernism is in fact a theoretical condition, essentially plural and diverse and does not readily yield to simple descriptions that are so peculiar to the 'natural sciences' (as a method of generating knowledge with its privileged medium of 'reason' The present paper however, argues on slightly different lines, based on an understanding of religions (as have been understood and practiced during past few centuries and are still continuing to be so) and the way historical understanding of our past and future is affected.

Keywords: *Monotheism, Plurality, diversity, tolerance, future, humanity*

Characterization of High-and Low-Melting Fractions of Avocado Fat

J.M. Nazrim Marikkar, Noorzianna Yanty and S.S.K. Marasinghe

Food Chemistry Laboratory, National Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka

Fractional crystallization is a process applied to semi-solid fats to obtain fat products with new functional properties. Fractionation is generally performed through either a dry or a solvent-assisted process. In this study, avocado fat was sequentially crystallized in acetone at 5°C (2h), 0°C (24h), and -20°C (24h) until the mother liquor becomes devoid of any crystal formation. The high-melting stearin isolated at 5°C and low-melting olein isolated at -20°C were compared with the original sample in terms of fatty acid composition using GLC and thermal profiling by DSC. The high-melting stearin and low-melting olein were found to display distinctly different DSC thermal profiles from that of the original sample. These differences were mainly due to changes taking place in the chemical compositions of the fractions. With respect to the original sample, low-melting olein is possessed with higher proportions of diunsaturated and triunsaturated triacylglycerol (TAG) while high-melting stearin was found to become enriched with disaturated and trisaturated TAG molecules. This study concluded that high-melting stearin fraction could be useful as an ingredient in hard-melt products while low-melting olein fraction could be useful in the formulation of products those required to be ease in melt.

Development and Evaluation of a Particulate Matter Dispersion Model for Power Plants Based on the Geographical Significances

Ishara Premadasa¹, Prabuddhi Rathnasekara², Dilpium Samarasinghe³

¹Business System Analyst, IFS R&D International (Pvt) Ltd, Sri Lanka

²Research Assistant, Department of Chemical and Process Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka

³Research Assistant, Department of Chemical and Process Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka

Particulate Matter (PM) in the troposphere is a complex mixture of inorganic and organic components with particle aerodynamic diameters ranging from a few nanometers to tens of micrometers. PM has been linked to multiple detrimental public health outcomes and plays important roles in climatic processes including cloud formation, precipitation, and the solar radiation budget. PM 10 and PM 2.5 are the most health damaging considered to other pollutant in atmosphere thus people with heart or lung diseases are the most likely to be affected. This paper elaborates the protracted modeling of well-known Gaussian Plume Dispersion model used in forecasting of dispersion and behavior patterns of PM emitted from Sri Lankan power plants emphasizing the significant functioning in urban and rural areas. Adiabatic and environmental lapse rates are analyzed specifically in identifying the atmospheric stability conditions based on geographical and topographical conditions. The type of the plume buoyant or momentum is initially detected in analyzing the PM dispersion. The PM emission rate is modified with particle interaction coefficient of 0.002 and the effective stack height is modified by adding the distance travelled by particles due to drift velocity. Stack tip downwash, dimensional and spatial coordination of the plume, building downwash & multiple stack effect are integrated in the model to characterize PM in both urban and rural areas. The model is validated with refinery emission data where the results depict that stable atmospheric condition is the most challenging. The model momentarily highlights the significant differences in urban and rural PM dispersion reflecting the concentration contour lines, spatial point PM concentrations, PM dispersion pattern during emergency situations and the minimum ground level concentration with the relevant ground level distance through graphical representations and numerical figures.

Keywords: *Particulate matter, Dispersion, Urban, Rural, Gaussian plume*

**THE RELATIONSHIP BETWEEN QUALITY OF SPORT EVENT AND
CUSTOMER SATISFACTION
A STUDY OF PRESIDENT'S GOLD CUP VOLLEYBALL TOURNAMENT – 2017**

S.D.S Jayalath ** A.A.L.Madushani ** K.R.D.C.Rathnamudali**

*Department of Sports Sciences and Physical Education, Faculty of Applied Sciences,
Sabaragamuwa University of Sri Lanka, P.O. Box 02, Belihuloya.*

This particular study titled "The Relationship between Quality of Sport Event and Customer Satisfaction" was accomplished with special reference to President's Gold Cup Volleyball Tournament-2017. This study was undertaken by focusing on the matter that was recognized from the National Volleyball Convention -2017 and through records of Sri Lanka Volleyball Federation. There were four objectives construct and achieved by this study. Which include key objective namely—To identify relationship between quality of sport event and customer satisfaction" and three specific objectives such as to determine relationship between service quality and service satisfaction, to determine the relationship between core product quality and game satisfaction and to provide strategies to eliminate or minimize the impact of the given challenges to improve the quality of services and core product.

A quantitative research design was applied to examine customer satisfaction. The questionnaire survey been the main data collection method and 100 volleyball players and 50 spectators were selected as a sample by using random sampling method. The study provides conclusions after wearing out detail scientific analyses of data using suitable statistical tools.

The conclusions are indicate separately as players and spectators perspective, as well as all main stakeholders. The course setting results that service quality is weak positively correlated with service satisfaction and the core product quality is strong positively correlate with game satisfaction. Moreover the results indicate significant strong positive relationship between quality of sport event and customer satisfaction. The results of this study will be able to use to tailor advertising messages as well as it will important to different affiliated parties in sports sector.

Keywords: *Service Quality, Core Product Quality, Service Satisfaction, Game Satisfaction, Customer Satisfaction*

BE SEATED & KNOW EVERYTHING

Singh Lal

National Institute of Fashion Technology (NIFT), India

It is very much a matter of thinking that time is running or we are running, though in the right sense, we are running and time has just sat. Time is constant, that is why it keeps all the information of the entire universe; if we say that time is the encyclopedia for keeping the information about the universe and the world, and then it will not be wrong. Now the question arises whether a person understands time or not, if we do not have the answer, then we all are thinking right. Humans have amazing potential, whatever they can think of, they can do it themselves, and can understand the knowledge of the entire universe. In order to know the universe, in the second century of the ancient Indian history Patanjali had discovered a few number of techniques through which person can achieve anything. Be seated & know everything is an ancient & unique process. People can develop these techniques with the practice of their body. Patanjali has developed eight steps for body practice in a chapter of a pantajali yoga sutra book. Although there are three more chapters besides this, and the four texts are respectively *Samadhi* lessons, *Sadhan* lessons, *Vibhuti* lessons & *Kevalya* lessons. There are about 195 formulas in all the texts, all the formulas are in Sanskrit. This study will help to achieve Excellency, knowledge, wisdom in all the streams.

Keywords: *Practice, Breath, Mind, Relation, Silence, Enlightenment.*

Oxidative stability of structured lipid produced from coconut (*Cocos nucifera*) and sesame (*Sesamum indicum*) oils by enzymatic interesterification using *Rhizomucor miehei* lipase

Subajiny Sivakanthan^{1*}, Anura Prasantha Jayasooriya² and Terrence Madhujith³

¹*Department of Agricultural Chemistry, Faculty of Agriculture, University of Jaffna, Sri Lanka*

²*Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka*

³*Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya, Sri Lanka*

Structured lipids (SL) are the restructured triacylglycerols produced by the process, interesterification. SLs are produced to have improved physico-chemical and nutritional properties. The aim of this study was to determine the oxidative stability of a SL produced through enzymatic interesterification of coconut (*Cocos nucifera*) oil (CO) and sesame (*Sesamum indicum*) oil (SO) using lipase (*sn*-1, 3 specific) derived from *Rhizomucor miehei* and to determine the effect of addition of butylated hydroxytoluene (BHT) (200 ppm) on the oxidative stability of produced SL. Lipase was used at 0.2% of substrate (w/v). Reaction parameters optimized through Response Surface Methodology (temperature; 57 °C, time; 16 h and weight ratio of CO:SO; 50:50) were used to produce SL. The oxidative stability test was carried out using *Schaal* oven test. Oxidative stability was evaluated by peroxide value, *p*-anisidine value and TBARS tests. Oil samples [CO, SO, blend (CO:SO; 50:50), SL] with and without added BHT were placed in glass vials (2 cm ID × 4.5 cm) and stored in an oven at 60±5°C. Samples were taken on the day 0, 7, 14 and 21 and analyzed for the oxidative stability. SL exhibited poor stability compared to its blend, however, SL exhibited significantly higher stability than pure SO and significantly poor stability than pure CO. Addition of BHT at 200 ppm significantly improved the oxidative stability of all samples. Thus, even though SL exhibited poor oxidative stability than the blend, addition of antioxidants can improve the oxidative stability, thus, widening its applications in the food industry.

Keywords: *interesterification, lipase, oxidative stability, structured lipid*

Acknowledgement: The financial support by the University Grants Commission, Sri Lanka is highly appreciated.

DESIGNING LIFE

Singh Lal

National Institute of Fashion Technology (NIFT), India

Designing is an endless subject & endless is a small word for life. This is the whole study about design & life. First to understand design & what its role in life, secondly we have to understand how life motivates from design. When designing & life combine together, it converts into designing a life. Once the designing life is understood then it will be able to understand that the whole world is connected & nothing is separated from each other. Everything is well connected in this universe, whether it's related to living things or non living things & visible or non visible things. This study also consists of different types of designing life, like:- spiritual design life, philosophy design life, medical design life, engineers design life, sports design life, political design life, education design life & Art design life, etc. This study is focused on how to achieve excellence in these fields & what are the methods. To understand of excellence I have taken an example of eminent personalities from the history in their expertise field. The findings of this study can help to better understanding of designing life with various perspectives.

Keywords: *History, Inspiration, Relation, Silence, Pleasure, Excellence.*

Taxonomy Formulation for Factors Affecting Time and Cost Overrun in Building Construction Industry in Sri Lanka

S.N. Malkanthi¹, C.U. Palihakkara² and D.C.L.G. Rodrigo³

*1, 2, 3 Corresponding Author, Department of Civil and Environmental Engineering,
University of Ruhuna, Sri Lanka,*

Construction industry plays a main role in the economic sector of any country. The success of any project depends on the number of objectives achieved maintaining the required quality within the pre-determined time duration, and allowed budget. Construction delay has been recognized as one of the emerging issues affecting the construction industry all over the world. Also, project cost should be thoroughly focused otherwise cost overrun will lead a project to losses. Hence, identification of most critical factors for time and cost overrun is essential.

The aim of this study is to investigate the factors affecting time and cost overrun, thus formulating taxonomies. Two questionnaires were prepared to collect information on time and cost overrun and respondents were the representatives from contractors and consultants. Sample size of the respondents was selected based on the total contractors registered at the Construction Improvement and Development Authority (CIDA). Collected data were analysed converting those into quantitative values by using relative importance index method.

Finally, four taxonomies were prepared as the outcome of the study considering time and cost overrun for both contractors' and clients' perspectives. Taxonomy for time overrun from contractors' perspective says; client-related factors are the critical for time overrun while the taxonomy for time overrun from clients' perspective is vice-versa. Taxonomies for cost overrun from both contractors' and clients' perspectives say, contractor-related factors are the most critical for cost overrun. Some mitigation measures also were suggested with these taxonomies giving some guidelines to minimize time and cost overrun.

Keywords: *time overrun, cost overrun, taxonomies, relative importance index*

Smallholder Entrepreneurship Development: Best practices of dairy farming

R. A. C. H. Wijayasinghe

Doctoral Student, University of Kelaniya, Sri Lanka

Milk prices are normally volatile. But, a good dairy farming practice can manage the economic risks of the business. Dairy farmers are the primary producers in the supply chain. Opportunities are open for them to add value to their primary product. Farmer's ultimate objective is to maximize profit and maintains an economically viable business. If the farmer wants to get into a profitable business he/she should apply good management practices in feeding & breeding, animal health, milk hygiene...etc. A better understanding of the internal and external environment is essential for sustainability. If the demand is favourable and the opportunities are open for value addition, what actions should be taken by the farmer to grab the opportunities? Three strategies are available for dairy farmers to gain the competitive advantage. They are cost leadership, differentiation and focus (*Porter's Generic Strategy model, 2006*). At the initial stage, it is not advisable for dairy farmers to practice "differentiation" or "focus strategies as they tend to increase the cost of production and are only sustainable if consumers see the value and are willing to pay more for the product. The success of cost leadership as a competitive strategy also depends upon the ability to produce low-cost milk as compared to the competitor.

Keywords: *Smallholder enterprises, Dairy business, Matching grants*

Post-war Ethnic Reconciliation in Sri Lanka: Challenges and possibilities

K. Jasmiya

Department of Political Science University of Peradeniya, Kandy

Ethnic reconciliation remains a dominant theme in the political debates of Sri Lanka since its military victory over the Liberation Tigers of Tamil Elam in 2009. The termination of the armed conflict largely instigated the need of ethnic reconciliation to attain sustainable peace and development. In fact, many initiatives have been undertaken by the successive governments due to the constant international pressure. However, achieving reconciliation and consolidating democracy remain the great challenge for Sri Lanka. Given this context, this research examines the process of reconciliation in the post-war Sri Lanka with the focus on the good governance political regime and its challenges and barriers that preventing the reconciliation possible in Sri Lanka. Also this study has attempted to examine the possibilities and opportunities that help the good governance government to carry out the initiatives to reconcile the ethnic communities in the post-war Sri Lanka. This qualitative study has incorporated both primary and secondary data to explore the understanding of the challenges and opportunities that influence the initiatives of the process of reconciliation in Sri Lanka. The interviews with the ordinary people of the Sinhalese, Sri Lankan Tamil and Muslim communities were analyzed to discover the views of the communities towards the inter-ethnic relations. The finding of the study uncovers the fact that emergence of ethno-religious nationalism, lack of political wiliness, Top-Down approach, interest base politics, and the weakness of Tamil leaders have greatly influenced the process of reconciliation in Sri Lanka. This study has further found that to achieve ethnic reconciliation, the government must show willingness to accept faults of its part and need to extend the hands to accept everyone to the one nation.

Keywords: *Ethnic reconciliation, armed conflict, democracy*

Assisting Bilingual Education Learners to learn intentional vocabulary by using Digital Memory Addressing Cards

Ruchira Tharanga Kumara Gangahagedara

Sectional Head (Grade 8&9), Trinity College, Kandy, Sri Lanka.

As an effort to pursue on the claims made by proponents of intentional vocabulary learning, difficulty in vocabulary, an identified common problem among the secondary bilingual education (BE) learners, this study focuses to test whether and how Digital Memory Addressing Cards (DMAC) word cards constructed digitally as a vocabulary learning technique that can be incorporated in to BE learners to promote their vocabulary learning of subject content in English language(L2). The sample consists of 90 BE Male students of Grade 9, who were drawn from three intact classes studying at BE stream, averaging 30 students per class at Trinity College Kandy. The students were administered to construct memory addressing cards collaboratively and individually with and without in cooperating of technology as a treatment, the study was conducted for 12 weeks at Trinity College Kandy. The research was done in noticing hypothesis, which states that noticing is a necessary condition for second language acquisition. The sources of data used in this research included pre test, post test, attitudinal questionnaire, observation and teacher's reflective journals. The data was analyzed by using descriptive statistic. The overall research findings highlight the significance of learning vocabulary with DMAC as an interactive to more conventional resources, and draw attention to the comparative merits of establishing DMAC as a collaborative and interactive **vocabulary learning technique** in BE class room settings in secondary education. Futuristic longitudinal research is recommended to test the retention of the effect and to test the effect with different age groups and gender variability.

Keywords ; *Intentional vocabulary learning, Bilingual Education(BE), Digital Memory Addressing Cards(DMAC), Vocabulary learning technique, Noticing hypothesis*

Commercial Agriculture and Environmental Ethics

Dr. Jailakshmi Kaul,

Assistant Professor in History, FSS, BHU, Varanasi, India

Commercialization of Agriculture means growing cash crops for the purpose of trade, and profit. This kind of agricultural practice in India (especially during last two centuries) resulted in transforming the entire character of the Indian agriculture – consequently leading to a tremendous change not only in the socio-economic and cultural conditions of the pastoral societies, but also in terms of environmental degradation, destruction of bio-diversity and all its connected aspects. This is also closely associated with the British colonial policies, pursued in India in the wake of industrial revolution in England. What is true of India is also true to a greater or lesser degree about other colonies of England in different parts of the world. The purpose of this presentation is to understand different aspects related with the commercialization of agriculture, and *in particular how it has impacted upon the environment*. Today, most of the scientists are worried about the terrible problems that are facing humanity and posing a challenge to the survival of the earth itself, not to talk of human and sub-human species. In this context, understanding of the traditional practices in agriculture and comparing them with the modern practices, the nature of the technologies that sustain it, the change in cultural norms of the societies that they bring out – are some of the very important aspects that need to be investigated and scrutinized thoroughly. It is expected that such a study would be productively utilized for ensuring sustainable future of the humanity.

Keywords: *commercial, agriculture, technology, damages, environment, ethics*

WHAT IS BEING WOMAN?: THE TASLIMA PHENOMENON IN SOUTH ASIAN LITERATURE

Dr. M. A. Afzal Farooq*

Assistant Professor, Department of English, Central University of Jammu (J&K) India.

Taslina Nasrin, the fiery feminist, enthusiastic human rights activist and articulate novelist is a scintillating star in the galaxy of South Asian writers of the contemporary times hailing from Bangladesh. A versatile and prolific writer, Taslima's pen unleashes gory account of suicidal situations, women falling prey to patriarchal hegemony and domestic violence not only in Asia but across the globe.

The present paper explores 'epistemic violence' and 'essentialising' tendency of patriarchs besides critically understanding women's suffering and misery in patriarchal South Asian society as reflected in Taslima Nasrin's *French Lover* and *Home coming*. These two novels highlight the status of women as mother, citizen, sacrificer and free thinker in India and Bangladesh- two important South Asian nations. An attempt has been made to analyse Taslima's depiction of social reality in India and Bangladesh through the prism of a critical evaluator. This paper claims that Taslima's view of devastating patriarchy and religious hegemony in the two countries are grounded on visible reality. The paper also examines Taslima's humanistic stances in *French Lover* and *Home coming* and adumbrate her postcolonial approach of decolonizing the mind.

Methodology adopted for this paper is close textual analysis. Primary sources for the current research paper are texts authored by Taslima Nasrin and secondary sources include critical writings of critics from across the world.

Keywords: *Patriarchy, Hegemony, Feminist, Humanistic, Domestic violence, Postcolonial*

Gender Based Violence: A Threat to Women's Reproductive Health in India

Dr. Padmalaya Mahapatra

*Associate Professor and Head, Department of Public Administration, Utkal University,
Vani Vihar, Bhubaneswar-4 Odisha, India,*

Contextually patriarchy is based on a system of power relations which are hierarchical and unequal where men control women's production, reproduction and sexuality. Acceptance of traditional masculine gender roles in a patriarchal society is closely connected with escalating violence towards women. The methodology of study is based on secondary sources of data. The paper attempts to analyse how gender based violence is linked to a variety of negative health outcomes for women including severe reproductive and maternal health consequences. A U.S. study revealed that women who experienced intimate partner abuse were three times more likely to have a gynecological problem than were non-abused women. These problems include chronic pelvic pain, vaginal bleeding, infection, painful menstruation, sexual dysfunction, fibroids, pelvic inflammatory disease, urinary tract infection, infertility, sexually transmitted disease including HIV/AIDS. Survivors of GVB need integrated and comprehensive care that addresses their legal, psychological and health needs and the barriers they face in accessing services. The paper concludes with the observation that health care sector can have a significant impact on reducing reproductive health problems related to abuse. With training and support from programme managers health care providers can learn to identify and care for women who have experienced violence.

Keywords: *Gender, Women, Reproductive Health, Violence*

Environmental Practices and Economic Success A study on Small and Medium-sized enterprises represented in high polluting industries in Sri Lanka

R. A. C. H. Wijayasinghe

Doctoral Student, University of Kelaniya, Sri Lanka

Today environmentalism grows rapidly and it helps to make the world a better place. This study investigates the impact of environmental practices on economic success of the Small and Medium-sized Enterprises (SMEs) represented in high polluting industries in the Western Province, Sri Lanka. It also identifies the most effective environmental practice/method that can be economically benefitted for the development of the country. The link between environmental practices and economic success has been widely debated in the literature during the past decade. One view is that environmental practices mainly causes extra costs and thus negatively affect the performance of the business while, the opposite has been argued that the environmental practices would improve the performance of the business. Both views have not been generalized so far. The empirical studies done on environmental practices of the SMEs are very limited in the context of Sri Lanka, thus the proposed study will make an effort to fill that void. This research involves quantitative approach. A total of 380 entrepreneurs will be selected from different SMEs represented in high polluting industries in the Western Province of Sri Lanka, and their environmental practices implemented in 2014 to 2016 will be examined against the financial performance on a year-over-year (YOY) basis. The findings will help to identify, whether the environmental practices affect the economic success of the SMEs represented in the Western Province of Sri Lanka.

Keywords: *Environmental Practices, Economic success, Small and Medium-sized Enterprises*

Enhancement of the Biosolubilization of Eppawala Rock Phosphate with Biofilms

¹Jayaneththi JPHU , ²Seneviratne G, ³Madawala HMSP and ¹Amarasekara MGTS

¹Faculty of Agriculture, Rajarata University of Sri Lanka, Sri Lanka.

²National Institute of Fundamental Studies, Hanthana, Kandy, Sri Lanka.

³Faculty of Science, University of Peradeniya, Sri Lanka.

Application of Eppawala Rock Phosphate (ERP) for annual crops is limited due to low solubility. If though, by enhancing the biosolubility, ERP has a great potential to be used as a phosphorous (P) fertilizer. National Institute of Fundamental Studies (NIFS) has developed certain biofilm formulations (BF1, BF2, BF3 and BF4)with potential biosolubilization of P in ERP and testing to develop the microbially improved ERP with the enrichment of biofilm. Hence this study is mainly conducted to study the P biosolubilization pattern of biofilm enriched ERP particles. Two experiments were conducted by using laboratory trays and leaching columns. In laboratory trays, a uniform quantity of ERP has been spread and enriched with biofilms according to recommended rate. Five treatments were tested as ; BF1, BF2, BF3 and BF4 with ERP particles and a control without biofilms. In leaching tubes; five treatments were tested having combined application of BF1, BF2, BF3 and BF4 biofilms with reformulated rice fertilizer recommendation by replacing Triple Super Phosphate (TSP) from ERP and a control without biofilms. Both experiments were conducted in a completely randomized design (CRD) with three replicates and NaHCO₃-extractable P were determined within two weeks interval up to three months. Data were statistically analyzed using analysis of variance (ANOVA) followed by mean separation using Tukey's HSD test. At the end of the three months, a similar P solubilization rhythms were observed in all microbially improved ERP treatments. This P release pattern is perfect for the better plant growth. In leachates, significantly ($p < 0.05$) highest cumulative solubilized P was recovered with BF3 enriched reformulated fertilizer mixture encompass with ERP. Overall it can be concluded that, when ERP is improved with biofilms, it leads to biosolubilize P with perfect nutrient releasing rhythm for enhancing plant growth. Further BF3 + ERP incorporated fertilizer mixture can be identified as most effective in P solubilization. Although, more studies are required to verify the BF3 action on biosolubilization of ERP.

Keywords; Biofilms, Eppawala Rock Phosphates, Solubilization of Phosphorous

The relationship between geo-magnetic fields and mammal distribution

P.S.B. Wanduragala and S.R.W.M.I.S. Bandara

Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka

The Open University of Sri Lanka, Nawala, Nugegoda, Sri Lanka.

Most of the mammalians have magnetic senses. Several mammalian species spontaneously align their body axis or jump some direction or work, eat, or sleep etc. with respect to the Earth's magnetic field lines in diverse behavioral context.

Experiment carried out referring research papers regarding mammal distribution and geo-magnetic field and tried to find how mammals sense the geo-magnetic fields, how they react and how geo-magnetic fields affects their distribution pattern. Generally most mammals are distributed according to their behavior and niche/habitat. The study was carried to see whether there is the correlation between mammalian and geo magnetic fields. It indicates that apart from humans (*Homo sapien sapien*) the other entire mammals have a correlation.

Keywords: Mammals, Geo Magnetism, Electro Magnetism, *Homo sapiens sapien*

Overview of Teenage Pregnancies in Two Urban Hospitals

**Samaranatha M.S.¹, Gangani J.M.N.², Kumari S.A.D.C.³, Damayanthi M.W.C.S.⁴,
Sriyani K.A.^{5*}**

^{1,4}Colombo South Teaching Hospital, Kalubowila, Sri Lanka.

²Base Hospital, Panadura, Sri Lanka, ³Kethumathi Maternity Hospital, Panadura. Sri Lanka.

⁵The Open University of Sri Lanka, Nawala, Sri Lanka

Background: Teenage pregnancy is a public health problem globally and it makes a bad impact on both child and the mother. In Sri Lanka, teenage pregnancies account for around 5.3% of the total pregnancies.

Purpose: To describe the socio-demographic and cultural background of teenage pregnant mothers in two urban hospitals.

Methodology: This was a quantitative descriptive study conducted during January to March 2017 among 150 pregnant teenagers attended the two urban hospitals in the Western province. A pre-tested self-administered questionnaire was used to collect data from purposively recruited participants and written informed consent was obtained from all participants. This study was approved ethics review committee of Colombo South Teaching Hospital.

Results: The majority teenage mothers were Sinhalese (82.7%), and studied grade five to O/ Level (94%) and 19 years old. Most of them lived with their parents (70.7%). Thirty percent of teenagers were single and had poor parental supervision (44%). More than eighty percent of teenage mothers did not aware about sex education before their pregnancy. Fifty percent of teenage mothers` had low income and the majority of their parent`s income was insufficient to cover their basic needs while dropout schools due to poverty, whereas more than 60% of teenagers used smartphones.

Conclusion: Teenage pregnancies are more common among Sinhalese and those with low education, poor parental supervision, low income and poor awareness of sex education. Thus, providing sex education at schools, improving socio-economic status and emphasizing the importance of parental supervision would be beneficial to prevent teenage pregnancies.

Keywords: *Teenage, Pregnancy, Socio-demographic and cultural background*

A Study on Philosophy, Religion and Science

Jally; Sudhakar

Post Graduate Department of Philosophy, Utkal University, Vani Vihar, Bhubaneswar- 751004, India

Discussion here is broadly on religion, and science in relation to philosophy. Generally, philosophy and religion are, being quite often, discussed since long. Of course, recently philosophy is also discussed in relation to science. Philosophy is known as darśana in some South Asian Countries and is found as different from dharma; while the latter is for some religious belief; the former is for their rational strength. Complete disregard to reasoning and on belief alone and treating it as pure knowledge (Divyajñāna) remains unacceptable to philosophical discussion. Depending on observation and experiment or both being based on reasoning, sciences, social sciences grow in general. While formal sciences emphasise on verbal /linguistic consistency, sciences rest upon factual evidences of some type. Philosophical studies are never opposed to sciences in general. Only if, logical/ conceptual cracks and flaws, then philosophy aims at eliminating those and brings in clarity. In formal science like logic and mathematics, the course of investigation / enquiry is found to be, by and large, though such formality is taken as conscious and also is applied in some cases to relevant facts and state of affairs. In linguistic studies of different varieties more stress is given on the use of words, ideas and concepts so far as their applications are taken into account. In this manner, philosophy may be viewed as sort of appraisal on the remarks, noticed in different forms of reasoning.

Keywords: *Philosophy, Religion, Science, Reasoning, Affinity, Difference*

DEVELOPMENT OF POTENTIAL TRACES FOR A CYCLE PATH NETWORK TO IMPROVE TOURISM EXPERIENCE IN TRINCOMALEE, SRI LANKA

KDP Damsara¹, TWKIM Dias²

^{1,2} Department of Civil Engineering, General Sir John Kotelawala Defence University
Sri Lanka

Trincomalee is the capital of Eastern Province - Sri Lanka, which is located 257 km north-east of Colombo. As a major tourist destination in Sri Lanka, Trincomalee is home to the fine beaches such as, Nilaveli, Marble beach, Coral Cove and many more. Apart from the beaches, Koneswaram Kovil, Sri Lanka Navy museum, seven hot springs at Kinniya, Seruvila buddhist temple adds more value as tourists attractions for Trincomalee. Sri Lanka Tourism Development Authority is committed towards expanding the county's tourism market. As a support for the Tourism development plan, this research is targeted on introducing a cycling network in Trincomalee city to improve the tourism experience to both locals and foreigners who visit. All the tourism attraction points are identified and multiple loops are proposed based on Main bus terminal and the railway station. Locals and tourist guides were questioned for supportive data. Using the proposed Cycling network, tourists can rent out a bicycle from any of the cycle hiring points proposed which also act as drop off points, at a reasonable rent: key advantage being, tourists do not need to return the bicycle to the same point they hired it. They can return it to any of the other points and shift to any other transport mode. Proposed network contains loops of multiple lengths, convenient cycle hiring points, coverage of all the tourism attraction points in and around the city. With proper functioning, this may attract more tourists to the city and also to promote eco-friendly non-motorized transportation modes within the city.

Keywords: *tourism, cycle path, Sri Lanka, Trincomalee, non-motorized transportation*

Evanescing Beauty and Viability of Coastal Beaches of Colombo District

Sivakumaran Sivaramanan¹ and Sarath Kotagama²

¹ Environmental Officer, Central Environmental Authority, "Parisarapiyasa",
104, Denzil Kobbekaduwa mawatha, Battaramulla, Sri Lanka.

² Vidya Jothi, Emeritus Professor, Department of Zoology, University of Colombo,
Sri Lanka.

Sri Lanka has been ranked at the 5th place in the list of world's most sea waste producing countries. Sea waste comprises the slow decaying or accumulated manmade products at the seashore and deep sea waters. It has been observed that sources of the waste depend on the type of coastal location of the beach. According to weekly beach survey conducted for two months and data analysis done by Clean Coast Index (CCI) method, some beaches in the Colombo district are rarely visited by public and they are at the backyard of rural population and become the dumping sites for them (domestic dumping sites) such as Moratuwa and Ratmalana. Beaches in Wellawatte, Dehiwala, Bambalapitiya and Kollupitiya hold wastes from mixed sources such as domestic dumping, wastes from commercial activities such as hotels, from running trains and from beach visitors, and beaches in Mt.Lavania, Galleface and Mattakuliya hold similar kind of wastes that are mostly from beach visitors including tourists. Furthermore, wastes from fishing related activities are abundant in Dehiwala, they are nylon fishing nets, ropes and polystyrene floats. In addition, PET bottle usage by the fisherman also significantly high. In urban areas such as Kollupitiya, Bamblapitiya, Wellawatte and Dehiwala most of the wastes are carried by the drainage canals. Mechanized beach grooming is not possible in most of the locations due to the presence of Southern railway track and stone fences, thus, source level mitigation plans have to be implemented such as penalties and banning of certain types of plastics.

Keywords: *Beach waste, Beach trash, Coastal pollution, Plastic pollution, Waste management*

A comparative study of Kerala dance rituals and Low country dance rituals

S. A. N. Perera

Department of Performing Arts, Sri Palee Campus, University of Colombo, Sri Lanka

History reveals that Sri Lanka and Kerala were consummated with similar nature and qualities. Both have maintained a good relationship with each other. Sri Lanka was also mostly invaded by the rulers of Chola Empire like King Karikalin, King Parantaka I, King Rajaraja I and King Rajendra Chola. Therefore, South Indian culture and their traditions easily developed in Sri Lanka, while examining the nature between Kerala and Sri Lankan dances, it can be said that both dance traditions are originated from their native rituals, folk traditions, cultural and religious aspect. Thus the aim of this research was to examine the comparative analysis between ritualistic theatre in Kerala and Low country dance. Here in this research I mainly focused on a comparison of the ritual process with presentation methods, dance techniques and external decorations in between both rituals. Generally, dance techniques, methods and presenting style have been originated from their indigenous culture nevertheless both celebrated Shakti form and goddess. Kerala dance rituals like Teyyam, Mudi yettu, Tirayattam, Tiyattam, Kummattikali and Patyani are associated with the cult of goddess Bhagawati and Badrakali while low country dance rituals such as Devol madu, Sanni yakuma, Rata yakuma, Suniyam yagaya are mainly worship goddess Pattini. Generally, both dance tradition follows the masculine art of dance and perform with powerful body movements vibrant costumes and attractive presentation. Results showed that the tradition in both Kerala and Low country dance rituals have evinced many similar features although, both maintain their uniqueness as well.

Keywords: *Dance ritual, Teyyam, Sanni yakuma, Kerala, Low country*

A MEDICAL SOCIOLOGICAL STUDY ON STIGMA AND DISCRIMINATION AMONG PEOPLE WITH WAR-RELATED DISABILITIES IN THE KILINCHCHI DISTRICT

S. Sivakanthan

Senior Lecturer, Department of Sociology, University of Jaffna, Sri Lanka

War is the leading cause of disability in the Kilinochchi District. The objective of this study is to assess the prevalence of stigma and discrimination among the war-disabled people in the Kilinochchi District using mixed methods. The sample comprised 316 (n=316) respondents selected based on stratified random sampling for the interviewer administered questionnaire method. Qualitative data were collected through in-depth interviews, focus group discussions and case studies. Results reveal that 43.7% of the person with war disabilities (PWWDs) perceived a lot their disability as burden or as causing feelings of inferiority, while, 18.3% never perceived their disability as burden. Further, 6% of PWWDs were highly treated unfairly by their families, while, 12% were treated unfairly a lot by the community. About 2.2% of the PWWDs who sought medical treatment felt unfairly by the doctors while, 13.3% of the PWWDs were felt unfairly a lot by the nurses and the other paramedical officers in hospitals. About 28.8% of the PWWDs were treated unfairly a lot when they were looking for jobs. Some 39.9% and 56.6% of the PWWDs were treated unfairly a lot during transportation and in getting welfare services, respectively. About 14.6% of the PWWDs experienced a lot of unfair treatment in the marriage context. Some 14% of the PWWDs were unable to cope with stigma and discrimination, whereas 85% of the PWWDs were able to cope with stigma and discrimination to some extent. This study concludes that stigma and discrimination caused widespread setback in the ordinary lives of PWWDs.

Keywords: *coping strategies, disability, discrimination, prevalence, stigma, war*

The Notion of Subject and Subject Positions in Sinhala

Dr. M.G. Lalith Ananda,

*Senior Lecturer in Linguistics, Department of English and Linguistics,
University of Sri Jayewardenepura, Nugegoda, Sri Lanka.*

The notion of subject in generative grammar has been defined in structural terms (Chomsky 1965, McCloskey 1997) along a number of properties. For example, the subject carries the Agent theta role, can act as a binder, takes a wide scope, subjects are either positionally and/or morphologically marked, and subjects are always nominal (McCloskey 1997). The developments in cartography have further decomposed subject properties along feature-encoded unique head positions (Pollock 1989, Cinque 1999).

Sinhala being a Subject – Object – Verb (SOV) language, Null Subject, thoroughly left-branching, free word-order phenomena, with Dative, Instrumental, and Locative subjects, volitive and involitive verbs, and the absence of agreement offers fertile ground for research. This paper aims to study the notion of subjecthood and the position/positions of the subject in the Sinhala clause with respect to the subject-related properties outlined above. In particular, it seeks to find answers to such questions as “Is the subject left-dislocated to Specifier of the Inflectional/Tense Phrase or does it stay in Verb Phrase? How many subject positions can be proposed for Sinhala and what are they? Can a Topic/Focus phrase host a subject? To what extent does Sinhala align with the theoretical claims made by other SOV languages in this regard?”

The data for the study consist of the grammatical judgments of about 10 native speakers of Sinhala, including the researcher himself. The study will contribute significantly to the body of empirical and theoretical literature related to the subjecthood and subject positions, notably in the absence of a well-articulated study on Sinhala in this area.

Keywords: *subject, subject positions, Sinhala clause*

A Study to Find Out the Reasons for the Degree of Students' Preference of the Bilingual Education Subjects in the National Schools of the North Central Province

Abeynayake Tharindra

Rajarata University of Sri Lanka

Bilingual Education (BE) prepares individuals to function in a global society, which has become a cornerstone of education in the twenty-first century. The North Central Province (NCP) in Sri Lanka possesses a 2963 of a BE student population and a 181 BE teacher population. One of the researcher's previous surveys highlighted the English Language (L2) errors and mistakes made by the BE teachers and also Mathematics as the most preferred BE subject of the students. This study examines the possible reasons for the students' preference and at the same time the reasons for the less preference of BE subjects. The study is based on a complex analysis which consists of web pages, questionnaires distributed among 50 BE students in the North Central Province, the written documents of 20 selected Bilingual Education teachers, classroom observations and interviews. The data was collected and analyzed manually using Microsoft Office Excel 2007. The findings suggest that the reasons for the preference of BE subjects are the questions asked in the question papers are clear enough; the language used by the teacher in the classroom is clear; the notes given by the teacher are clear and could be understood; and the teaching methodology is good. In contrary, it also proved the reasons for the students' less preference of the BE subjects: the lesson taught in English is not understood; the question papers given cannot be understood; the pronunciation of the teacher is very poor; and some words written on the blackboard are not found in dictionaries.

Keywords: *Bilingual Education (BE), English Language (L2), Government schools, North Central Province (NCP)*

Improving the Palm Oil Properties to Use as an Alternative Hydraulic Oil

T. K. K. S. Pathmasiri¹, G. I. P. Perera^{2*}

^{1,2} *Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Hapugala, Galle, Sri Lanka, 80000.*

Diverse studies have shown the capability of developing palm oil as lubricants in various applications. Major difficulty arises while using palm oil as a lubricant oil is its viscosity is not high as required for certain applications. So suitable method should be followed to improve its viscosity. An investigation is conducted to improve viscosity of palm oil by blending with various proportions of castor oil and polyethylene separately. Both methods show improvement in viscosity as the blending proportion increases. Improvement in viscosity decrease with temperature for castor-palm blends. Improvement in viscosity initially increases with temperature then decreases for polyethylene-palm blends resulting decrease in viscosity index than pure palm oil. For both methods, as the blending proportion increases, viscosity index decreases. Blending of 40% by volume of castor oil with palm oil and addition of 1.75wt% polyethylene to palm oil give blends with similar kinematic viscosity to Hydraulic68 (@ 40°C=69.3cSt, @100°C=10.7cSt). Physical and chemical properties of the two blends such as viscosity index, flash point, pour point, acid value, corrosion stability, demulsibility were also evaluated. Those properties are comparable to industrial hydraulic oil, Hydraulic68. The tribological performance was evaluated using ring and block type wear tester. Two bio lubricants developed from both methods possess better frictional heat removal capacity and wear prevention ability than Hydraulic68.

Keywords: *Bio lubricant, Castor oil, Polyethylene, Palm oil*

SURFACE PROTEOME ANALYSIS OF EXOGENOUS ALV-A INDUCED LIVER LYMPHOMA IN DEAD CHICKENS

Alka Tomar¹ and Amit Kumar

Tumor Immunology Lab/ Virus Lab

*Indian Council of Agricultural Research (ICAR)- Indian Veterinary Research Institute (IVRI)
Izatnagar, 243 122, UP. INDIA.*

Avian leukosis/sarcoma virus (AL/SV), under genus *Alpharetrovirus* in family *Retroviridae*, cause most dangerous infections/diseases inflicting enormous/significant economic losses to global poultry industry; besides public health concerns through genome integration, infected chicken origin food products; live virus vaccines and newer virus emergence. Nearly 50 *ev* loci, on interaction with exogenous/infectious virus, yield permanently viremic chickens maintained worldwide as AL/SV shedder/transmitter chickens, which need eradication based on specific identification, in absence of, as on date, effective vaccine/therapeutics.

AL/SV infection is diagnosed by detection of specific proteins/gps encoded by *gag*, *pol*, *env* genes using major gsAg/p27 based direct/indirect biologic assays, or proviral DNA or viral RNA by PCR and RT-PCR, respectively. As p27 is shared among viral *env* subgroups, direct/indirect biologic assays cannot differentiate endogenous and exogenous subgroups. Molecular assays may identify viral *env* subgroups, but are unsuitable for field conditions because they are costly and time-consuming. Hence, alternate biomarkers should be worked upon for convenient, precise and early diagnosis of AL/SV infections in poultry flocks.

Experiments were conducted to analyze cell surface proteome of exogenous ALV-A induced liver lymphoma from 2 dead chickens that revealed 6-7 protein bands compared to 2-6 bands in apparently normal tissues by native-PAGE resolution; and 15-17 bands (10.15-246.22 kDa) compared to 9-16 bands (10.60-310.34 kDa) in control tissues by SDS-PAGE resolution. Comparison revealed pattern of shared molecules, expressed as upregulated/downregulated, on ALV-A induced liver lymphoma, as also on control tissues. Surface proteome of ALV-A induced liver lymphoma is under study for diagnostic potential for AL/SV infections.

Exposition of *Rhodomicrobium vannielii* using general morphological and biochemical features

P. D. S. Weerasingha, M. Gunawardena

Department of Microbiology, Faculty of Science, Kelaniya University, Sri Lanka

The present work aimed to isolate purple non sulfur bacteria from enriched soil sample. The isolated bacterium was identified as *Rhodomicrobium vannielii* (RV) by morphological and biochemical tests.

The dominant photosynthetic pigment was bacteriochlorophyll *a* and carotenoids. The preferred growth medium of RV was simple electron donors and carbon sources. Pyruvate may be the best, but other substances such as acetate lactate, intermediates of citric acid cycle and malate also served as favored carbon sources and identification of tryptophanase and nitrate reductase formation was not reported previously.

Isolated RV utilized arabinose, cellobiose, galactose, glycogen, Inulin, maltose, melibiose, raffinose, rhamnose, ribose, salicin and trehalose and non-digestible carbohydrates of human such as arabinose, cellobiose, inulin; which was not identified previously. The findings of this study advance the knowledge on the efficacy of *Rhodomicrobium vannielii* by morphological and biochemical characteristics.

Keywords; *Rhodomicrobium vannielii*, carbon sources, non-digestible carbohydrates, photosynthetic pigment

Why do marine fishers break rules? Evidence from Southern Sri Lanka

Perera¹; Madhushika, Amarasinghe²; Oscar, Bavinck³; Marten, De Silva²; Nilantha

¹Nha Trang University, Vietnam/ ²Univeristy of Ruhuna, Sri Lanka/ ³University of Amsterdam, Netherlands

Fisheries management in Sri Lanka has failed to achieve the sustainability of the marine resources due to rule breaking by marine fishers. Number of evidences have shown significant negative impacts of rule breaking by marine fishers on fish stock and fish harvest which directly affects the wellbeing of the rule breakers as well as the other fishers. This study was conducted with the objective of identifying the prevailing legal systems in the fishing community, the rules breached by the marine fishers and the reasons for breaching the aforementioned rules. The study was conducted in Rekawa of Southern Sri Lanka with a sample of 63 marine fishers selected through random proportionate sampling. The data were collected through two focus group discussions and a pre-tested questionnaire survey; and data were analyzed descriptively. As per the study findings, there were two types of legal systems governing coastal resource use namely; community legal system and state legal system. Community laws were unwritten and consisted of norms, traditions, values mainly focusing on wellbeing of the people while state laws were written in the spheres of resource access, resource appropriation and resource conservation. The study has found that the level of awareness about state laws among marine fishers were very low; and also the number of state laws breached by the marine fishers were higher than the number of community laws. The study has identified that poverty as the main reason for breaching of community laws while poverty, incompatibility with interests, lack of awareness on fisheries regulations were the main reasons for breaching state laws. Therefore, it is important to understand the reasons for compliance and non-compliance with fishing laws in devising laws and policies with the consultation and engagement of stakeholders in all the levels.

Keywords: *Marine fishers, Break, Rules, Southern Sri Lanka*

Undergraduates' performances at Internship Training with special reference to the Undergraduates of BSc (Hons) in Information Technology at Horizon Campus

Samanthi Wickramasinghe¹, Nipuni Upeksha², Sunesh Hettiarachchi³

1 & 2. Faculty of Information Technology, Horizon Campus, Sri Lanka

3. Tech Computers, Sri Lanka

The curriculum is dynamic as it changes according to the society and learning experiences of individuals in society. The BSc. (Hons) in Information Technology is designed at Horizon Campus to offer students with the flexibility to work across many disciplines that require expertise IT aspects.

The 6-month Internship is a compulsory and essential requirement in the BSc. (Hons) in IT degree program. It presents a significant metric and measure to test the effective transformation of class-acquired knowledge and concepts to real-world industrial situations and skills and gathered theories to actual practice.

This study was carried out on final year IT graduates with the objective of identifying the correlation between the existing IT curriculum and undergraduate performances at Internship. An Interview has been conducted to identify the most applicable courses during the Internship and student results have been considered to observe their performances in those courses. Course evaluation by lecturers has been taken to observe the applicability to the market demand for selected courses. Internship employer feedback and students outcome of internship evaluation have been considered to measure students' performances at the internship.

The internship employer feedback indicated that these students had acquired meaningful work knowledge, demonstrated good working skills with the right attitudes at the workplace. Nevertheless, there are still areas for continual improvement to ensure students are well-prepared for practicum, further soft skill development and to improve the quality of their project and minor modifications to be done for the existing curriculum to match with the current market demand.

Keywords: *Curriculum, Internship, Undergraduates' Performances, IT Graduates, IT Degrees*

Antifungal Activity of Different Parts of Nutmeg (*Myristica Fragrans*) on *Fusarium oxysporum*

Fernando¹ A.Y.L. and Senevirathne¹ W. S. M.

¹Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka, Sri Lanka

Increasing public awareness on environmental impact associated with use of fungicides for agricultural practices has made an interest and a challenge on many researches around the world to find safer fungicides for environment and human being particularly from plant extracts. The present study tested the antifungal activity of methanol, ethanol, acetone, chloroform and hot water extract of nutmeg: leaf, mace, seed and fruit peel at different concentration levels (5%, 10% and 20%) against *Fusarium oxysporum*. The agar dilution technique was used and the effect of different concentrations of plant extracts on radial growth of *Fusarium oxysporum* was evaluated. Maximum inhibition of 100% was found at 10% and 20% concentrations of ethanol and methanol extracts of all plant extracts except fruit peel. Further, chloroform leaf extract showed the highest inhibition against *Fusarium oxysporum* at all concentrations levels. It was found that leaf samples have given encouraging results, indicating potential use of nutmeg leaves in management of *Fusarium oxysporum*.

Keywords: *Antifungal activity, nutmeg, Fusarium oxysporum, plant extracts*

Engineering Ethics- A Matter to Reconsider

Wijesinghe¹ D.P.S., Jayawardane² V.P.T.

¹Department of Interdisciplinary Studies, Faculty of Engineering, University of Ruhuna, Sri Lanka/

²Department of Industrial Management, Faculty of Business, University of Moratuwa, Sri Lanka

Engineering Ethics should be given highest priority by practicing engineers. Most of the engineering undergraduates and practicing engineers focus on application of technical knowledge with lesser adherence to Engineering Ethics. Unfortunately, unethical decisions and behaviors of engineers can lead to disastrous situations. Engineering undergraduates pursue their trainings in different engineering firms under senior engineers. If senior engineers are involved in unethical activities, the trainees may adopt these practices, because the respective senior engineers are considered as their professional role models. It is clear when referring existing research literature, less attention has been focused on this matter by engineering researchers. Therefore, this qualitative research was conducted with the main objective of identifying major engineering ethical violations observed by engineering trainees in their training places by getting answers to a structured questionnaire from 200 final year engineering undergraduates of a government university in Sri Lanka. The interpretive analysis of the data shows that, senior engineers have violated two major clauses of Engineering Code of Ethics. Those clauses are “Engineers shall hold paramount safety, health and welfare of the public” and “Encourage junior engineers under their direction to advance their knowledge and experience”. The findings of the study are very important for any practicing engineer to get rid of their unethical acts in order to develop ethical awareness of their trainees. Further research can investigate deeply about these issues from the perspectives of the senior engineers in order to support the development of ethics and moral practice within the conduct of engineers.

Keywords: *Engineering Ethics, Senior Engineers, Undergraduates, Ethical Violations*

A Corpus-based Critical Discourse Analysis of the 2015 Presidential Election News in Sri Lankan English Newspapers: ‘The Sunday Times’ and ‘The Sunday Observer’

Nandarathna Darshika

Department of English Language Teaching, Rajarata University of Sri Lanka

“A Corpus-based Critical Discourse Analysis of the 2015 Presidential Election News in Sri Lankan English Newspapers: ‘The Sunday Times’ and ‘The Sunday Observer’” is a study which was done in order to identify the elements of stance in the news reports of Sri Lankan English newspapers about the 2015 presidential election in Sri Lanka. This was done by using corpus-based linguistics tools to analyze the data downloaded from the online editions of two Sri Lankan English newspapers. It also involves a description of the Sri Lankan political history and particularly the 2015 presidential election. The WordSmith 5 corpus linguistic tool was used to analyze the data downloaded from newspapers and British English 2006 (BE06) corpus was used as the reference corpus of the study. The analysis of data was done with an exploratory process of identifying topics and themes in the main corpus of the study, Sri Lankan Presidential Election Corpus (SLPEC) by comparing it with the reference corpus. The topics generated include the ones related to politicians, political parties, electoral process as well as security. A keyword analysis and a concordance lines analysis of a number of selected keywords of the two newspapers were done in order to search for evidence of stance. It is discussed in detail about the main finding of the study, which is, identifying that the newspapers have presented their attitudes, ideas and feelings about the 2015 presidential election by using the linguistic mechanisms. Finally, it is discussed about the contribution of the study and suggestions for future studies.

Keywords: *Corpus, Concordance lines analysis, Keyword analysis, Elements of stance, Corpus - based linguistic tools, Critical Discourse Analysis*

Performance Evaluation of Vegetable Oil Based Metal Working Fluids (MWFs) in Flood and Minimum Quantity Lubrication (MQL) Techniques - Review

Fernando W. L. R.¹, Sarmilan N.¹, Wickramasinghe K. C.¹, Perera G. I. P.^{1,2}

¹ *Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka.*

The Metal Working Fluid (MWF) which commonly known as the cutting fluid plays a significant role in metal machining operations to facilitate a favorable condition for the cutting parameters. The integrated functions of the MWFs comfort the machining operation for a better quality of the final product. Hence, the economic value of the cutting operation increases due to the reduction of the cutting forces and power consumption. The cooling medium and the method are considered as the one of the most critical elements for the better performances during metal machining. Variety of cooling mediums and methods are used during the metal machining operations, but most of the techniques and practices pose considerable issues and problems. This paper discusses the related performance of the methods in term of flood cooling and Minimum Quantity Lubricating (MQL) while considering the cooling mediums as mineral oil and vegetable oil. A series of suitable vegetable oil based MWFs are discussed with the permitted additives for the enhancement of the performances while comparing related parametric values of the work-tool interface temperature, chip formation, surface quality and tool wear with mineral oil based MWFs. In addition, the importance of the usage of health and environmental friendly MWF has emphasized. Almost all the parametric values expressed the better results for the MQL while using the cooling medium as vegetable oil based MWFs in range of low to high speed metal machining.

Keywords: *Metal Working Fluids, Flood Cooling, Minimum Quantity Lubricant, Vegetable oil, mineral oil*

Obstacles Faced in Translating Idiomatic Phrases and Strategies to Overcome Them

Jayasinghe D.G.T.A.

Department of Linguistics, University of Kelaniya, Sri Lanka

The aim of this study is to identify the obstacles faced by students in translating idiomatic phrases and the strategies used to overcome them. Therefore, the research problems of the present study are; what are the problems faced by students in translating idiomatic phrases and the strategies used as solutions? And are they effective in the process of translation? Twenty five fourth year students of Translation Studies in the Department of Linguistics, University of Kelaniya, were used as the sample set of the research and the data was collected through practical translations of 25 stories given to them. Each translation was studied carefully and the translations of the idiomatic phrases were listed along with the original in order to conduct the analysis. A qualitative content analysis was done using comparative methodology in conducting this research. Thus the obstacles identified were; finding the meaning of the idiom and an equivalent in Target Language (TL), contextual inequalities and if no equivalent is present in TL what is the strategy to use. The hypothesis was that the students use idiomatic phrases that give the same idea in TL. After the analysis it was seen that they have used word for word translation, totally different and incorrect idiomatic phrases, have explained the idiom and some have used an equivalent in TL. Thus, it is recommended to use an equivalent in TL if there is any, or to explain the idiomatic phrase in the translation or in unavoidable circumstances, theory of omission could be adopted.

Keywords: *Translation, Idiomatic Phrases, Problems, Strategies*

Effectiveness of turn taking and group work in reducing speaking anxiety in ESL classrooms

Gardihewa P. N.

Faculty of Engineering, University of Ruhuna, Sri Lanka

One of the main problems for second language (L2) learners is speaking anxiety. Most of them express their anxiety of the language in different forms, to the extent that students simply refuse to speak in English which hinder them from successfully learning the language. This study 'effectiveness of turn taking and group work in mitigating speaking anxiety in English as a second language (ESL) classrooms' was designed to explore on how far turn taking and group work is effective in mitigating speaking anxiety. Anxiety is considered a complex and multi-faceted psychological phenomenon by past researchers and they have suggested the use of different perspectives and approaches to investigate this phenomenon. Primary data was collected using 50 questionnaires distributed at the pre and post stage. Teaching strategies were applied in the post stage. The findings suggested that turn taking and group work helped in alleviating and reducing the speaking anxiety felt by ESL learners and encouraged them to use the second language. At the post stage students showed great improvements in their willingness to speak and participate in different tasks and activities in their second language classroom. Through the findings the researcher was able to recommend strategies to teachers that would help alleviate speaking anxiety felt by second language learners by helping them to be less self-conscious and strengthen confidence.

Keywords: *L2 learners, anxiety, speaking anxiety, teaching strategies, ESL classrooms*

IMPACTS OF PSYCHOSOCIAL FACTORS ON SPORT PERFORMANCE ACROSS CAREER STAGES OF OLYMPIC ATHLETES IN SRI LANKA

K.M.S.M.Rathnayaka*, Lakshika Madhushani* and B.L.H. Perera**

Demonstrator, Department of Sports Sciences and Physical Education, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, P.O. Box 02, Belihuloya.

This research study has taken a step further to study the combined both factors as 'psychosocial' and its impacts in sport performance. In the recent past psychosocial factor were mostly used in studies in medical and health sciences. The objective of this study was to investigate psychosocial factors and its influence in successful and poor sport performance across career stages of Olympic athletes. The theoretical frame work for the research was based on the 'developmental model on transitions faced by athletes' (Wylleman and Lavallee 2004) to study impacts of similar factors. The study population was selected from athletes represented Sri Lanka during 2000 Sydney to 2016 Rio Olympic Games. Ten Summer Olympic athletes (N=10) have taken part in the study sample representing individual and team sports. The semi-structured interviews were conducted in order to collect data.

The collected information was preferred in to three parts and eight categories. The research has revealed that the psychosocial factors were contributed to the successful sport performance and poor sport performance evenly during initiation, development, mastery phases and maintenance stages. The impact of parents, family, coach, peers, siblings and other factors were studied among career stages. The results were presented that the psychosocial factors play a different role on the different career stages. The instance supportive family and parents were the most important factors to Olympic athletes' successful sport performance on the initiation stage, where the lack of family and coach support to be a more important factor to Olympic athletes poor sport performance on the maintenance stage. The research was recommended on future research and implication is given.

Keywords: *Developmental model, Psychosocial factors, Sport Performance, Career stages*

Effect of selected essential oils on reducing postharvest diseases in Papaya (*Crica papaya* L.) fruit

Samithri, Y.A.S¹, Karunanayake, K.O.L.C², Kulasinghe, A.A.

Department of Botany, Faculty of Natural Sciences, The Open University of Sri Lanka.

In Sri Lanka a large percentage of papaya fruit is lost postharvest due to a range of postharvest diseases of fungal origin. Predominant diseases being; Anthracnose caused by *Colletotrichum gloeosporioides* and Stem-end rot caused by *Lasiodyplodia theobromae*. Disease control is currently achieved by application of high doses of fungicides; causing health and environmental hazards. As an alternative method of disease management, essential oils have gained much attention in recent years. Objectives of the present study were to (i) investigate the antifungal potential of selected essential oils using Anthracnose and Stem-end rot causing pathogens *in-vitro*. (ii) Evaluate the efficiency of effective essential oils selected from *in-vitro* tests to reduce postharvest diseases *in-vivo*. The efficiency of five essential oils (Cardamom, Citronella, Orange, Mustard and Lemon) to retard mycelial growth of *C. gloeosporioides* and *L. theobromae* isolated from papaya fruit was evaluated. A poisoned food bio-assay was used and radial measurements of mycelial growth were obtained daily. The essential oils giving significant inhibition at the lowest concentrations were applied as postharvest spray to unripe, healthy Papaya fruits. Visual observations on natural disease development were recorded. In the *in-vitro* bio-assay, Cardamom and Citronella oils significantly inhibited ($P < 0.05$) mycelial growth of *C. gloeosporioides* and *L. theobromae* at concentrations of $1000\mu\text{l}^{-1}$ and $750\mu\text{l}^{-1}$ respectively. *In-vivo* experiments with the Papaya fruits treated with Cardamom and Citronella oils ($1000\mu\text{l}^{-1}$ and $750\mu\text{l}^{-1}$) resulted in a significant ($P < 0.05$) reduction of anthracnose, stem-end rot and other postharvest fungal diseases with no detrimental effects on fruit quality. Results indicate that Cardamom and Citronella oils can be applied as postharvest spray treatments to reduce diseases of fungal origin in papaya.

Keywords: Postharvest, Essential oils, Anthracnose, Stem end rot, Papaya fruit

Financial assistance given by the Faculty of Natural sciences Research Grant 2016 - OUSL is gratefully acknowledged

An Algorithm to Detect Intrinsic Plagiarism

Pieris¹; Kavindi, Weerasinghe²; A.R., Wijesekara³; W. M. L. K. N.

¹Department of Statistics, University of Colombo, Sri Lanka, ²University of Colombo School of Computing, Sri Lanka, ³Department of Statistics, University of Colombo, Sri Lanka.

Plagiarism detection refers to the comparison of a suspicious document against a collection of reference documents. Current approaches to detect plagiarism perform well when the reference collection is given; i.e. in a closed world. However, it is not always practical to have a reference collection. Therefore, there's a need to develop algorithms to detect plagiarism when there is no reference collection. This is known as intrinsic plagiarism detection. This study develops an algorithm to detect the intrinsic plagiarism. Authorship verification was carried out as the initial step of the research which was then followed up by tackling the problem of intrinsic plagiarism. Several stylometric features including part of speech (POS) features were considered in this study. Initially, the author of the entire document was predicted via several techniques, and then it was followed up to a more realistic intrinsic plagiarism scenario where the author detection is done at the paragraph level. A collection of English documents from different authors were used as the dataset to carry out this research. Several experiments were carried out using Mann-Whitney test, Cosine similarity test and Naïve Bayes approach, and the accuracy was compared. The most suitable approach for predicting the authorship was Naïve Bayes approach.

Hybrid Optimization of Two-tier Logistics Framework for Cost-Benefit Analysis – A Systematic Review of Literature on Megacity Logistics

Dias¹; Maneesha, Vidanagamachchi²; Kasuni, Nanayakkara³; Julian

Department of Industrial Management, University of Kelaniya, Sri Lanka

A megacity is a city over a population of ten million people that supports complex logistics functionalities each and every day. A common logistics framework related to megacity concept world-wide, is a two – tier transportation network structure that consolidates freight received from origins at a central hub location and then transports it to the destinations. In the context of megacity, consolidated hubs act as a hub-and-spoke structure to accumulate freight from different areas. Extensive literature on two-tier logistics framework optimizations suggest simulation-based mechanisms to analyse the operational feasibility. At the same time, there is ample literature in the context of mathematical optimization of logistics frameworks considering aspects of time, distance and cost. Yet, a logistics framework in the megacity context needs to be subjected to a combinatory analysis of financial as well as operational feasibility for optimum outcome. Therefore, this study is conducted with the goal of identifying the capability of optimizing a two-tier logistics framework based on a hybrid approach (mathematical and simulation-based optimization) that can be utilized to analyse the cost-benefit trade-off of such a logistics structure while ensuring optimum operational feasibility. This scrutiny was conducted using multiple studies published in the area of megacity logistics, two-tier transportation framework, hybrid optimization and financial analysis by way of a systematic review of literature.

Keywords: *Megacity Logistics, Two-tier logistics framework, Hybrid Optimization, Simulation Optimization, Mathematical Optimization, Cost-Benefit Analysis*

Gender dependence of guessing in answering multiple choice questions in a physical chemistry course in the B.Sc. programme at the Open University of Sri Lanka

de Zoysa, M.N.K.¹, Siriwardana, K.D.V.F.² and Bandarage, G¹

¹ *Department of Chemistry*/² *Department of Mathematics, Open University of Sri Lanka, Sri Lanka*

In assessments using Multiple Choice Questions (MCQ) a student may guess the answer and score for what he actually does not know. In classical Formula Scoring (FS) a fraction of a mark is subtracted for each wrong answer in removing the effect of guessing. It is believed that FS introduces a gender bias against females in assessments.

Based on assumptions in FS, we have quantified the guessing behavior of a candidate, in answering MCQs, by defining the parameter, Guessing Propensity (GP). GP = 0% when candidate does not guess. GP = 100% when candidate guessed the answers to all the MCQs for which he did not know the answer. This research aims at studying the guessing in Continuous Assessments (CA), with MCQs, in a physical chemistry course in B.Sc. at the Open University, using GP.

Study sample contained 1168 (892 female and 276 male) candidates who sat all CAs of the course for the first time within an academic year. Data was collected over five academic years. Average and variance analysis were used in drawing conclusions.

Average GP for males and females were 78.2% and 75.4%, respectively, and t-test indicated that tendency for guessing is higher in males than in females ($p < 0.05$). It confirms the belief on gender bias of FS. High average GP values indicate the prevalence of guessing in both genders even though FS is used in discouraging guessing.

The standard deviation of GP of males and females were 18.0% and 17.8%, respectively, which indicates that the variation in GP is higher with males compared females. This result is in agreement with the Greater Male Variability Hypothesis.

Keywords: *Physical chemistry, Multiple choice questions, Gender, Guessing*

Improving Students' Oral Skills through a Cooperative Learning Approach

Abeysekara Keshani

Department of English Language Teaching Unit, Rajarata University, Sri Lanka

It is obvious that the need for English in the Sri Lankan society is growing in a variety of different directions every day. Yet, although English is regularly taught in all schools from the nursery to the tertiary levels, the learners suffer from a great lack of fluency in their oral communication. They are generally competent in their cognitive skills but weak in their communicative skills. In that context, this paper deals with issues and problems faced by secondary level students in mastering the oral skills in English and to investigate the effectiveness of Cooperative Learning (CL) strategy. The main aim of the study was to determine how cooperative learning is an effective approach to develop and enhance the speaking skills. In order to analyze the hypotheses developed in this concern, a quantitative survey and a qualitative survey are used along with a questionnaire as an instrument for obtaining data from a group of 50 students from five schools of the Kahatagasdigiliya Educational Division. According to the results, it was discovered that the majority of the students cannot speak English properly, as they suffer from a sense of insecurity caused by several language deficiencies. But through cooperative learning, students interact and express themselves more to their peers or classmates. The approach served also as a venue for reluctant and fearful students which enable to intensify their self-esteem. Therefore, in conclusion, the paper suggests a cooperative learning strategy to promote oral skills.

Keywords: *Cooperative Language Strategy, Speaking Skill, Fluency, Communication*

ENVIRONMENTAL MICROBIAL COMMUNITIES FOR EFFICIENT CELLULOSE DEGRADATION

Jayasekara SK¹, Abayasekara CL², Ratnayake RR³

^{1,3}*National Institute of Fundamental Studies, Kandy, Sri Lanka,*

²*University of Peradeniya, Sri Lanka*

Cellulolysis is a synergistic process between microorganisms in the natural environment. They act as a community in degrading cellulose, and thereby increasing soil fertility. If these efficient communities could be isolated from the environment, there may be a potential of using them in industries such as biofuel production, paper & pulp, agriculture etc. where cellulose degradation is one of the key factors. The objective of the current study was to isolate microbial communities with efficient cellulolytic capabilities exhibiting high total cellulase activities in comparison to a cellulolytic monoculture, *Trichoderma viridae*. Three different cellulase production media were used for isolation of communities. Upon submerged cultivation of each community, the total cellulase activities were determined. In total, 5 fungal communities, 8 bacterial communities and 8 fungal-bacterial communities were isolated from soil with a high degree of cellulose degradation. The fungal communities were more efficient than bacterial communities in cellulase production with the highest total cellulase activity of being 0.79 FPU/ml for the best community. This was significantly higher than the total cellulase activity of *T. viridae* which was 0.495 FPU/ml. The bacterial communities gave a total cellulase activity below 0.03 FPU/ml level, the highest being 0.028 FPU/ml. The cellulase activities of fungal-bacterial communities were not significantly different from each other, and was negligible compared to *T. viridae*. The study showed that cellulase enzyme from fungal communities can be utilized for efficient hydrolysis of cellulose. Molecular biological identification of the fungal components present in each community is warranted for future applications.

Key words: *cellulase, cellulase activity, cellulolytic microbial communities*

The impact of Sodium fluoride (NaF) and citric acid as preservatives for in-vitro blood glucose and the impact in diabetic diagnosis

Thillainathan¹ K, Uluwaduge¹ DI

¹Medical Laboratory Sciences Unit, Department of Allied Health Sciences, Faculty of Medical Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda 10250, Sri Lanka

Accurate measurement of glucose is required for a definite classification of subjects into diabetes, prediabetes and normal. Loss of glucose from whole blood in vitro is a significant source of error in clinical laboratories and glycolytic inhibitors are used to minimize this effect. Sodium fluoride is the widely used glycolytic inhibitor. Use of citric acid is one of the newly proposed methods. This study was conducted to compare the impact of sodium fluoride and citric acid on in vitro blood glucose analysis. Hourly measurement of glucose was done on 103 individuals for a period of 2 hrs. Measurement of immediate blood glucose concentration was used as the reference. The mean glucose reduction in NaF tubes (8.8%, 1 hr & 11.9%, 2 hr) was significantly higher than that in citric acid containing tubes (2.2%, 1 hr & 4.1%, 2 hr). The highest mean difference was obtained in glucose concentrations ranged from 110 - 125 mg/dL. The calculated diagnostic sensitivities of NaF in diabetic patients in the 1st hr and 2nd hr were 84.6% and 69.2% respectively. Sensitivity of citric acid samples remained as 92.3% throughout the period. The diagnostic sensitivity of citric acid (61.5%, 1 hr & 30.8%, 2 hr) in pre-diabetes was also significantly higher than NaF (7.7 %, 1 hr & 0%, 2 hr). The failure of NaF in arresting glycolysis leads to falsely low plasma glucose concentrations, thus critically affects the diagnosis of pre-diabetes. Treating blood samples with citric acid minimizes the risk of misdiagnosis of diabetes.

Keywords: sodium fluoride, citric acid, diabetes, prediabetes, diagnosis

Cooking effect on total phenolic content of different skin coloured *Vigna unguiculata ssp. sesquipedalis*

Somawathie¹; K.M, Dalukdeniya¹; C.K, Rathnayaka²; R.M.K.T, Wijithasena¹; N

¹Department of Food Science & Technology, Sabaragamuwa University of Sri Lanka

²Department of Physical Sciences & Technology, Sabaragamuwa University of Sri Lanka

Little is known about the behaviour of phenolic compounds in vegetables with cooking. Current research was aimed to study the effect of different cooking methods on total phenolic content (TPC) of *Vigna unguiculata ssp. sesquipedalis*; long bean. Three skin coloured (green (G), green-purple mixed (M), purple (P)), fresh samples were cooked separately. Four cooking methods were employed (cooked with no spices (CNS), cooked with spices (CS), stir fried with no spices (SNS), stir fried with spices (SS)). TPC was tested against the uncooked (U) respective samples, using Folin-Ciocalteu reagent. Results interpreted as mg GAE/100g of fresh weight. Analysis of variance (ANOVA) and Tukey Pairwise comparison were performed to compare the samples at 5% significance. TPC of uncooked samples in P, G and M samples were (74.47±2.5SD), (71.53±1.5SD) and (57.86±3.1SD) respectively. TPC of all cooked G samples were less but higher in P samples than the respective U samples. In G samples, TPC of U, CNS and SNS showed no significant difference. However, significant difference was observed among SS and CS and (U, CNS, SNS) group. TPC of spice added G samples were lower than the non-spiced samples regardless of the cooking method while the same trend was not observed in other two skin colours. Higher TPC were recorded in SS samples of both P and M samples among which the P samples showed the highest. P samples did not show significant difference among the cooking methods used. The study indicates that stir fried purple *Vigna unguiculata ssp. sesquipedalis* has the highest TPC among all tested samples.

Keywords: *Vigna unguiculata ssp. sesquipedalis*, total phenolic content, skin colour, cooking method, spice

COMPARISON OF MORPHOLOGICAL FEATURES OF SECOND CERVICAL VERTEBRA BETWEEN GENDERS USING COMPUTED TOMOGRAPHY

MR. TS¹ MADHAVAN MR. KOTIAN² RAHUL P, MR. S³ SHARATH

*^{1, 2, 3} Department of Medical Imaging Technology, School of Allied Health Sciences, Manipal
Academy of Higher Education, India.*

Aim

To compare the morphological features of second cervical vertebra between genders using Computed Tomography.

Methods

This was a retrospective study including subjects visiting for CT (Computerized Tomography) of cervical spine in Department of Radio diagnosis and Imaging, Kasturba Medical College. In this study 180 patients underwent computed tomography of cervical spine on MDCT Brilliance 64 slice Philips with routine protocol and later post-processed into Multiplanar imaging. Anthropometric measurements were performed which were calculated using the measurement tools.

Results

In present study nine measurements of the second cervical vertebra were performed such as Maximum height of the dens (DA), maximum sagittal length(DS), maximum width of the axis(LMA), maximum distance between superior facets(DMFS), Dens sagittal diameter(DSD), Dens sagittal diameter(DTD), Width of vertebral foramen(WVF), Maximum sagittal diameter of the body(DSMC) and maximum transverse diameter of the body(DTMC), out of which seven variables were good discriminators where DMFS contributed much separation with high accuracy in comparison to others.

Conclusion

DMFS contributed much separation with high accuracy in comparison to others affirming that there is considerable sexual dimorphism with respect to the second cervical vertebra which could determine the gender of human based on computed tomographic measurements of second cervical vertebra.

Keywords: *Cervical Spine, Computed Tomography, Sexual Dimorphism*

EFFECT OF SELECTED YOGA PRACTICES ON ANAEROBIC CAPACITY OF VARSITY SOCCER PLAYERS

Dr. S. Joniton

**Lecturer, Department of Sports Sciences and Physical Education,
Sabaragamuwa University of Sri Lanka.*

The purpose of the study was to determine the Effect of Selected yoga asana Practices on anaerobic capacity among varsity Soccer Players. To achieve this propose of the study sixty (N=60) men soccer players (beginners) were randomly selected as subjects, who were from the various Departments of Sabaragamuwa varsity of Sri Lanka. The age of the subjects were ranged from 19 to 22 years. The subjects are performed selected yoga asana in the morning time for 30 to 60 minutes per five days/week over the period of six (6) week which was given by the yoga experts. The subjects tested on speed using 50m dash. The collected data was statistically treated by using independents' test, 0.05 level of confidence was fixed to test the significance. The result shows that there was a significant difference in speed between pre and the post test.

Keywords: *Yoga Practice, Anaerobic, Soccer Players, Varsity*

Improving Downstream Logistics Performance of Agricultural Supply Chains through Collaborative Digital Logistics

Sarathchandra¹; Kalpani, Vidanagamachchi²; Kasuni

Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

Global agricultural production is barely sufficient to appease the hunger of the world population. Greater part of agricultural production gets spoiled on the way to the consumer. Agricultural logistics ensures that the agricultural products reach the consumer with the right quality at the right cost. Hence, the availability of properly managed storage and transport facilities, real time access to information on: demand, supply, weather conditions, price fluctuations, surplus handling and value added production capabilities are crucial. Consequently, the need for redesigning the agricultural logistics networks by deploying information technology has emerged. Although digital logistics is important to enhance the performance of agricultural supply chains (ASC), it is difficult for small scale stakeholders to invest on the new-fangled technologies. It is established that collaboration is a strategic decision which aids in gaining logistics performance excellence. Accordingly, this study focuses on the effect of supply chain collaboration in implementing digital logistics in less sophisticated supply chains such as agricultural supply chain, in improving downstream logistics performance. This scrutiny presents the findings of a comprehensive and systematic review of literature in the areas of collaboration, digital logistics and downstream logistics efficiency of agricultural supply chains and subsequently presents a conceptual framework of factors involved in collaboration and integrating digital logistics in improving downstream logistics performance of agricultural supply chains.

Keywords: *Agricultural supply chains, Collaboration, Digital Logistics, Downstream Logistics Performance*

A Study of Entrepreneurial Tendencies of Undergraduates

Abhayarathne¹ M.H.R and Kodithuwakku² K. A. S. S.

^{1,2} Department of Agricultural Economics and Business Management, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Entrepreneurial tendency measures the psychological characters associated with tendency to set up and manage projects. Understanding if undergraduates possess the required traits necessary to become entrepreneurs will be helpful to develop tailor-made approaches to teach and conduct capacity building programs to different groups of students. Therefore the main research objective was to identify whether students from various fields of study (Agricultural Technology and Management (ATM), Psychology, Civil Engineering, Management and Veterinary Medicine) exhibit different levels of overall entrepreneurial tendency and the key enterprising attributes. In addition, to determine the differences across first and final year students and male and female students. A sample of 386 first and final year undergraduates from the University of Peradeniya was selected using stratified random sampling technique. A validated questionnaire; Caird's General Enterprising Tendency test (GET2 test) was used to assess the level of enterprising tendency, along with few other demographic and personal characters. ANOVA, t-test and chi square methods were used to test the hypotheses in the study. Results revealed that there is a significant difference ($p < 0.05$) in the level of enterprising tendencies and four out of five enterprising attributes of students from different fields of study in first year students. ATM students and Psychology students showed higher tendency levels than Civil Engineering and Veterinary Medicine students. First-year students showed higher tendency levels than final years in most disciplines of study. Students of University of Peradeniya; irrespective of the field of study or year of study, on average all subjects showed medium enterprising tendency level.

Keywords: *Enterprising tendency, Entrepreneurial characteristics, Entrepreneurship, Students, Different disciplines of study.*

Level of Trust in Different Types of Marriages: Analysis of Pakistani Marriages

Ikhlaq Beenish, Yasin Shehla

Department of Gender & Development Studies, Lahore College for Women University, Pakistan

Marriage is a heavenly institute and a must exercise practice in a religious country situated in Asia _Pakistan. Usually there are three types of marriages being practiced in Pakistan (arranged, love and eloped) and current ex-post facto study was aimed to evaluate the level of trust among these 3 types of married couples. We also aimed to identify if this level of trust has anything to do with technologically advanced areas of Pakistan and somewhat not so areas? So the married couples were taken from a cosmopolitan city of Pakistan (named Lahore) and half were taken from a less populated and less advanced city (Haveli, Azad Kashmir). The sample comprised of 177 males and females. 30 arranged marriages couples, 30 couples of love marriages with parental consent and 28 couples of love marriage without parental consent were taken from different areas of Lahore and Haveli, Azad Kashmir. Trust Scale (Rempel, Holmes & Zanna, 1985) was used. ANOVA and independent sample t test was employed for testing hypothesis using SPSS. The results indicate that the level of trust was significantly different among three types of couples. Arrange marriage couples scored more on trust scale as compared to love marriage and eloped couples. But geographic location does not impact married couples' trust level significantly. The study has implications for marriage counselors.

Keywords: *Marriage, elopement, trust, ex-post facto*

Effectiveness of eLearning Practices to improve the learning quality: Case of Horizon Campus

Samanthi Wickramasinghe¹, Janaka Wijayanayake²

1. Faculty of Information Technology, Horizon Campus, Sri Lanka

2. Dept. of Industrial Management, University of Kelaniya, Sri Lanka

Graduate outputs or the Undergraduate Students' performance is a key quality parameter of any higher education institute. Therefore, management of the Horizon Campus annually spends a considerable amount of money as capital and operational cost to provide better teaching and learning environment. However, the major issue at present is that the student performances are not up to the standard as expected in contrast to the allocated funds.

In this research, the main focus was to comprehend how to improve learning quality of students at Horizon Campus by introducing eLearning. Undergraduate Student's Pass Rate, Attendance, and Grade Point Average were selected to observe the relationship between eLearning practices and improving learning quality.

Primary data was collected through a questionnaire survey among undergraduate students in the Faculty of Information Technology and Secondary data was collected based on the existing information. The linear regression model, correlation analysis, and descriptive analysis were used to analyze data.

The research outcomes revealed, Accessibility & Usability practice has the highest impact of improving learning quality while other practices (Personalized Learner Interface, Interactivity & Collaborative Tools, and Notifications & Alerts) show comparatively lesser impact. Therefore, it is clear that there is a relationship between the uses of e-learning practices with learning quality. Further, the outcomes evident that those who used Learning Management System have performed well during the examination and maintain high-Grade Point Average.

Keywords: *eLearning, Learning Quality, Learning Management System, Virtual Learning, Higher Education*

Chemical composition, physicochemical and technological properties of selected fruit peels

Dias¹;P.G.I., Sajiwani¹;J.W.A. and Rathnayaka¹;R.M.U.S.K.

¹Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka, Sri Lanka.

Fruits after processing leave large proportion of peels which is a nuisance to the environment as a solid waste. The aim of this study was to ascertain the chemical composition, physicochemical properties and technological properties of selected such fruit peels to determine their suitability for use as natural food ingredients. Peels from four fruit varieties namely pineapple (PP), orange (OP), yellow passion fruit (PFP) and avocado (AP) were collected from fruit waste of Sri Lankan food industries. Proximate composition was analyzed by AOAC approved methods in dry matter basis. Bulk density (BD), color values (L^* , a^* , b^*), water holding capacity (WHC), oil holding capacity (OHC), emulsifying activity (EA), emulsifying stability (ES), least gelation concentration (LGC), forming capacity (FC) and forming stability (FS) of the peel powders were evaluated by using appropriate physical and chemical tests. All the readings were taken in triplicates. The results showed that AP and OP are rich sources of lipids while all the peels are rich in crude fibers. PFP showed significantly high WHC ($99.00 \pm 0.00\%$) as well as prominent OHC ($30 \pm 0.00\%$) and SC (16.94 ± 0.47). OP and PP can contribute as good bulking agents. Whereas, AP observed weak gelling and forming abilities. Color values of four peels are significantly different. These results confirmed the utilization of peels of desired physicochemical and technological properties as sources of food fibers or bulk ingredients in food applications requiring oil and moisture retention. Among studied fruit peels PFP having good potential for use as excellent food hydrocolloid.

Keywords: *fibers, food hydrocolloids, fruit peels, technological properties*

The impact of employer - employee relationship and practice of effective goal setting on the performance of millennial employees in small and medium scale IT organisations in Sri Lanka

Wickramasena¹; Kalani, Vidanagamachchi²; Kasuni

Department of Industrial Management, Faculty of Science, University of Kelaniya

Employee performance is a major contributing factor of organisational performance. Since there are many factors that affect employee performance, it is important to explore the contribution of each factor. IT industry is a booming industry in Sri Lanka where the majority of the workforce is considered to be millennials. It is evident that the behaviour of millennials is significantly different from the behaviour of other generations. Most of the studies that have been conducted on millennial employees, are on their difference from other generations and behaviour at the workplace. Organizational Goal setting involves the development of an action plan designed to motivate and guide a person or group toward a goal. According to the literature, the specificity of goals leads to improvements in both employee and organizational performance. The relationship between an employer and an employee is a key deciding factor as it is vital to establish mutual trust. There is no sufficient research conducted on Sri Lankan small and medium scale IT organisations in order to explore the impact of the practice of effective goal setting and employer-employee relationship on employee performance. Hence, this research study has been conducted to investigate the impact of the practice of effective goal setting and employer-employee relationship on the performance of millennial employees, both collectively and individually, through a systematic review of literature. Also this study opens the path for further research on human resource management practices of IT industry as well.

Keywords: *employee performance, practice of goal setting, employer-employee relationship, millennials, IT organisations*

Stability of pigment extracts of purple yam as natural food colourants

Sajiwani¹;J.W.A. and Rathnayaka¹;R.M.U.S.K.

¹*Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka, Sri Lanka.*

Food colourants play a vital role in food manufacturing industry to acquire consumer perception. Natural food colourants furnish benefits to the human health and environment over the synthetic food colourants. Stability is one of the major concerns in commercial food colourants. Locally grown and available crops are the good natural sources for the food manufacturing industry. Limited Scientific investigations were found on stability of local natural sources of anthocyanin pigment. This study was focused to evaluate the anthocyanin stability of two yam cultivars as Rajala (*Dioscorea alata*), and Dandina (*Dioscorea alata*) available in Sri Lanka. Pigments were extracted to the 99% methanol from clean harvested matured tubers and ripen fruits of above varieties. The stability of pigment extracts was studied at different pH (4.0, 5.0, and 6.0) in the presence and absence of light as well as in the application of heat (ambient, 40 and 100 °C). Absorbance was measured at 540nm in each sample periodically. Degradation constant and half life time were calculated according to the observations. Results showed that, maximum half-life times were obtained as 1050 t_{1/2} in Dandina (pH6, Absence of heat and light), Rajala (pH5, Absence of heat and light) and Bovitiya (pH5, Absence of heat and light) respectively. pH stability of the colorant is compatible with pH range of food items. Subsequently, Dandina showed highest potential to develop a commercial food colourant among studied sources.

Keywords: *Dandina, Natural Food Colourants, Rajala, Stability*

Gender and Social Networking Behavior of Small and Medium Entrepreneurs in Sri Lanka

Udani¹ K. and Kodithuwakku² K. A. S. S.

^{1, 2}*Department of Agricultural Economics and Business Management, Faculty of Agriculture, University of Peradeniya, Peradeniya. Sri Lanka.*

Small and Medium Enterprises (SMEs) play a significant role in economy. Previous research has revealed that social networks are vital in achieving success and growth of the enterprises. Guided by social network related theories, the overall objective of the study was to identify the social networking behaviour of SME operators of a selected geographical location in Sri Lanka. A structured questionnaire was used to collect data from a randomly selected sample of 60 respondents in the study area. Data were analyzed using Chi-squared test and descriptive statistics. The findings revealed that the respondents' social networks comprise of a small number of ties of which majority are non-business partners, restricted to the geographical location that they operate (i.e. local) immaterial of the gender of the respondent, and are used to mobilise diverse types of resources. The most frequently mobilized types of resources are intangible. There are significant differences in size, sex composition, and composition of family/non-family ties in social networks between male and female business operators ($P < 0.05$). Male operators possess a relatively larger number of social networks for mobilising and those are more extensive and diverse social. On the other hand, women have small and less diversified social networks which are noticeable with more women and family ties that are widely being used for obtaining emotional support. Moreover, there are differences in frequency of social network usage to mobilise different types of resources between male and female enterprise operators. Future research could explore these relationships among varying socio-cultural contexts across a more extensive geographical coverage with a larger sample.

Keywords: *Entrepreneurship, Social networks, Networking behavior, Resource mobilisation, SME operators*

Optimization of workforce performance through smart human resource management and industry 4.0 concepts in the context of Sri Lankan apparel industry

Weerasekara¹; Madara, Wickramarachchi²; Ruwan, Kasuni³; Vidanagamachchi

Department of Industrial Management, University of Kelaniya, Sri Lanka.

With the globalization, competition among the firms are rapidly increasing. This rivalry has forced organizations to perform better and retain in the industry. Employee engagement in every field in the organization is vital to enhance the performance. The modern world is in the fourth industrial revolution. Since, the human involvement in the business processes has been at a higher level during the past decades, the new advancement of technology has influenced organizational functions including human resource management (HRM) disruptively. This paper investigates how the new concepts of industry 4.0 can be used to evaluate the necessary skills such as Internet of Things (IoT), Artificial Intelligence (AI), Virtual reality (VR), 4G and 5G wireless communication technology in order to enhance the performance. Smart human resource concepts can be applied from the beginning of recruitment process of the employee. It will reduce both unnecessary time and cost while increasing the performance and efficiency. To implement these concepts to measure the workforce performance, Sri Lankan apparel industry has been identified as one of the key industries since it involves both human and machinery in its processes. This study presents the findings of a comprehensive and systematic review of literature and subsequently presents an innovative model to enable apparel industry to enhance HRM processes using technologies through industry 4.0 applications. The article provides an insight to current state of knowledge available in the respective area and set up the path for future research as well.

Keywords: *Workforce performance, Industry 4.0 application, Smart human resource, Apparel industry*

Variation of Infrared Absorption Spectrum of Sapphire with Temperature

Sandun Illangasinghe¹, Hasintha Wijesekara² and Meththika Vithanage²

¹*Gem and Jewellery Research and Training Institute, Regional Center, Hidellana, Ratnapura, Sri Lanka.*

²*National Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka.*

Fine quality heated blue sapphires are available in gem trades. The price of heated and natural sapphire is completely different. Therefore, distinguishing heated and natural sapphires through non-destructive method is very important. Scientists have used infrared absorption spectroscopy to distinguish heated sapphires from natural sapphires but with some limitations. However, still scientific investigation on infrared absorption variations of sapphire with temperature is lacking. This study was focused on infrared absorption of sapphire treated into different temperatures. Ten low gem quality sapphires were collected from the Ratnapura area. The samples were cut into two slices parallel to the optical c-axis and polished. A slice of selected samples was stepwise heat treated in reducing atmospheric condition at 800, 1000 and 1800 °C. The infrared absorption spectrum was obtained before and after heat treatment by using Nicolet 7600 Fourier Transfer Infrared (FTIR) Spectroscopy with 4cm⁻¹ resolution. Background and sample spectra were respectively obtaining from 64 scans in air and through the sample. The resulted infrared absorption graphs clearly showed that, two narrow peaks at 2850 and 2919 cm⁻¹ in non-heated, heated at 800 and 1000 °C. During the heat treatment at 1700 °C, these two peaks have been disappeared. Moreover, a detailed scientific investigation on this peak changes during heat treatment is vital. An additional peak at 3309 cm⁻¹ appeared above the 1000 °C. Normally all sapphires heat treated above the 1000 °C. Identification of heat treated sapphire is important and infrared absorption pattern change with temperature can be used as a method to distinguish treated and natural blue sapphires available in the Sri Lankan gem trade.

Keywords: *Blue Sapphire, FTIR, Heat Treatment, Sri Lankan Sapphire*

First and Second Language Interference in Learning German as a Foreign Language – A syntactic analysis

Danansooriya Malpathika

Department of Modern Languages, University of Kelaniya, Sri Lanka

A foreign language acquisition is needed for employment, education and other purposes. When a foreign language is learnt first and second language (L1 & L2) have an effect on the way the foreign language is learnt. The focus of syntax is on the structure of sentences in a language. Each language has its own syntactic structures. The word order of languages varies one to another. Even the spoken and written varieties of Sinhala have different syntactic structures. Native speakers learn these syntactic structures naturally and non native speakers have to acquire these structures with extra effort. Some languages have SVO (subject- verb- object) structure. For an instance English .German, English and Sinhala languages historically belong to Indo European language family. Although these languages belong to the same language family there are differences in terms of sentence structures .This paper focuses on the syntactic interference of first and second language (Sinhala and English) in learning German as a foreign language with a sample of 50 students at beginner level at University of Kelaniya. As the data collecting methods the answers written by the students in written exams, oral tests, class tests, class room observations, face to face interviews with the German language lecturers were used. In conclusion the study helped to figure out the syntactical errors resulting from the interference of the students at beginner level in learning German as a foreign language at University of Kelaniya.

Keywords: *Foreign Language acquisition, German as a Foreign Language, syntax, Native speakers*

Utilization of lentic waterbodies by associated amphibians and agamids in montane cloud forests of Sri Lanka

Prabhath, Meegamage Chamara; Jayasekara, Elle Gamaralage Dulan Pathum; Silva, Gonapinuwala Kariyawasam Vithanage Praneeth Tiroshan; and Mahaulpatha*, Wanigathunga Arachchige Darshani

Department of Zoology, University of Sri Jayewardenepura, Sri Lanka.

The current study was conducted in and around five selected lentic waterbodies at the Horton Plains National park (HPNP), in Sri Lanka from January 2016 to December 2016 for three consecutive days per month with the objective of studying the utilization of lentic waterbodies by inhabiting herpetofauna. Amphibian and agamid survey was conducted in three fixed plots in and around lentic waterbodies through visual encounter surveys. The plots were considered as occupied if at least one amphibian or an agamid was found in the plot. In each plot possible and utilized habitat variables, behaviour of the animal when first encountered were recorded. Non-Parametric Mann-Whitney U test at the significance level of $p < 0.05$ was used to compare habitat variables between occupied and non-occupied plots. During the current study 7 amphibian species and 2 agamid species were recorded from these habitats. Present study revealed that the amphibians prefer specific habitat characteristic such as, availability of water, submerged plants, short plants and shrubs, decaying plant matter and leaf litter, sand, substrate temperature, relative humidity and substrate relative moisture to perform their resting, swimming, locomotion, calling, courtship, alert, refuge use, feeding behaviors. Agamids tend to prefer habitat characteristics such as short plants and shrubs that are adjacent to water where insects are abundant, bare soil cover, ambient temperature, relative humidity, and soil moisture. Feeding, foraging, alert and resting behaviors were the most common behaviors of agamids. Present study emphasizes the importance of lentic waterbodies in HPNP for the survival and reproduction of associated herpetofauna.

Keywords: *Habitat Use, Herpetofauna, Lentic Waterbodies, Horton Plains National Park*

Hemato-biochemical and immunological alterations induced by individual and combined effect of Fumonisin (FB1) and Ochratoxin A (OTA) in broilers

¹*Shahzad Akbar Khan and ²Eiko Nakagawa Itano.

¹Department of Pathobiology, Faculty of Veterinary & Animal Sciences, The University of Poonch, Rawalakot

^{*1}Department of Pathologic Sciences State University Londrina, Londrina, PR, Brazil**

For the study sixty broiler chicks of one day old were divided into five groups of A to E. Group A was kept as vaccinated control, while chicks those in groups B, C, D and E, were provided OTA and FB1 contaminated feed at 0.1mg (OTA+0.1mg FB1), 0.3mg (FB1), 0.5mg (OTA +FB1) and 0.9 mg (FB1/kg) of feed, respectively, for a period of 21 days respectively. FB1 alone and in combination with OTA caused a significant increase in relative weights of kidneys and liver of chicks of all experimental groups as compared to control group ($p < 0.05$), while significant decrease in weight of bursa and thymus was observed in all FB1 alone or OTA+FB1 treated groups, similarly, significant reduction ($p < 0.05$) in relative weight of spleen was observed in FB1 alone or OTA+FB1 treated groups. Hematological profile indicated significant decrease ($p < 0.05$) in hematocrit of group B treated with 0.5mg FB1 +OTA, similarly significant decrease of erythrocytes, hemoglobin, leukocytes and lymphocytes was found in FB1 alone or FB1+OTA treated groups, while significant increase in heterophils, monocytes and eosinophils was observed ($p < 0.05$). All experimental groups of chicks indicated that FB1 alone and in combination with OTA caused significant increase of the levels of urea, triglycerides, uric acid, and creatinine, ALT, GGT and AST ($p < 0.05$), however, FB1 alone caused non-significant increase of AST in chicks of experimental group C, similarly, glucose and protein levels were reduced in all experimental groups. Specific IgY level against *Eimeria sp* HSP-70 was reduced day 14 and 21 post vaccination in all FB1 and OTA treated groups.

Keywords: Fumonisin, lymphoid organs, hematology, biochemical, ochratoxin

Poster Presentations

LEARNINGS FROM VERNACULAR ARCHITECTURE FROM WARM AND HUMID CLIMATE

Ar. SANJANA S SHETTY

Assistant Professor, Faculty of Architecture, Manipal Academics of Higher Education, Manipal, Karnataka, India.

RESEARCH STATEMENT:

OBJECTIVES:

- To study the vernacular houses of Dakshina Kannada and Udupi districts and analyze the different cases of vernacular houses.
- Address the relationship between vernacular architecture and the climatic context, highlighting the benefits of the climate responsive design.
- Synthesize the common features of the vernacular bunt house that respond to the immediate climatic conditions, classified under:
 1. Site planning
 2. Building design
 3. Materiality
 4. Landscaping
 5. Water conservation.

ABSTRACT

Vernacular architectural principles have always focused on nature and climate and reflected the culture and tradition of the community and its context. It is significant and unique in terms of the concept of the balance within everyday life. In the development of vernacular buildings, different strategies have been developed for their accommodation into the neighboring environment. The influence of climate on vernacular architecture is widely acknowledged. The climate-responsive strategies implemented in vernacular architecture have the abilities to be further developed and could be incorporated in the contemporary buildings.

The aim of the paper is to carefully study and analyze the vernacular houses located in Dakshina Kannada and Udupi district of Karnataka, belonging to warm and humid climatic zone, address the relationship between vernacular architecture and the climatic context, highlighting the benefits of the climate responsive design features categorized under: site planning, building design, materiality, landscaping, and water conservation.

Keywords: *Vernacular Architecture, Climate Responsive Design, Warm and Humid*

Fatigue effect on hamstring muscle strength in Soccer _ A systematic review

Fernando¹ Shyamali Kaushalya, Martínez² Alberto Encarnación

¹Department of Sports Science, University of Sri Jayewardenepura, Sri Lanka, ² Faculty of Physical Activity and Sports Science, Catholic University of Murcia, Spain.

The type of activities performed in soccer is intermittent: sprinting, jumping, change of direction and all these activities depends on the ability to generate maximal strength toward the movement. In the soccer game, quadriceps work concentrically: to jump, balance and kick. Furthermore, hamstrings eccentrically use: to sprint, run, and tackle. The aim of this review was to examine the values of the isokinetic hamstring to quadriceps muscle strength ratio assessment when appears fatigue in soccer. The methodology was used established by the PRISMA statement. Databases searched up to 2017 by PubMed, Medline, WOS, SPORTDiscus. Selected 10 studies by using the following keywords: “soccer”, “fatigue”, “hamstrings”, “h: q ratio”, “isokinetic strength”. Eligibility criteria: soccer players >18years, no hamstring injury, evaluate pre-post fatigue, use soccer simulated fatigue protocol, measure functional and/or conventional ratios, use isokinetic dynamometer, published in English. Exclusion criteria: injured soccer players, not use soccer simulated fatigue protocol and dynamometer, not provide values of h: q ratios. Total of 10 studies, 7 studies evaluated both functional and conventional ratio in angular velocities ranging at 60°/s-300°/s and range of motion ranging 0-90° and others only analysed functional ratio. Analysed studies revealed that there is a significant decrease with the dominant leg in the functional ratio than in the conventional ratio upon application of different soccer simulated fatigue protocols. This review indicates that the influence of muscle fatigue make a significant reduction in the functional ratio and it indicates as a more reliable indicator to evaluate hamstring to quadriceps muscle strength balance.

Keywords: Soccer, Muscular Fatigue, Isokinetic Strength, Hamstring to Quadricep ratio

INTERMEDIATE SPACES

HASMITHA BHETALAM

Assistant Professor, Faculty of Architecture, Manipal Academics of Higher Education, Manipal, Karnataka, India.

RESEARCH STATEMENT:

How design interventions in the intermediate Spaces define user perceptions?

Focusing on both dependent (people) and independent (buildings, Surroundings, Activities.) variables.

OBJECTIVES:

- To identify intermediate areas and how such spaces are formed.
- How the space dictates user perceptions.
- Undertaking the study on user perceptions in relation with intermediate Spaces

ABSTRACT

Intermediate spaces are one which makes person to participate or engaged with place.

Often disconnection is found in a space as there is a disengagement of design with respective to human scale. The study on relationship between person and environment in the spaces can be achieved by keeping contextuality in mind. The study explores the intermediate spaces in urban areas, where informal social interaction occurs. Further study looks into how design of space, affect the way in which people interact with respect to spatial design, which leads to understands the nitigrities of how the space should not be neglected and be designed humanely.

Keywords: Intermediate spaces, Contextuality, social interaction, spatial design.

Job satisfaction among state sector pharmacists in Jaffna district

**Kaneshamoorthy¹; Kugatheepa, Paramanathan²; Kalki, Rajendra³;
Surenthirakumaran, Thiyahiny SN⁴**

^{1,2}Pharmacy, Unit of Allied Health Sciences, Faculty of Medicine,
University of Jaffna, Sri Lanka

³Department of Community and Family Medicine, Faculty of Medicine,
University of Jaffna, Sri Lanka

⁴Department of Pharmacology, Faculty of Medicine, University of Jaffna, Sri Lanka

Job satisfaction is an important concept among health care professionals that influence the quality of healthcare service and quality of working life. A descriptive cross sectional study was conducted among state sector pharmacists and dispensers in Jaffna district to assess the level of job satisfaction and influence of socio-demographic and work related factors on it. A self-administered questionnaire was used to collect data and a five point- likert scale was used to assess the level of job satisfaction. Overall job satisfaction was graded as high, moderate and low based on the mean scores. Data were collected in July-September 2017 from 116 participants and the response rate was 88.9% (103). Majority of the participants (65.1%) had moderate level of satisfaction, 22.3% had high level and 12.6% had low level of job satisfaction. Factors found to be significantly influence on job satisfaction ($p < 0.05$) were profession, working institution, working extra hours per month and location of the institution. There 41.7%, 30.1% and 24.3% of participants expressed low level of satisfaction in their promotion and carrier development, work and family balance and working environment respectively. Though majority of the participants (87.4%) had fair amount job satisfaction (moderate and high). Remarkably low level of satisfaction is seen in promotion and carrier development, work and family balance and working environment. If improvements are made in promotion and carrier development and working environment job satisfaction could further improved, which in turn will have a positive impact of health service.

Keywords: *Dispensers, Pharmacists, Job satisfaction, Jaffna district*

AN INTRODUCTION TO SEIR EPIDEMIC MODEL WITH DELAY AND TIME DEPENDENT TRANSMISSION RATE (B(T))

Hasanthika N.H.E.

The Open University of Sri Lanka

A brief introduction to the formulation of stochastic epidemic models is presented based on the SEIR epidemic model. In most cases, three different types of stochastic model formulations have been discussed: discrete time Markov chain, continuous time Markov chain and stochastic differential equations. In here, Stochastic model formulation is discussed using stochastic differential equations with latent period and time dependent transmission rate ($\beta(t)$). There are several biological reasons for the introduction of time delays in models of disease transmission. In this paper, an SEIR model is described where there is an exposed period between being infected and becoming infective. Mathematical analysis is used to study the dynamic behaviour of this model and formulation of stochastic differential equation model.

Keywords: *SEIR epidemic model, time dependent transmission rate, delay time, stochastic differential equations*

Virtual Participants

Multi Agent Approach to Time Based Vehicle Arrangement in a Taxi Company

Mr. Peiris; D. A. P.

*Department of Computer Science, Faculty of Applied Sciences,
University of Sri Jayewardenepura, Sri Lanka*

Taxi services consist of several identities such as Client (Customer), Taxies (Cab or Car), Drivers and etc. These entities involve in completing a hire. Development of communication technologies and communication networks is an essential part in taxi service. Taxi companies always concern about accountability of driver, location awareness of taxi using Global Positioning System (GPS), dispatching most economical taxi considering distance to client (consider as lost millage) , waiting time of taxi without job, daily earning of taxi, type of taxi (hybrid or sedan), color of taxi and special services requested by customer. Those are the most essential requirement of a booking in all reputed taxi companies. Keep a promise to customer that his vehicle is on the way is the repute of every established taxi company's goal. This dissertation discusses the satisfaction approach using multi agent and reliable internet services in reaching the above goal of reputed taxi companies. It includes key design decision, schedules the taxi according to customer requirement, reschedules the taxies for bookings to gain the economical advancement, applies the ride sharing concept to utilize the limited resources and novel approach of booking sharing (arrange multiple taxies to one booking) to minimize the customer hail on roads. This multi agent approach applies to competitive taxi company in Colombo, Sri Lanka and compares the results of existing system with the new approach.

Keywords: *Complex, Multiagent, JADE, Taxi, Booking Sharing*

Tools Proposed to Measure Effectiveness of Human Resource Function in an Organization: Learnings and Insights

Sinha¹; Himanshu, Sujatha²; R., Lakhanpal³; Pooja

¹Human Resource, IL&FS Group & Amity Business School, Amity University, India

²Amity Business School, Amity University, India / ³Indian Institute of Foreign Trade, India

Human Resource (HR) functions deliverables are always considered to be intangible and unmeasurable. You cannot manage what you cannot measure and what gets measured gets done too (Ulrich, 2007). This questions keeps haunting HR at all levels, be it at individual HR Professional level, HR Team level or at the Organizational level. Measuring the effectiveness of HR function is important so that it can be strategized in order to effectively support the vision, mission and business strategy of an Organization. At the operational level of HR function, HR Professionals still look for answers to not so complex process of measuring effectiveness of HR function in an Organization in an objective way. This leads to management perception and conclusion also that effectiveness of HR function remains unmeasurable. Many Organization still use subjective processes to measure HR parameters like balance score cards. HR Metrics and Analytics are now being used by the Organizations in order to quantify HR processes. This paper provides learnings and insights, as to why to measure? How to measure? Value addition to an Organization by way of review of HR best practices of Indian Organizations. This paper includes some practical tools like, Competency Mapping; Performance Review; Audit of HR Department; X – Matrix process etc to measure effectiveness of HR function in an Organization in a very objective way at individual; departmental and Organizational level within HR Function. These will also help to measure and improve impact of HR practices on business results in an Organization

Keywords: *Effectiveness of HR, HR Tools, Measurement, Organizatio*