

NATIONAL RESEARCH WEEK
FOR THE
HIGHER EDUCATION SECTOR

“PREPARING
FOR
THE FUTURE”

Book of Abstracts

InterContinental Mauritius Resort,
Balaclava Fort

2nd - 5th April 2019

EDITORS

K. Peersia
K. Hyatoola
P. Malloo

A futuristic journey to the unknown...

Tertiary Education Commission, www.tec.mu, Phone: 4678800, Fax: 4676579

Book of Abstracts

2nd Edition of the National Research Week

in the Higher Education Sector – 2019

‘Preparing for the Future’

Editors

Ms K. Peersia

Mrs K. Hyatoolla

Mrs P. Malloo

Cover Design

Open University of Mauritius

ISSN 1694-3562

This book is available on

<http://www.tec.mu/>



Published by
Tertiary Education Commission



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MESSAGE OF THE EXECUTIVE DIRECTOR, TEC



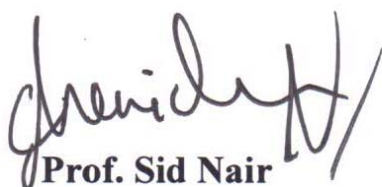
Prof. Sid Nair, Executive Director, TEC

Research in essence is essential in building a solid tertiary sector. The 2nd Edition of the National Research Week took place in Mauritius from 2-5 April 2019. This year's theme 'Preparing for the Future' brought some 1600 registered participants to witness the diversity of research carried out in Mauritius.

The aim of the National Research Week in Mauritius is to celebrate the research works carried out by academics and researchers on this island state. It provided an opportunity for staff, students and the community to see the exciting research and talent in this nation.

This book of Abstracts is the culmination of the presentations that were accepted for the Forum. This publication of 183 abstracts showcases the richness of research that takes place within the walls of the ivory towers of the higher education sector.

This edition of Research Week was scientifically rewarding and a pleasurable experience for the organisers and Community.


Prof. Sid Nair
Executive Director



NATIONAL RESEARCH WEEK (NRW) ORGANISING COMMITTEE

Prof. Sid Nair, Executive Director, TEC, ***Chairperson***

Mr A. Valaydon, Ag Head, Research and, Planning (RPL) Division, TEC

Mr D. G Philippe, Ag Assistant Director, Tertiary Education and Scientific Research Division, Ministry of Education Human Resources, Tertiary Education and Scientific Research

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Mr P. Appavoo, Senior Academic, Head Academic Research, Open University of Mauritius

Dr. (Mrs) S Peeroo, Head of Doctoral School, Université des Mascareignes

Prof. (Dr) Y Ramma, Professor and Head of Research Unit, Mauritius Institute of Education

Dr. H Ramduth, Senior Lecturer, Mahatma Gandhi Institute

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Dr. A Moorgawa, Research Officer, RPL Division, TEC

Mr K. Ujoodha, Systems Administrator, CIS, TEC

Ms K. Peersia, Ag Research Officer, RPL Division, TEC, ***Event Coordinator***

Mrs A. Modoosoodun, Public Relations Officer, TEC

Ms S. B Soorkea, Trainee, RPL Division, TEC



TEC NRW IMPLEMENTATION TEAM

Prof. Sid Nair, Executive Director, *Chairperson*

Mr A. Valaydon, Ag Head, Research and Planning Division

Mrs K. Charitar, Financial Controller and Head, Finance Division

Mrs H. Rosunee, Deputy Secretary

Mr D. K Seeruttun, Head, CIS

Dr A. Moorgawa, Research Officer

Ms K. Peersia, Ag. Research Officer, *Event Coordinator*

Mrs A. Modoosoodun, Public Relations Officer

Mrs H. Boodhoo, Procurement Supply Officer

Mrs K. Hyatoolla, Confidential Secretary

Mrs M. Lam Leung Man, Confidential Secretary

Miss S. B Soorkea, RPL Trainee

SPONSORS AND COLLABORATORS



EBSCO



PROGRAMME

Opening Ceremony

02 April 2019

Venue: Hibiscus Ballroom, InterContinental Hotel, Balaclava

Chief Guest: **H.E. Mr Paramasivum Pillay Vyapoory, G.O.S.K**
Acting President of the Republic of Mauritius

08 00 a.m – 09 00 a.m	Registration of Participants
09 15 a.m	Participants & Guests to be seated
09 30 a.m	Welcome by Master of Ceremony, Ms Kamini Peersia, Ag. Research Officer National Anthem
09 35 a.m – 09 45 a.m	Live Performance by MGI entitled ‘Melodious Co-Existence: A Creative Exploration’
09 45 a.m – 09 50 a.m	Welcome Address by Prof Sid Nair, Executive Director, TEC
09 50 a.m – 10 05 a.m	Speech by Dr A.S. Saumtally, Chairperson Sub-Committee, Research & Planning, Member TEC Board
10 10 a.m – 10 35 a.m	Inaugural Speech by HE Mr Paramasivum Pillay Vyapoory, G.O.S.K
10 35 a.m	Group Photo
10 45 a.m	Refreshments
11 00 a.m	Departure of Chief Guest

OPENING CEREMONY



Arrival of H.E. Mr Paramasivum Pillay Vyapoory, G.O.S.K, Acting President of the Republic of Mauritius



Live Performance by MGI entitled 'Melodious Co-Existence: A Creative Exploration'



Inaugural Speech by HE Mr Paramasivum Pillay Vyapoory, G.O.S.K



Souvenir presented to H.E Mr Paramasivum Pillay Vyapoory, G.O.S.K



DAY 1: TUESDAY 2nd APRIL 2019

08:00-09:00 a.m	Registration of Participants
09:15 a.m	Participants & Guests to be seated
09:30-10:30 a.m	Opening Ceremony by H.E Mr Paramasivum Pillay Vyapoory, G.O.S.K
10:30-10:45 a.m	TEA/COFFEE BREAK
	Venue: Hibiscus Ballroom
	KEYNOTE SPEECH: INTEGRATING RESEARCH IN TEACHING AND LEARNING
10:45 12:30 a.m	Facilitator: Prof. Theng Y Leng
	Research Director for Arts, Humanities, Education and Social Science
	<i>Chairperson: Assoc. Prof. M. I Santally</i>
	<i>Pro Vice Chancellor (Planning and Resources), UoM</i>
12:30-01:30 p.m	LUNCH
	PARALLEL SESSIONS
01:30-02:30 p.m	Workshop /Oral Presentations
02:30-02:45 p.m	TEA/COFFEE BREAK
	PARALLEL SESSIONS
02:45-03:45 p.m	Oral Presentations
03:45 p.m	END OF DAY 1



DAY 2: WEDNESDAY 3rd APRIL 2019

08:30-9:00 a.m	Registration of Participants
	Venue: Hibiscus Ballroom
09:00-10:15 a.m	KEYNOTE SPEECH: "NEW DIRECTIONS : RESEARCH IN ARTS, HUMANITIES AND PERFORMING ARTS"
	Facilitator: Acharya Pratishtha ji Saraswat Director, Indira Gandhi Centre for Indian Culture Chairperson: Mrs N. Gayan, Director General, MGI
10:15-10:30 a.m	TEA/COFFEE BREAK
	Venue: Hibiscus Ballroom
	DISCUSSION PANEL
	"STRATEGIES FOR EFFECTIVE UNIVERSITY-INDUSTRY RESEARCH COLLABORATION"
10:30-12:00 p.m	Resource Persons: Dr N. Gopaul, Research Coordinator, Mauritius Research and Innovation Council (MRIC); M^e S. Subbarayan, Legal Affairs Director, University of Mauritius; Dr R. Somanah, Director General, Université des Mascareignes; Mr A. Goolaub, Assistant Director (Extension and Training), FAREI; Mr A. Meetoo, Senior Adviser, Ministry of Ministry of Technology, Communication and Innovation
	Chairperson: Prof D. Jhurry, OSK, GOSK, Vice Chancellor, UoM
12:00-01:00 p.m	LUNCH
	PARALLEL SESSIONS
01:00-02:30 p.m	Workshop/ Oral Presentations
02:30-02:45 p.m	TEA/COFFEE BREAK
	PARALLEL SESSIONS
02:45-04:00 p.m	Oral Presentations
	PARALLEL SESSIONS
04:00-05:00 p.m	Oral Presentations
05:00 p.m	END OF DAY 2



DAY 3: THURSDAY 4th APRIL 2019

08:30-09:00 a.m	Registration of Participants
09:00-10:15 a.m	Venue: Hibiscus Ballroom KEYNOTE SPEECH: RESEARCH PERFORMANCE IN ACADEMIA Facilitator: Prof C. Ennew Provost, University of Warwick <i>Chairperson: Dr S. Saumtally, Director, MSIRI/MCIA and TEC Board member</i>
10:15-10:30 a.m	TEA/COFFEE BREAK
	PARALLEL SESSIONS
10:30-12:45 p.m	Oral Presentations
	PARALLEL SESSIONS
12:45-01:45 p.m	Oral Presentations
	LUNCH
01:45-03:00 p.m	Venue: Hibiscus Ballroom Workshop: "Turning your Research Idea into a Proposal for Funding" by Prof C. Ennew Provost, University of Warwick <i>Chairperson: Dr M. Atchia, Chairman, Mauritius Research Council</i>
03:00-03:15 p.m	TEA/COFFEE BREAK
	PARALLEL SESSIONS
03:15-04:30 p.m	Oral Presentations
04:30 p.m	END OF DAY 3



DAY 4: FRIDAY 5th APRIL 2019

08:30-09:00 a.m	Registration of Participants	
	Venue: Hibiscus Ballroom	
	Debate: "HIGHER EDUCATION : TO BE OR NOT TO BE"	
	<i>Chairperson: Mr Bashir Taleb, Director, Islamic Cultural College</i>	
	Affirmative Team Members	Opposing Team Members
09:00-10:15 a.m	Dr K. Sukon, Director General Open University of Mauritius	Mr K. Bhujun, Officer-in-Charge University of Technology, Mauritius
	Dr H. Mariaye, Associate Professor Mauritius Institute of Education	Prof L. Pelliccione, Pro-Vice Chancellor & President Curtin Mauritius
	Ms V. Pillay, Senior Advisor in Regulatory Affairs African Leadership University	Dr G. Chung Kim Chung, Executive Director Service Diocésain de l'Éducation Catholique (SDEC)
10:15-10:30 a.m	TEA/COFFEE BREAK	
	PARALLEL SESSIONS	
10:30-12:15 p.m	Oral Presentations	
12:15-01:00 p.m	LUNCH	
	PARALLEL SESSIONS	
01:00-02:00 p.m	Presentation by Emerald & Oral Presentations	
02:00-02:15 p.m	TEA/COFFEE BREAK	
	PARALLEL SESSIONS	
02:15-03:00 p.m	Presentation by Elsevier	Presentation by Clarivate Analytics
03:30-06:00 p.m :	AWARDS/CLOSING CEREMONY	



POSTER PRESENTATIONS

POSTER PRESENTATION

LIST OF POSTERS

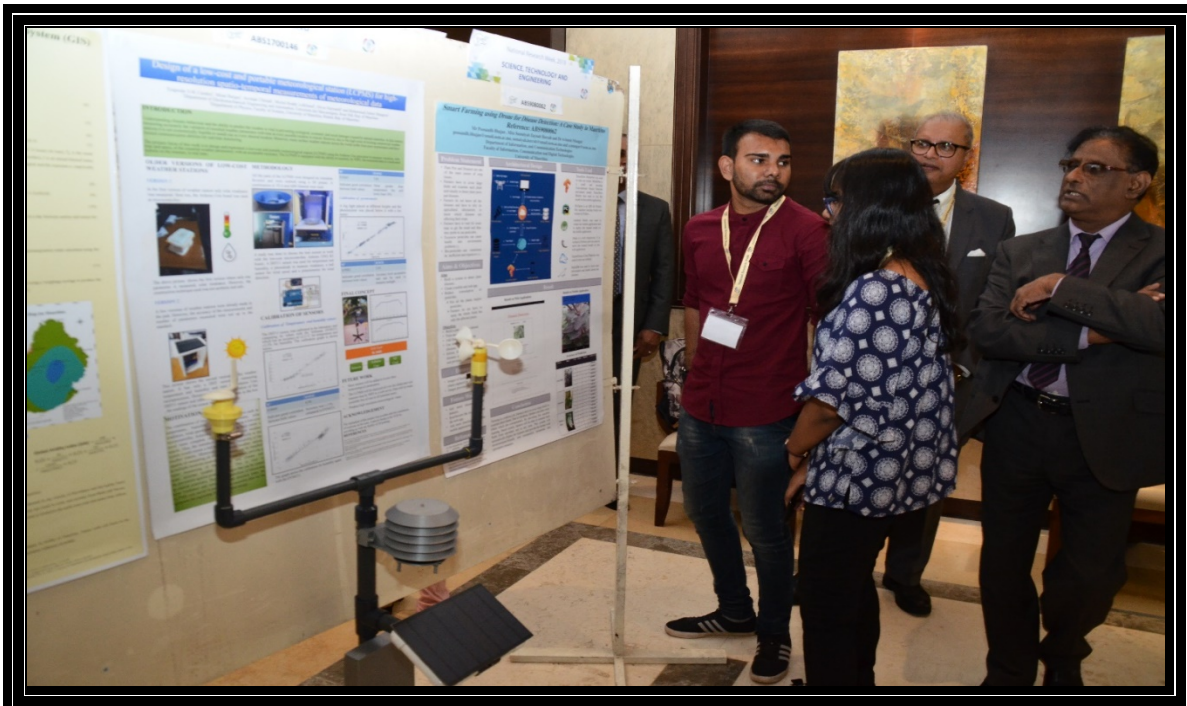
EDUCATION		
ABSTRACT No.	TITLE	AUTHOR
ABS1570076	A Learner Social Media Engagement Level (LSMEL) Model for Higher Education Institutions	Dr G. Vaghjee
ABS2100086	Exploring Sense of Community on Moodle Using the Community of Inquiry Framework	Ms H. Vaghjee

BUSINESS, LAW AND MANAGEMENT		
ABSTRACT No.	TITLE	AUTHOR
ABS6930154	A Structural Equation Model for Analyzing the Impact of e-Procurement in Mauritius Public Sector	Mrs B.N Bhaukaurally
ABS0460043	Modelling the Factors Underlying Road Traffic Accidents in Mauritius using GLM and ANN Approaches	Dr N.A Mamode Khan
ABS5470217	Cognitive Process of Low Ability Secondary School Students During Mathematical Problem-Solving	Dr K.S Angateeah
ABS4160091	An Empirical Analysis of Bitcoin's Volatility	Dr A. A. El-Faidal Saib

SCIENCE, TECHNOLOGY AND ENGINEERING		
ABSTRACT No.	TITLE	AUTHOR
ABS3070128	Assessing Efficacy of gel Larval Diets Using Waste Brewery Yeast for Use in Sterile Insect Technique	Mrs N.A Patel
ABS6590089	Sociodemographic Factors Affecting the Control of Diabetes: A Study in Flacq Region	Dr Z. Dargaye
ABS5690069	Engineering Intelligent Environments: Preliminary Findings of a Systematic Review	Mr A. Santokhee
ABS6320018	Towards Enhancing the Effectiveness of Honeypots by Predicting Targeted Port Numbers Using J48 Algorithm	Mr T. Gangabissoon
ABS1390112	Augmented-Reality Computer-Vision Assisted Disaggregated Energy Monitoring and IOT Control Platform	Mr J. A Purmaissur

SCIENCE, TECHNOLOGY AND ENGINEERING		
ABSTRACT No.	TITLE	AUTHOR
ABS0960113	Adoption of Internet of Things Among Organisation in Mauritius: Overview and Current Challenges	Mr V.D Domun
ABS1650216	Phasing Out Halogenated Refrigerants in the Air Conditioning and Refrigeration Sector in Mauritius	Mr R.K Dreepaul
ABS0610087	Experimental Study on the Use of Construction and Demolition Waste Materials as a Substitution to Fine Aggregates in Concrete Production	Mr P.G Quedou
ABS1700146	On the Design of a Low-Cost and Portable Meteorological Station (LCPMS) for High-Resolution Spatio-Temporal Measurements of Meteorological Data	Mr T.S. M Cunden
ABS6530126	Associational Protection by Acropora-Dwelling Stegastes of Resilient Porites Corals: A Case for Branching Coral Rehabilitation	Ms I. C Tiddy
ABS2130026	Tagopsin: A Tool for Getting Taxa-Specific Protein Structural and Functional Information from Seven Sources	Mr E. Bundhoo
ABS3620047	Performance Intensification of Constructed Wetland technology: A Sustainable Solution for Treatment of High Strength Industrial Wastewater	Ms N. Nurmahomed
ABS8160049	Performance of Mortar Using Coal Bottom Ash as a Substitute for Rocksand	Ms N. Jaffur
ABS3150051	Characterisation of Plastic Waste in Mauritius	Ms N. Jaffur
ABS9080062	Smart Farming Using Drone For Disease Detection: A Case Study in Mauritius	Dr U.A Mungur
ABS7050115	Heavy Precipitation Effects on the Micro-Phytoplankton Community Structure at Trou Aux Biches, Mauritius	Mr M. Soondur
ABS5210119	Vulnerability of SIDS: A Local Perspective	Ms E. A. S Davantin
ABS3570169	A Spatial Mapping of Aridity Index for Mauritius Using Geographic Information System (GIS)	Dr M. R. Lollchund
ABS1760187	Coastal Sediments Polluted by Petroleum Hydrocarbons (C10-C40): A Review on its Impacts on the Coastal Ecosystems of Mauritius	Mr G. Mungla
ABS3600193	A Local Weak-Form Radial Point Interpolation Technique for Pricing Contingent Claims	Dr N. Thakoor

SCIENCE, TECHNOLOGY AND ENGINEERING		
ABSTRACT No.	TITLE	AUTHOR
ABS8100197	Correlation Between Climate Variability and Agricultural Products Using the Empirical Ensemble Mode Decomposition Method: Case of Cabbage Yields in Mauritius	Dr M. R. Lollchund
ABS0250208	Stress Photo-Physiology of Symbiotic Corals to Selected Environmental Stressors	Mrs S. Mattan-Moorgawa
ABS9430110	Evaluating the Plague of Stigma Devouring the Mental Health System: A Case Study Among Psychiatric Nurses in Mauritius	Dr A. Luximon-Ramma
ABS2470121	Evaluating the Need for the Introduction of a Cardiac Rehabilitation Programme at the Cardiac Centre for Post-Operative Cardiac Patients.	Dr A. Luximon-Ramma
ABS5820182	Assessing the Use of Coercive Measures in the Psychiatric Institution of Mauritius	Mrs G. Chinatamunnee
ABS0520098	Identification and Quantification of Microplastics in Different Medium: A Critical Review	Ms D. Ragoobur
ABS5390111	A Study on the Microalgae Biodiversity and Occurrence of Cyanotoxins in an Impounding Reservoir for Irrigational Use	Mr M. Ballah



Poster presentation by a participant



HE Mr Paramasivum Pillay Vyapoory, G.O.S.K visiting the Poster Exhibition Area



EDUCATION





ABSTRACTS

Ref: ABS1570076

**A LEARNER SOCIAL MEDIA
ENGAGEMENT LEVEL (LSMEL)
MODEL FOR HIGHER EDUCATION
INSTITUTIONS**

Dr G. Vaghjee*

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The integration of social media in higher education has led to varying level of learner participation in these online environments, this in turn giving rise to studies on social media-enhanced learning. However, there is limited research focused on developing nations. In an era of globalization, universities have realized the significance of investigating further on learners' social media engagement level. This study thus attempts to bridge a gap in research to further benefit learners from developing nations. 887 university learners across four main higher education institutions of Mauritius, a developing nation, were surveyed on their social media activities for educational purpose. The results show the identification of five main levels of participation, namely curator, consumer, communicator, collaborator and producer. The findings are displayed in the Learner Social Media Engagement Level model, also indicating the social profile of each category of learner. The intent of this research is to understand the participatory roles of learners and formulate more tailored approach to increase social media engagement for learning purpose.

Keywords

Social media, higher education, participatory culture, virtual communities, new media, participatory models

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Ref: ABS2100086

**EXPLORING SENSE OF COMMUNITY
ON MOODLE USING THE
COMMUNITY OF INQUIRY
FRAMEWORK**

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The conventional means of imparting knowledge in higher education institutions have considerably changed throughout time with the innovations of Information and Communication Technologies (ICTs). Courses disseminated are either fully online or on a blended learning mode. While the growth rate of online learning is higher compared to the traditional mode, we also find that online learners lack the pedagogical support to help them pursue successfully their studies online. With a growing feeling of isolation due to lack of interaction online, they end up withdrawing from the course, whereby the necessity to develop an online learning environment to meet the pedagogical needs of students. In support to higher education institutions, learning management systems (LMS) provide the core learning platforms for an online environment. However to assess how effective an online learning environment is, universities need to measure how well these

LMS deliver their key functions and fulfill the pedagogical needs of learners online. This research explores initially the perceptions of learners following the use of Moodle as well as the barriers they face. This exploratory study was conducted through a web survey to learners engaged in blended learning. Once the data was collected and analyzed, with the use of the Community of Inquiry Framework, which is considered as the model which provides insights to the dimensions of an effective online learning environment, we explored how effective the main functionalities and tools available on Moodle provided the pedagogical supports students needed online. Overall results show that students use Moodle to access notes rather than as an online learning environment where interaction between peers and instructor should have been done. The mapping results show that modules are present on Moodle to support learners in their studies. However the functionalities and tools need to be used fully to be beneficial.

Keywords

Online learning, community of inquiry framework, learning management systems, moodle

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**BUSINESS
LAW
AND
MANAGEMENT**

ABSTRACTS

Ref: ABS6930154

A STRUCTURAL EQUATION MODEL FOR ANALYZING THE IMPACT OF E-PROCUREMENT IN MAURITIUS PUBLIC SECTOR

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e-Procurement represents a very important information technology investment options for operation or service, and have been applauded in the practitioner and academic literature for their potential to improve business performance. Many organizations are striving to use e-procurement systems to achieve proficiency in their procurement processes, especially developing countries like Mauritius. This research investigates and further provides insights into the acceptance factors driving public sector enterprises to use e-procurement systems in Mauritius. For this purpose, we determine the main benefits and barriers on the e-procurement systems, and using Structural Equation Modelling (SEM), we analyze the effects of the implementation and benefits on the e-procurement adoption decision in public sector. The data from public sector officials (Buyer) and private sector (Seller) at all the levels and the general public was collected through drop off survey. The results are conjectured that barricades (Benefits) of e-procurement systems at public sector in Mauritius have adverse (Constructive) effect on the adoption decision. Also, the SEM results clearly demonstrates that there exist close interrelations among the benefits (Higher than barriers) of implementing e-

Procurement systems and Public sector competence at Mauritius, indicating that it would be beneficial for the country.

Keywords

e-procurement, information technology, investment, SEM, public sector, private sector.

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Ref: ABS0460043

**MODELLING THE FACTORS
UNDERLYING ROAD TRAFFIC
ACCIDENTS IN MAURITIUS USING
GLM AND ANN APPROACHES**

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Increasing number of road traffic accidents in Mauritius is an issue of major concern for the public as well as the government. The current statistics indicate an increase of 15.2% with respect to fatal road accidents from the year 2016 to 2017. In fact, the total numbers have increased from 5753 in 1980 to 29627 in 2017 exhibiting a gradual upward trend. Despite the various measures put in place by the government, such as, sensitisation campaigns, re-enforcement of speed cameras and implementation of severe penalties and fines, the situation has not improved much.

In order to bring down these numbers effectively it is pertinent to scientifically model the effects of the significant factors leading to traffic accidents on the roads of Mauritius. The PF 178 form contains

important information on each accident across Mauritius. However, this information has not been adequately utilised so far to research the major causes of road accidents. In this study, we first convert this information into a proper data structure and then model these data using Generalised Linear Model (GLM) and Artificial Neural Network (ANN) approaches which can efficiently identify the significant factors underlying road traffic accidents and predict the severity of these accidents. The findings of this study will be useful to the general public as well as the policy makers.

Keywords

Road traffic accidents, GLM and ANN approaches, Estimation of effects, Predictions

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Ref: ABS5470217

COGNITIVE PROCESSES OF LOW ABILITY SECONDARY SCHOOL STUDENTS DURING MATHEMATICAL PROBLEM SOLVING

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This study explores the cognitive processes undergone by three low ability secondary school students as they thought aloud during mathematical problem solving. The three students, each from grades 9, 10 and 11, were given demonstrations and practice in thinking aloud. They were given four multi-step word problems to solve while thinking aloud. Verbalizations were audio recorded and transcribed for analysis using Montague's (2003) framework. Though subjects could read the problem, they faced difficulty in paraphrasing the problems. Consequently, they could not visualize correctly the problem and thus developed a wrong plan for solving the problem.

Keywords

Cognitive processes, low ability students, problem solving

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Ref: ABS4160091

AN EMPIRCAL ANALYSIS OF BITCOIN'S VOLATILITY

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Of the hundreds different types currently being traded, bitcoin is the first decentralized cryptocurrency generated by predetermined

computers and recognized on traditional currency exchanges as BTCs. The commonplace element of those different cryptocurrency systems is the public ledger ('blockchain'). Bitcoin might arguably be the most successful digital forex scheme thus far, representing approximately 41% of the overall expected cryptocurrency capitalisation but, current fluctuations in bitcoin charges have resulted in periods of high volatility. The bitcoin market is therefore more liable to speculative bubbles as compared to normal currencies which make the analysis of the effect of bitcoin's volatility on the financial markets and in portfolio management vital.

In particular, sample statistics on a set of daily log return observations pointed towards an excess kurtosis of 0.92 for the bitcoin price which implied that the underlying distribution is Platykurtic. We further performed kernel density estimates which suggested a unimodal distribution. As part of our model building approach, we implemented among others, the ARCH (4), GARCH (1, 1), EGARCH (1, 1) and IGARCH (1, 1) models and performed value-at-risk backtesting. The GARCH (1, 1) was observed to be capturing most effects of

the bitcoin series and an accuracy of 10(-5) was achieved in the price forecasts.

Keywords

Bitcoin, ARCH, GARCH, Forecast, Volatility

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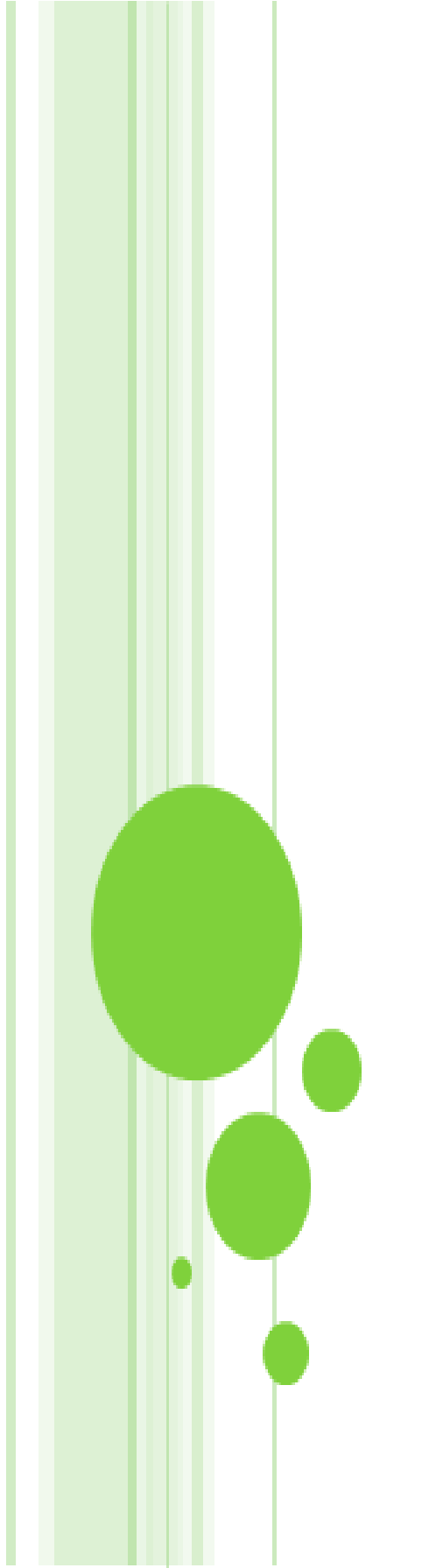
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*HE Mr Paramasivum Pillay Vyapoory, G.O.S.K
visiting the Poster Exhibition Area*



**SCIENCE,
TECHNOLOGY
&
ENGINEERING**



ABSTRACTS

Ref: ABS3070128

**ASSESSING EFFICACY OF GEL
LARVAL DIETS USING WASTE
BREWERY YEAST FOR USE IN
STERILE INSECT TECHNIQUE**

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The Peach Fruit fly, *Bactrocera zonata* is one of the most harmful species of Tephritidae. It is a polyphagous fruit fly pest attacking about 40 species of fruits and vegetables. The Sterile Insect Technique (SIT) which involves field release of sterile flies has been successfully used in suppressing and even eradicating certain fruit fly species. Successful implementation of SIT relies on an efficient and economical mass-rearing method that produces large numbers of high-quality flies, in terms of mating competitiveness with wild flies. The objective of this study was to devise an alternative diet which would eliminate the problem of using bulking agents and disposal of used medium, as is the case with the presently used larval diet. The gel diet was a viable option, but one drawback was that it contained yeast as a major component for larval development, and commercial yeast is imported and thus expensive. The first part of the research was to compare the efficacy of the conventional diet and that of the gel diet using various formulation of imported commercial yeast (CY) and slurry of locally

modified waste brewery yeast (WBY). Diets were prepared in a mixer according to the respective proportion of ingredients. The common variable factor was the ratio of % composition of modified WBY: CY (control diet - 0:100, diet A - 25:75, diet B - 30:70 diet C - 40:60 and diet D - 50:50). 100 g of test diet was placed in petri dishes of 15 cm diameter and seeded with 0.1 ml of eggs. The petri dishes with seeded eggs were then placed individually in plastic trays holding 1 cm deep of washed sterilized sand as pupation medium. The trays were covered with cloth bags to avoid contamination with drosophila. The egg hatch for both conventional and gel diet was above 90 %. However, the percentage fly emergence for the different formulations with the conventional diet varied between 89 % to 92 % while above 97 % was recorded with the gel diet. The pupal recovery with the conventional diet was 60.7 % as compared to 87.7 % with the gel diet. The second part of the experiment was to determine the optimum egg seeding rate using the gel diet. 100 g of diet B, C and D were seeded individually with 0.1 ml, 0.15 ml, 0.2 ml, 0.3 ml and 0.4 ml of eggs respectively. There were 4 replicates. The data collected was analysed by analysis of variance in Minitab and the means were separated by the Tukey test. Gel Diet C using 0.15 ml of eggs gave the highest significant result ($P < 0.05$) for pupal recovery (77.7 %), pupal weight (1.00 g/100 pupae), emergence (99.5 %) and flight ability (97.5 %). The results of the experiments showed that the gel diet is a promising alternative to the conventional diet and that the commercial yeast can effectively be replaced partially by the modified waste brewery yeast in the gel formulation, thereby contributing to a lower cost of production.

Keywords

Sterile Insect Technique, *Bactrocera zonata*, larval gel diet, waste brewery yeast, pupal recovery

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Ref: ABS6590089

SOCIODEMOGRAPHIC FACTORS AFFECTING THE CONTROL OF DIABETES: A STUDY IN FLACQ REGION

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In this study, our objective is to assess compliance of patients to recent guidelines (ADA) concerning lifestyle (diet, exercise, smoking and alcohol consumption) and to determine the relationship between control of diabetes mellitus and socio-demographic status.

A cross-sectional study at Flacq Area Health Centre, involving 400 patients, was conducted and data was collected by filling in questionnaires and from case notes. The SPSS software was used to carry out descriptive analyses to assess compliance and independent t-test and Spearman Rho correlation analysis to determine the association between sociodemographic status and diabetes control.

Only 34.3% of patients have controlled diabetes, that is, HbA1C

Keywords

ADA, Diabetes Mellitus, Sociodemography

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Ref: ABS5690069

ENGINEERING INTELLIGENT ENVIRONMENTS: PRELIMINARY FINDINGS OF A SYSTEMATIC REVIEW

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Intelligent environments (IEs) are complex systems that require a diverse set of hardware devices, software libraries, networking and human computer interactions [1]. New tools and techniques that can facilitate the engineering of such systems are thus critical [2, 3, 4]. However, given the size and heterogeneity of the literature and in the light of, to our knowledge, there being only informal surveys restricted to specific issues have been conducted, we have seen the need to organise and synthesise the existent research corpus to obtain a clear idea on the main approaches that have been utilised for the engineering of IEs [7]. To address this research gap, a systematic literature review was carried out [6]. The initial search resulted in 4210 papers, out of which 70 were selected for extraction. Based on the review's preliminary findings, we find that there are different approaches for developing IEs and the development cycle consists of several phases [8, 9]. In terms of

an overall methodology, a user driven approach was found to be quite prominent. Focus groups seem to be the most accepted method for gathering requirements followed by scenarios. For analysis and design, model based approaches are quite popular. Tool support and prototyping are mostly used during development. Unit and integration tests along with simulations are more frequent during integration and testing. However, the results show that maintenance phase has been largely overlooked. It is also quite evident from these initial findings that there is no consensus upon techniques used during a project's life-cycle and there is not yet a standard systems development methodology for IEs. Development of an evaluation framework which could offer guidance on the choice of the most suitable techniques for engineering of IEs is in the pipeline [5].

Keywords

Intelligent Environments, engineering, systematic review, systems development lifecycle

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Ref: ABS6320018

**TOWARDS ENHANCING THE
EFFECTIVENESS OF HONEYPOTS BY
PREDICTING TARGETED PORT
NUMBERS USING J48 ALGORITHM**

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During recent years, there has been an increase in cyber-crime and cyber criminal activities around the world [1] and as countermeasures, effective attack prevention and detection mechanisms are needed. A popular tool to augment existing attack detection mechanisms is the Honeypot. It serves as a decoy for luring attackers, with the purpose to accumulate essential details about the intruder and techniques used to compromise systems [2, 3]. However, limited work has been done to predict targeted port numbers despite all the machine learning techniques [4]. In this endeavor, such tools need to effectively listen and keep track of ports on hosts such as servers and computers within networks. This paper investigates, analyzes and predicts destination port numbers targeted by attackers in order to improve the effectiveness of honeypots. To achieve the purpose of this paper, the J48 decision tree classifier was applied on a database containing information on cyber-attacks. Results revealed insightful information on key destination port numbers targeted by attackers, in addition to how these targeted ports vary within different regions around the world.

Keywords

Destination Port, Honeypot, Prediction, J48 algorithm, Decision Tree

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Ref: ABS1390112

**AUGMENTED-REALITY COMPUTER-
VISION ASSISTED DISAGGREGATED
ENERGY MONITORING AND IOT
CONTROL PLATFORM**

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The aim of this research is to develop an innovative low cost and affordable platform for smart home control and energy

monitoring system interfaced with augmented reality. The proposed method will educate people about energy use at a time when fuel costs are rising and create novel methods of interaction for those with disabilities. This system allows the user to view his real time energy consumption and at the same time offers the possibility to interact with the monitoring device in Augmented Reality. The energy usage was captured and stored in a database which can be accessed for energy monitoring. We believe that the combinations of both, complex smart home applications and transparent interactive user interface will increase the awareness of energy consumption in the society. The easiest way of receiving information from a device in the real world is directly from the device. For this to be possible, the device needs to be augmented with information. Thus, an intermediate device such as a smart-phone need to be used to make the information virtually visible for the user. For this purpose, we have used a smart-phone to allow the user to see augmented data on their screen. The working prototype projects data captured from a smart plug TP-Link HS110 and uses a smart-phone running android and Vuforia with an internal image recognition database. The camera image of the mobile phone is compared to the image recognition database with the help of trackers. The mobile phone request the live data from Node-Red server along with its GPS location and projects the data into an augmented environment. Moreover, the user has the ability to interact with the object through the mobile phone. When the object is switched on, an HTTP response is sent to the Node-Red server which switches the smart plug on. The advantage of Vuforia interaction technique is its intuitive and easy handling. It

uses Computer Vision to track planar images and uses image registration capability which allows it to track the position and orientation of the image in real time. This project represents the beginning of our research work on the ACADEMIC platform. During the past few years, the adoption of electric and electronic devices has brought immense benefits to human beings, such as increased productivity, improved entertainment and communication and much more. The increase of energy consumption awareness in the society will lead people to utilize energy more efficiently and consciously. We have brought this concept closer to the goal of increasing energy wastage awareness. The users are able to visualize their energy consumption and based on this knowledge they are in a better position to implement strategies for energy saving. As smart home systems become smarter, they will be able to develop energy saving strategies for the user such as selectively switching of the lights. The challenges discussed in this paper show that there are many more opportunities for further research.

Keywords

Air Quality, Augmented Reality, Presence detection, Sensor.

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ADOPTION OF INTERNET OF THINGS AMONG ORGANISATION IN MAURITIUS: OVERVIEW AND CURRENT CHALLENGES

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Mauritius has become a hub for business both locally and for Africa due to the high IT skills availability. With the excellent network coverages, there has been very low adoption of Internet of Things (IoT) among organisations. The recent budget has encouraged organisaions to adopt work from home concept also, using IoT. Benefits of IoT are: a decrease in capital expenditure, being more efficient thus increasing productivity and others.

As per the Government of Mauritius through the "Achieving the second Economic Miracle and vision 2030", Cloud Computing is what we need which englobes IoT Organisations like NPCC accompanies companies towards adoption of new technology such as IoT. This research assesses the current opportunity and challenges for the adoption of IoT in Mauritius within organisations.

The most top rank issues are privacy and security. This research also proposes a number of recommendations to support Organisations in their journey of IoT adoption in Mauritius.

Keywords

Cloud Computing, Internet of Things, IoT Adoption, Organisations

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Ref: ABS1650216

PHASING OUT HALOGENATED REFRIGERANTS IN THE AIR CONDITIONING AND REFRIGERATION SECTOR IN MAURITIUS

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Currently HCF's are the most common family of refrigerant being used in Mauritius. But these refrigerants are facing ban under international protocols. In Mauritius, following the Kigali ammendment 2016 of the Montreal Protocol, a freeze will be implemented on use of HFC's as from the year 2022. The main findings of a survey conducted among major stake holders in the RAC sector show that HFC's such as R134a refrigerant are widely being used in the refrigeration and automobile sector while R404 and R 410 are widely being employed in the air conditioning sector. R22 from the HCFC family of refrigerant which is facing ban by 2025 are mainly being used in cold rooms and in split air conditioners. Alternative refrigerants to replace HFC's in the long run are also assessed in this study. Three refrigerants namely Hydrocarbons, Ammonia and Carbon Dioxide are actually under study. But a major drawback is that they pose several safety issues. The barriers for implementing natural refrigerants in Mauritius are presented. Finally, recommendations are made for best alternatives taking into consideration environmental and economic factors.

Keywords

Alternative Refrigerants, Air conditioning, Refrigeration, Retrofitting

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EXPERIMENTAL STUDY ON THE USE OF CONSTRUCTION AND DEMOLITION WASTE MATERIALS AS A SUBSTITUTION TO FINE AGGREGATES IN CONCRETE PRODUCTION

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In recent years, demolished concrete waste handling and management has been regarded as a primary concern that most countries. It is a very challenging and hectic problem that has to be tackled in an indigenous manner, by recycling the wastes in order to protect natural resources and reduce environmental pollution. The re-use of construction and demolition waste materials have long been debated by researchers and at a certain point of view being looked upon as an alternative materials in the production of green concrete. The aim of this study is to experiment the use of construction and demolition waste materials at the percentage of 25%, 50%, 75% and 100% as a replacement to natural fine aggregates and investigate their properties on fresh and hardened concrete. To determine and compare the properties, different tests were performed to evaluate the workability, compressive strength, flexural strength and drying shrinkage of each concrete mix. The results demonstrated that, construction and demolition waste materials with a well define slump range decreases slightly the compressive strength, flexural strength and drying shrinkage with increasing C&D content.

Keywords

Construction and Demolition Waste Material, Compressive Strength test, Flexural Strength test, Drying Shrinkage

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Ref: ABS1700146

ON THE DESIGN OF A LOW-COST AND PORTABLE METEOROLOGICAL STATION (LCPMS) FOR HIGH-RESOLUTION SPATIO-TEMPORAL MEASUREMENTS OF METEOROLOGICAL DATA

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High-resolution spatio-temporal meteorological data is very useful for better weather forecasting and climate monitoring (Cruz & Ruiz, 2015; Johansson & Glass, 2008). These are vital for a good understanding of climate behaviour which can help to prevent ecological, economic and social damages. For instance, due to existence of microclimates, real-time monitoring of the climatic conditions of a farm can contribute to better understand the surrounding weather conditions and help to solve many of the farm related problems

(Shugurensky & Caprano, 2011). The primary focus of this work is to build up and implement a low-cost and portable meteorological station (LCPMS) to measure the variation with time and space of the essential weather parameters with an acceptable accuracy. The LCPMS consists of an embedded system based on the Arduino Uno micro-controller (Dangi, 2017), interfaced with the different sensors for air temperature, humidity and solar irradiance, that ensures flexibility, portability and user-friendly operations. The data are assimilated over 10-minute intervals. The micro-controller also provides the user facilities to record monitor and access real-time weather observations over the World Wide Web through a dedicated website. Testing and calibration of the different sensors utilised are performed by comparing measured data from the LCPMS with those from sophisticated instruments both indoor (in the lab) and outdoor (using a Davis Vantage Pro 2 wireless weather station calibrated by the Mauritius Meteorological Services). This is done using standard mathematical techniques such as root mean square error, Pearson's correlation analysis and the least square method (Jammalamadaka & SenGupta, 2001). The latter analysis reveals an accuracy of 2.38% for the air temperature, 6.69% for the relative humidity and 2.48% for the solar irradiance compared to the Davis Vantage Pro 2 weather station. Therefore, the LCPMS is equivalently efficient to measure various weather parameters and is very reliable for practical applications.

Keywords

Regional Climate Model, Air temperature, Precipitation, Sensitivity Analysis.

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Ref: ABS6530126

ASSOCIATIONAL PROTECTION BY ACROPORA-DWELLING STEGASTES OF RESILIENT PORITES CORALS: A CASE FOR BRANCHING CORAL REHABILITATION

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Damselfish (genus *Stegastes*) inhabit branching corals (genus *Acropora*) upon

which they cultivate algal gardens. *Stegastes* territorially protect these gardens and attack any fish which approach, thus preventing piscine feeding upon algae and coral within the territory. This may extend to other coral species within the territory, providing associational defence from corallivorous fish that could otherwise damage these corals through chronic predation (Gochfeld, 2010; White and O'Donnell, 2010). Such protection is particularly relevant for *Porites*, because while branching corals e.g. *Acropora* are susceptible to global warming stress-related bleaching and mortality, *Porites* are resilient (Edward et al., 2018). However, mortality and disintegration of branching *Acropora* may result in loss of *Stegastes*, and thus associational protection to *Porites* colonies. This effect may be exacerbated in protected areas due to greater numbers and/or biomass of corallivorous fish (McClanahan and Arthur, 2001). To date the potential for transplantation of *Acropora* thickets as a conservation tactic has been given little attention due to varying success, and pressure from other bodies e.g. fishers to keep lagoons clear. This study aims 1) to verify whether *Porites lobata* and *P. lutea* corals within *Stegastes* territories receive associational protection; 2) to assess whether this relationship varies between protected and unprotected areas; and 3) to investigate whether reintroduction of *Acropora muricata* colonies to degraded areas can facilitate recolonization of *Stegastes* fish, returning protection to nearby *Porites* colonies.

Surveying has been undertaken every two months since September 2018 at seven sites around Mauritius Island, three of which occur within protected areas. A minimum of 22 *Porites* per survey were compared according to whether they occur within

Stegastes territories. Parameters analysed included bite density and percentage coral surface area damaged by bites; these were determined through computer analysis of Porites photographs. Fish numbers at sites were also surveyed using video transects. Additionally, in December 2018-January 2019, ten Porites corals at each of three unprotected sites were transplanted from degraded habitat into Stegastes territories within the same site for subsequent assessment of healing rate of bites, as well as acquisition of new bites. Control corals (5-10 per site) were also transplanted outside Stegastes territories.

A. Muricata branches were transplanted into the immediate vicinity of further ten Porites within degraded areas at these sites. Survey results from September-December 2018 showed significant relationships between Stegastes presence and both parameters measured, with more bites occurring and a greater area being damaged outside Stegastes territories. Protection status had no significant relationship with either parameter, outside or within Stegastes territories.

B. Initial observations of the A. muricata transplants in January 2019 suggested that Stegastes recolonization has occurred at one study site within a month of field manipulation. Whether this affects Porites damage by corallivores over a longer period may indicate that it is possible for these systems to recover their diversity and associated interactions. This could encourage further transplantation of the thermally vulnerable A. Muricata colonies to degraded systems to enhance protection from fish predation of thermally resilient Porites colonies and facilitate coral reefs ecosystem recovery.

Keywords

Stegastes, Porites, Acropora, associational protection, corallivory, resilience, rehabilitation

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Ref: ABS2130026

**TAGOPSIN: A TOOL FOR GETTING
TAXA-SPECIFIC PROTEIN
STRUCTURAL AND FUNCTIONAL
INFORMATION FROM SEVEN
SOURCES**

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Biological data have benefited greatly from digital technologies in that they are now readily available in public databases. Consequently, a specific research problem is increasingly being addressed by database or multi-database search and data retrieval for the obtention of the required dataset. This concerns investigations ranging from gene or genome analysis to protein structural analysis. A typical docking-based virtual screening workflow for instance involves querying and retrieving selected data from specialised databases like the RCSB PDB [1] which stores protein 3D structural data, or UniProt KB [2] which stores protein data. Indeed, docking-based virtual screening entails the availability of an experimentally-solved or computationally-modelled protein 3D structure. The identification of a suitable protein drug target can prove to be a cumbersome task, particularly if novel targets are being sought. Likewise, inter-species gene comparisons in a molecular evolutionary study, or multiple sequence alignments, need formatted data present in sequence databases. For all these purposes, the obtention of interconnected data from a number of different databases can be bothersome.

We present TAGOPSIN, a command line application written in Java, for the rapid and efficient retrieval of selected data from seven of the most popular public biological databases [1-7]. The data retrieved are gathered in the database management system PostgreSQL [8] which constitutes a single local repository for utilisation on a user-defined basis. Thus manipulation of interconnected data is more convenient and multi-database queries are avoided since the program integrates different databases.

TAGOPSIN is the acronym for TAxonomy, Gene, Ontology, Protein, and Structure INtegrated. It uses an object-oriented approach to biology in which organism, genome, gene, protein, gene ontology, protein domain family and protein 3D structure are represented as real-world objects. Accordingly, it retrieves selected data from their respective FTP or HTTP servers, namely NCBI Taxonomy, NCBI Nucleotide, UniProt KB, Gene Ontology, Pfam and EBI SIFTS / RCSB PDB.

The program was tested on a Unix operating system with *Mycobacterium tuberculosis* and *Streptococcus pneumoniae* as model organisms. About 3,300 strains of interest were obtained, of which 304 curated and annotated genomes. These genomes allowed the retrieval of over 1 million protein-coding nucleotide sequences. In addition, a total of 6,018 protein entries from the SwissProt subset of UniProt KB were identified in the dataset, which represented 2,105 protein domain families from the Pfam database and 1,913 protein 3D structures from the RCSB PDB. The number of gene ontology terms for both organisms combined amounted to 4,371. Currently, the program is being tested with other prokaryotic organisms.

Overall, TAGOPSIN demonstrates efficient retrieval of a specific dataset for any prokaryotic organism within its scope. By using a relational data model and combining all data in a single local repository, comparative analyses of protein-coding genes as well as identification of protein domains and/or 3D structures for investigations requiring such entities (e.g. molecular docking) are facilitated.

Keywords

bioinformatics, biological dataset, database management system, object-oriented biology, program

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Ref: ABS3620047

**PERFORMANCE INTENSIFICATION
OF CONSTRUCTED WETLAND
TECHNOLOGY: A SUSTAINABLE
SOLUTION FOR TREATMENT OF
HIGH STRENGTH INDUSTRIAL
WASTEWATER**

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This study addresses an innovative constructed wetland to treat high strength effluent having high organic source of pollution (Chemical oxygen demand (COD)) and phosphate (PO₄). To apply a conventional biological treatment, the BOD/COD (Biological oxygen demand/Chemical oxygen demand) ratio should be > 0.6. However, most of the industrial effluents have a BOD/COD ratio less than 0.6. Therefore this clearly indicates that the high strength industrial wastewater may not be satisfactorily treated by a

conventional constructed wetland alone. Therefore, the main element of research of this study is to investigate the enhancement/intensification of COD and phosphate removal along the Horizontal sub surface flow constructed wetland (HSSFCW) through the integration of adsorption mechanism using coal ash and alum sludge. Also, this study will look into the determination of the kinetics of Chemical oxygen demand (k_{COD}) in such system. The k_{COD} is an important design parameter in determining the size of the system. It indicates how fast organic matter is being removed in the HSSFCW. Inappropriate value will lead to either over-designing or under-designing, and ultimately unsatisfactory performance or failure of the treatment. Literature review revealed the absence of k_{COD} value for high strength effluent. This project will attempt to bridge this gap in knowledge by developing/proposing a set of k_{COD} values for treatment of high strength effluent by a horizontal sub surface flow constructed wetland (HSSFCW). Batch and continuous fixed bed column analysis will be conducted using coal ash and alum sludge. For the batch analysis, the adsorption capacity for coal ash and alum sludge should lie between $1 < n < 10$ in order to prove that coal ash and alum sludge are good absorbent of COD and PO_4 and continuous column analysis (Yoon Nelson model) will be carried out to determine their saturation time. Four HSSFCW of dimensions $3.0 \text{ m} \times 0.5 \text{ m} \times 0.5 \text{ m}$ will be set up where two HSSFCWs will be filled with gravels acting as control and one HSSFCW will be filled with alum sludge followed by another HSSFCW consisting of coal ash. Synthetic effluent will be prepared to simulate high strength wastewater. The HSSFCW's will be operated at different

hydraulic retention times (HRTs) and organic loading rates (OLRs) at which performance will be assessed under continuous plug flow model. The kinetics of COD and PO_4 removal will be investigated via the fitting of the progression of removal of these contaminants along the bed into the K-C and K-C* plug flow models. In this study, the integration of adsorption removal mechanism in the HSSFCW will overcome the challenge of treating high strength organic water and will be a sustainable solution. This performance intensification will eventually contribute to its increased application and its popularity as one of the most suitable sustainable and least-costly wastewater treatment.

Ref: ABS8160049

**PERFORMANCE OF MORTAR USING
COAL BOTTOM ASH AS A
SUBSTITUTE FOR ROCKSAND**

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Drymix Product Ltd in Mauritius utilizes an elevated amount of rocksand on a daily basis for the production of mortar despite the fact that rocksand being a non-renewable product derivable from basaltic rock. With a pent up demand in the construction industry, the development of alternative substituents to rocksand are necessary to meet the increasing consumption [1]. With the sanitary landfill packed to capacity and land scarcity issues, a reliable option for Mauritius is to make use of the sub-bituminous coal bed ash being disposed off in the production of mortar which will not only alleviate the load of the landfill but will

also protect the environment from heavy metal contamination usually present in coal ashes [2,3]. The aims behind this analysis is to develop trial mixes of 5%, 10%, 15% and 20% of coal bottom ash as an alternative to rocksand, to conduct rheological analysis of trial mixes through lab testing according to European Norms as well as comparing with actual formulations and thus determining the performance of the optimum mix by end-user as a comparison with existing cementitious mortar containing only basaltic sand and to accomplish a comparative analysis of a coal ash substituted mortar along with a conventional mortar (Crepifix) in terms of consistency, flexural and compressive strength, air content, flow, fresh density and tensile adhesion. Trial mix of 5% bed ash revealed higher water absorbency and retention capacity than rocksand and the amount of bed ash present was found to be directly proportional to the mortar consistency. Also, the particle size of the trial mix 2017/158 rocksand along with 5% bed ash was evaluated to be close to that of pure rocksand while mix 2017/159 alongside 10% bed ash partially replaced in the bed ash of rocksand exhibited passing percentage ranging between 13 to 100% which lied within the limits of the passing percentage of pure 0-2mm rocksand. Moreover, 5 and 10% bed ash exhibiting methylene blue values of 0.25 and 0.5 g/kg respectively indicates that the modified rocksand is of a superior quality in mortar production. Also, the optimum amount of bed ash which can be used was determined to be up to 10% in existing mortars product on the market of Mauritius, namely Crepifix and Primefix where the optimum flexural strength was determined to be 2.09 MPa for 2 days and 3.45 MPa for 7 days while the respective compression strength was assessed to be

5.69 and 13.7 MPa and tensile adhesion after 20 min open time was observed to be 0.7 and 0.9 MPa correspondingly. Additionally, the feasibility of the project was assessed with the help of local suppliers and the accomplishment of the project was deemed favourable with a total capital investment of (TCI) of MUR 4,293,637.84, a payback period of 3.4 years along with an internal rate of return (IRR) of 29.7%.

Keywords

Bed ash, sub-bituminous coal, mortar, tensile adhesion, air content, flexural and compressive strength

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Ref: ABS3150051

CHARACTERISATION OF PLASTIC WASTE IN MAURITIUS

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During the last decades, plastic waste has turned into a pressing issue when taking into account disposal substitutes to conventional plastic solid waste dumping in landfills [1]. This study endeavoured to evaluate the quantity as well as composition of plastic waste in Mauritius in order to assess its recycling potential. Plastic waste separated into polypropylene (PP), polystyrene (PS), polyethylene terephthalate (PET), low-density polyethylene (LDPE), polyvinyl chloride (PVC), high-density polyethylene (HDPE) were collected at five transfer stations notably La Brasserie, Poudre d'Or, La Chaumiere, La Laura, Roche Bois and characterisation of waste was achieved through manual sorting as well as via visual estimation in line with US EPA 2015 methods. It was established that plastic waste occupied a significant portion of 17.18% of the Municipal Solid Wastes (MSW) which was further sub-categorised into 14.7% PP, 9.5% PS, 22.3% PET, 37.6% LDPE, 3.1% PVC and 12.8% HDPE. Additionally, a proximate analysis was conducted where the moisture content of the same respective plastic types was determined to be 2.47%, 1.40%, 1.88%, 2.04%, 2.63% and 3.79% while ash content for the corresponding types was assessed to be 1.37%, 1.07%, 2.22%, 2.39%, 3.51% and 2.45%. The high moisture and ash content of the samples indicate a low calorific value obviating that additional energy needs to be supplied in

case of incineration. Moreover, the volatile content of the solid wastes varied in the range of 73.70 to 87.25% with LDPE comprising of the least amount of volatile matter and hence exhibiting the lowest ignition rate. Fixed carbon content lied within the limits of 6.61 to 21.87% with LDPE and HDPE revealing optimum percentages of 21.87 and 13.43 implying that they possess high energy contents. Plastic blends constituting 50% LDPE along with PP, 100% LDPE and 100% HDPE demonstrated optimum gross calorific values of 42.18, 48.12 and 44.26 MJ/kg respectively implying that these blends have relatively higher energy content as compared to conventional feedstocks such as bagasse and coal. The ultimate analysis revealed that all the blends were devoid of sulphur while HDPE and LDPE constituted the highest proportion of carbon and nitrogen indicating that upon combustion, Volatile Organic Contents (VOCs) such as olefins, aldehydes and light hydrocarbons will be produced [2]. Moreover, the flue gas analysis disclosed that 50% PP having a flue gas temperature of 1100C emitted 80 ppm of nitrogen oxides (NO_x representing 60 ppm nitrogen monoxide (NO) and 20 ppm of nitrogen dioxide (NO₂) while 100% LDPE emitted relatively lower amount of NO_x at 1000C representing 15 ppm (10 ppm NO and 5 ppm NO₂) and 100% HDPE released the highest amount of CO at 1200C accounting to 325 ppm. The high flue gas emissions exceeding the allowable limits imposed by the Environmental Impact Assessment (EIA) indicate that combustion or incineration of plastics is not a feasible approach but rather plastic blend with other MSW for incineration as well as pyrolysis are viable waste to energy options to bring down the level of emissions within regulated limits.

Keywords

Plastic Waste Management, Flue Gas Composition, Fixed Carbon Content, Gross Calorific Value, Volatile Content, Low-Density Polyethylene

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Ref: ABS9080062

SMART FARMING USING DRONE FOR DISEASE DETECTION: A CASE STUDY IN MAURITIUS

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The agricultural sector is a key factor in the economic expansion of Mauritius. The health of the economy depends on the annual production of crops. To cater for this mass production, farmers should avoid loss in their food crop. Plant disease is one of the main causes of loss in crop. Hence, farmers use pesticides to produce better quality and quantity of food and to combat plant diseases. However in 2016, it was estimated

that 11% of the crops harvested were above the Maximum Residue Level of FAO Codex Alimentarius (Ministry of Agro Industry and Food Security, 2016). Having such a high level of pesticides in our food can cause serious health issues and moreover, in the long term, these pesticides will cause soil infertility. Thus, there will be a drastic reduction in food production. In 2016, the government of Mauritius has decided to promote and encourage the use of bio-pesticides in order to reduce the risk of plant diseases (Agro-Industry Minister, 2016). However, farmers continue to use normal pesticides as they remain less expensive than bio pesticides (Organic Pest Control, 2019). Hence, this paper presents the design and implementation of a Smart Farming using Drone for Mauritius whose main purpose is to detect plant diseases. The farmer will know which diseases that are contaminating the crops. According to the type of diseases, the farmer will be presented a list of treatments to treat the affected plants. The farmer will not need to spray the whole field with pesticides but only the affected plants. Also, not all diseases require the use of pesticides. Hence, this will reduce the amount of pesticides considerably. To achieve this, a drone and tensorflow machine learning (Causevic, n.d) will be used. A drone with an integrated SD camera will be used to capture images of plants and crops. These images will then be uploaded on a web application through DigitalOcean cloud platform (DigitalOcean Cloud, 2019). The tensorflow machine learning program, more specifically the convolutional neural network algorithm (Convolutional neural network, 2019), will be integrated in the web application so as to compare the images with a trained dataset. This dataset is built by using images of healthy and affected plants captured by our camera and also images

provided by FAREI (FAREI, 2019). When the tensorflow machine learning will provide an image classification, the name of the disease will be displayed on the web application along with the treatments. The web application will be hosted on a cloud server and will be also connected to a database. Furthermore, a mobile application will be created and will also contain the tensorflow machine learning program. The mobile application will use the mobile's camera and the application will compare the image with the dataset. The result will be displayed on the mobile application instantaneously. The mobile application will work offline. In case the web application is down, the farmer will still be able to use the mobile application because it does not require an Internet connection to work.

Keywords

Machine Learning, Drone, Cloud, Image processing

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Ref: ABS7050115

HEAVY PRECIPITATION EFFECTS ON THE MICRO-PHYTOPLANKTON COMMUNITY STRUCTURE AT TROU AUX BICHES, MAURITIUS

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Rainfall patterns are changing and becoming more extreme worldwide. While some regions in the world are facing flash floods, others are becoming the prey of a high frequency of short-term drought. Even among the small developing countries, the Republic of Mauritius has been the victim of several flash floods in April 2013. Rainfall can change the sea surface conditions drastically. It can alter factors such as salinity gradient, temperature and momentum of the sea water leading to a disturbance in the surrounding environment. The aim of this study was to determine whether the micro-phytoplankton diversity and density differed spatially and temporally during a heavy precipitation period in the shallow waters of Trou aux Biches situated in the north-west Coast of Mauritius Island.

This study was conducted in March 2017 for 18 consecutive days and it entailed three different zones namely the coast, lagoon and reef. The samples of micro-phytoplankton were collected by the filtration of 10 liters of sea surface water through plankton net of 5 μm , fixed with Lugol's solution and stored for further processing and analysis under inverted light microscope. Furthermore, samples of sea water were collected for the Chlorophyll a analysis through spectrophotometric method.

The diversity of micro-phytoplankton was divided into three main categories namely the diatom (28 genera), dinoflagellates (12 genera) and cyanobacteria (7 genera). Throughout the study period, the density of micro-phytoplankton followed the order diatom > dinoflagellates > cyanobacteria. There were significant differences among the densities of micro-phytoplankton at the coast, lagoon and reef, where the highest total micro-phytoplankton density was recorded at the coast. At the start of the sampling period, the density of the coastal micro-phytoplankton was $0.97 \pm 0.13 \times 10^5$ cellL⁻¹ and at the end, the density increased by almost 3-fold ($2.65 \pm 0.36 \times 10^5$ cellL⁻¹). Among the toxic micro-phytoplankton species present in our waters, the presence of Alexandrium was recorded at Trou aux Biches, however at a low percentage. There was a high significant positive correlation between total phytoplankton density at the coast and the chlorophyll a concentration ($r = 0.802$, at $p < 0.01$). There was an increase in the nitrate concentration during the mid-term of the sampling period which was followed by a gradual decrease. The decrease in nitrate may be attributed to the assimilation by micro-phytoplankton and among other micro/macro-biota. A weak negative correlation ($r = -0.3656$, $p < 0.01$) between chlorophyll a and nitrate was found.

Phosphate did not vary significantly in the coast but the comparison for the concentration maybe between coast, lagoon and reef showed significant differences.

Further studies investigating the intensity of heavy rainfall impacts on micro-phytoplankton communities in coastal waters are more important than ever in an era witnessing more frequent El-Nino events. Similar in-depth studies on micro-phytoplankton are warranted if one were to thoroughly understand their dynamics and related health issues with respect to toxic micro-phytoplankton and their implications for the tourism sector.

Keywords

Precipitation, micro-phytoplankton, chlorophyll a

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Ref: ABS5210119

VULNERABILITY OF SIDS: A LOCAL PERSPECTIVE

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Ever since the term Small Island Developing States (SIDS) gained formal expression in 1992 it was associated with the term vulnerability. This association has become a sure-fire argument in advocating for special attention in sustainable development, specifically climate change, for countries falling under this acronym like Mauritius. Literature on vulnerability and consequently resilience develops on the theories, the definitions and the many initiatives to measure the phenomenon in diverse contexts, including SIDS. Understanding and evaluating the vulnerability of SIDS is a continued effort which is also urgent when considering the recent report of the Intergovernmental Panel on Climate Change on the impacts of global warming at 1.5°C.

Moreover, sustainable development, climate change and vulnerability in nature go beyond disciplinary borders. The multiplicity of legitimate perspectives requires multi-disciplinary and trans-disciplinary approaches. As part of a broader initiative of developing vulnerability and resilience measures to inform decision making for SIDS of the Indian Ocean region, this research seeks to assemble a comprehensive picture of the vulnerability and resilience of these SIDS to climate change. This was done through the voices of those who are addressing the issues in their respective sectors and fields of intervention. A series of semi-structured interviews were carried out

with experts from different sectors and from 4 categories, Non-Governmental Organisations, Academia, Governmental bodies and International/Regional Organisations. The sample presented was focused on Mauritius and the questions were designed to investigate (1) the concept of vulnerability and resilience in different sectors, (2) the factors, including their linkages, driving/enhancing vulnerability or resilience, (3) indicators and measures of vulnerability and resilience and finally (4) the actions, challenges and needs of organisations and individuals in that regard.

The responses were synthesised in categories and topics with the important elements and points outlined and discussed. Many elements in the definition of the vulnerability-resilience concept corroborated literature and were constant across sectors. Beside the common known factors enhancing vulnerability of SIDS, it was pointed that the history, especially the development, of Mauritius was itself a determining factor. Moreover, the current development pattern and the lack of political will, lobbying, financial and technical resources were also pointed out. Contributors conceded that a vulnerability assessment was policy relevant, especially for floods and its corresponding risks, suggesting that this could support diplomatic efforts. Proper mechanisms, strategies, policies and presence of a common vision were denoted as possible measures. Social capitals such as trust, political will were considered important yet unmeasurable. Finally, it was prominent that competition and lack of understanding between sectors, the lack of data and partnerships were challenges while multi-disciplinary approaches should be encouraged.

Keywords

SIDS, vulnerability, resilience, climate change, multi-disciplinary

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Ref: ABS3570169

A SPATIAL MAPPING OF ARIDITY INDEX FOR MAURITIUS USING GEOGRAPHIC INFORMATION SYSTEM (GIS)

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One essential aspect in research on climate change over a certain region is an assessment of the aridity. The latter is a term that most people conceptually understand. It brings to mind images of very dry lands with sparse natural surface-water bodies and not enough rain for plants (Mishra & Singh, 2010). However, a fundamental distinction exists between aridity, which is a long-term climatic phenomenon and droughts, which are a temporary phenomenon (water deficit) (NOAA, 2019). There are different classifications of aridity, ranging from 'Hyper-arid', 'Arid', 'Semi-Arid', 'Dry sub-humid', 'Humid' and 'Very humid'. These are determined by numerical indicators computed based on the precipitation, temperature and/or potential evapotranspiration (PET) data of the given location (Stadler, 1998; Sun et al., 2016). In the literature, the most common techniques used for calculating the numerical indices are the De Martonne Aridity Index (DMAI), Thornthwaite Classification (TC), the Pinna Combinative Index (PCI) and Unesco Aridity Index (AI) (Lungu et al., 2011). The current study focuses on the island of Mauritius which is situated within latitude 20.2° S and longitude 57.3° E. It has a tropical climate with two seasons: summer (November to late May) and winter (May to

late October). The climate is influenced by several meteorological variables such as the El Niño Southern Oscillation (ENSO), the Indian Ocean Dipole moment (IOD), trade winds and Asian-Austral monsoon circulations (Seebocus et al., 2019). In order to assess aridity for the island the DMAI, TC and AI are used. These are applied to daily data for the period January 2017 to December 2018 collected from 11 stations of the Mauritius Meteorological Services (MMS). A Geographic Information System (GIS) is used to map the computed values which are interpolated using the Empirical Bayesian Kriging (Linear Variogram model). Results showed that climate of west and north coasts of the island are mostly drier compared to other regions. Moreover, there exist small climatically wet zones in the central plateau and eastern areas.

Keywords

Aridity Index (AI), Geographic Information System (GIS), Empirical Bayesian Kriging, Climate Change

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Ref: ABS1760187

COASTAL SEDIMENTS POLLUTED BY PETROLEUM HYDROCARBONS (C10-C40): A REVIEW ON ITS IMPACTS ON THE COASTAL ECOSYSTEMS OF MAURITIUS

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Contamination due to petroleum hydrocarbons may result from many sources. In Mauritius, coastal sediment pollution results mostly from anthropogenic sources such as industrial activities and the sea activities, mainly at the harbour. While some authors affirmed that sea activities polluted the coastal sediments, and the concentration of pollutants was found to be higher in the harbour, likewise, an investigation was set to quantify the amount of total petroleum hydrocarbon (TPH), ranging from C10 to C40, in the neighbouring coasts from the Mauritius harbour at Port-Louis and to determine its effect on the coastal ecosystems. Three coastal sites were selected, namely, Tombeau Bay (C-BDT), Pointe aux Sables (C-PAS) and Mer Rouge (C-MER). Results showed that the most

polluted the coastal sediments was Pointe aux Sables (451 mg/kg) followed by Tombeau Bay and Mer Rouge (less than 66 mg/kg) both. Despite that the chemical properties of the sediments analysed were favourable for microbial biodiversity, results showed that there was a much richer microbial biodiversity in less contaminated sediments while greater microbial activity (respiration rate) in the contaminated environment, C-PAS. Given that the toxicity of TPH in soil was established at range greater than 1000 mg/kg, it was noted that despite the C-PAS site was the most polluted, it did not reach the permissible limit. However, due to the urbanisation and intensive use of the sea for ship activities, the concentration of the level of pollution due to TPH is expected to increase in the forthcoming years.

Keywords

Coastal sediment, anthropogenic sources, total petroleum hydrocarbon, ecosystems

Ref: ABS3600193

A LOCAL WEAK-FORM RADIAL POINT INTERPOLATION TECHNIQUE FOR PRICING CONTINGENT CLAIMS

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Few financial option contracts have closed-form pricing formulas. Of the different approaches for obtaining price approximations, the partial differential equation approach (Thakoor et al., 2018a, 2019) yield efficient computational procedures. In this work, a new computational technique for option pricing

under the Black-Scholes equation is developed. Contrary to numerical computations for forming the system matrices in local radial point interpolation method, closed-form shape functions in a three-node local radial point interpolation method (Thakoor et al., 2018b) are derived to develop a weak-form algorithm. The advantage is that the matrix coefficients can be explicitly obtained and this simplifies the stability and convergence proofs. The merit of this new computational procedure is demonstrated on one asset option and extension to the solution of two-dimensional problems using new finite difference formulas for local radial point interpolation method are carried out. An extensive set of numerical results illustrate the efficiency of this new approach.

Keywords

Localised Radial Point Interpolation, Shape Functions, Weak-Form Algorithm

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Ref: ABS8100197

**CORRELATION BETWEEN CLIMATE
VARIABILITY AND AGRICULTURAL
PRODUCTS USING THE EMPIRICAL
ENSEMBLE MODE DECOMPOSITION
METHOD: CASE OF CABBAGE
YIELDS IN MAURITIUS**

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Agriculture is one of the mainstays of the economy of Small Island Developing States (SIDS). It contributes to both food security and employment. In the literature, several studies have reported that recent trends in change of climate variables affect global crop yields (Ochieng *et al.*, 2016). However, to our knowledge no study has been attempted to understand the correlation between climate variability and agricultural products. As a case study, this work focuses on cabbage yields (as an indicator crop) for the island of Mauritius. The latter is situated in the tropical region of the Indian Ocean within latitude 20.2° S and longitude 57.3° E. The Ensemble Empirical Mode Decomposition (EEMD) method is employed to study the trends in cabbage crop yields and their correlation with climate variability in the Indian Ocean. EEMD is a robust technique commonly used to analyse the non-stationary properties of time-series data. It is an improved version of the original empirical mode decomposition (EMD) method developed by Huang *et al.* (1998) that solves the mode-mixing problem. The method works by breaking down the time-series data into intrinsic mode functions (IMFs) with different oscillation periods and

a residual component without leaving the time domain. The IMFs represent a set of successive low-pass filters based entirely on the properties exhibited by the time-series data. They are very effective in isolating physical processes of various time scales. Hence, the mean period of each IMF can be associated to a climatic event (Molla *et al.*, 2005; Seebocus *et al.*, 2019). Data for monthly production (in tonnes) of cabbage are analysed for the period January 2006 to December 2017 for 'North', 'South', 'East' and 'Central West' regions of the island. In the EEMD process, each set of data resulted into 5 IMFs and 1 residual. The residuals reveal a general linear increase of cabbage yields from 2006 to 2013 at a rate ranging from 1.07 (South) to 17.75 (Central West) tonnes/year. Then from 2013 onwards, a net decrease in the yields at a rate ranging from 2.35 (North) to 2.93 (South) tonnes/year is observed. It should be noted that for the Central West region, there is no decrease in the yield. The computed mean periods of the IMFs suggest that the climatic phenomena which impact more on cabbage yields are the seasons (0.5 years), tropical cyclones (~1 year), intraseasonal phenomena (30 to 90 days), quasi-biennial oscillations - QBO (2 to 2.5 years) and El-Nino Southern Oscillation - ENSO (~4 to 7 years).

Keywords

Climate variability, Crop yield, Empirical Ensemble Mode Decomposition (EEMD), Intrinsic Mode Functions (IMFs), Climate Change

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Ref: ABS0250208

STRESS PHOTO-PHYSIOLOGY OF SYMBIOTIC CORALS TO SELECTED ENVIRONMENTAL STRESSORS

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Mauritius Island is enclosed by 150 km fringing reefs. It escaped the major 1998 bleaching event; however, recent records of coral bleaching/mortality have increased mostly due to climate-induced thermal stress. This study assessed the effects of environmental stressors (physical, biochemical and biological) on stress photo-

physiology of selected corals of Mauritius through field, using coral cell aggregates or tissue balls (TBs) as a miniaturized model, and laboratory investigations. Environmental stressors included physical (in-situ and ex-situ temperature), biochemical (extracts of sponges and ascidians) in laboratory, and biological stressors (microbe-mediated) in situ. Coral stress photo-physiology was measured by a Diving -Amplitude Modulated (D-PAM) fluorometer. Firstly, field surveys carried out during summer 2008-2009 bleaching event indicated a higher susceptibility of tabular Acroporids, namely *Acropora cytherea* and *A. hyacinthus*, to elevated sea-surface temperatures (31.5°C in February 2009) while *Pocillopora damicornis*, *P. eydouxi*, *Galaxea fascicularis* and *Fungia repanda* did not show any signs of mortality. Maximum quantum yield (dark-adapted), Fv/Fm, was lower in partially-bleached (PB), pale (P) and bleached (B) colonies as compared to non-bleached (NB) ones in *A. cytherea* and *A. hyacinthus*. In pale colonies of *P. damicornis* and *G. fascicularis* it did not differ from their non-bleached ones. Fv/Fm in *P. eydouxi* and *F. repanda* was normal as no recorded bleaching occurred. Secondly, effects of thermal and biochemical stressors were examined using coral TBs. Temperature stress and biochemical extracts of sponges (*Adocia* sp. (AS), *Haliclona* sp. (HS) and *Lissodendoryx* sp. (LS)) and ascidian *Didemnum molle* (DM) were tested on four corals, *A. muricata*, *F. repanda*., *Pavona cactus* and *P. damicornis*. Formation and disintegration of TBs were studied through exposure to different temperatures (23, 28 and 30°C) and to sponge/ ascidian crude extracts (concentrations 50 to 200µgml⁻¹). TB density was highest at 23°C and lower at higher temperatures (28 and 30°C). A differential susceptibility among

tested corals was observed to thermal stress with *P. damicornis* being most robust and *A. muricata* most susceptible. Stress experiments revealed negative effect of sponge/ascidian extracts and higher temperatures (28 and 31°C) on TBs density mostly in *A. muricata*. Thirdly, coral diseases, namely white band disease (WBD, tissue sloughing) and white plague (WP, complete whitening), were surveyed at nine stations (n=20 colonies per station) along three transects from coast to reef at Belle Mare from November 2013 to February 2014. Higher percentage (90%) of disease occurrence was observed in *A. muricata* (WBD 45%; WP 55%) than in *P. damicornis* (WBD only 10%). None of the colonies of *P. eydouxi*, *G. fascicularis*, *A. Cytherea* and *F. repanda* exhibited any diseases. Effective quantum yield (light adapted), Θ_{PSII} , was normal (0.60 ± 0.01) in non-diseased/healthy coral colonies, but was significantly low (< 0.20) in diseased colonies at healthy-looking tissue adjacent to disease lesions. Low Θ_{PSII} was accompanied by low relative maximum electron transport rate (rETR_{max}) and maximum non-photochemical quenching (NPQ_{max}), indicating damage to the photosynthetic apparatus in WBD-affected *A. muricata*. This study indicated variable responses among studied coral species to thermal, biochemical and biological stressors, and their implications for coral reef management are discussed.

Keywords

Corals, PAM, photo-physiology, stressors, tissue balls, Mauritius

Ref: ABS9430110

EVALUATING THE PLAGUE OF STIGMA DEVOURING THE MENTAL HEALTH SYSTEM: A CASE STUDY AMONG PSYCHIATRIC NURSES IN MAURITIUS

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The taboo surrounding the abnormal thinking, feeling and behavior, has only contributed to reinforcing the negative beliefs and attitudes towards the mentally ill stereotype. The mental health stigma prevailing in the society is internalized by the affected individuals, and also gets associated to the health professionals caring amidst them (Verhaeghe, 2012). This study was developed as a stepstone to investigate the phenomenon of stigma devouring the mental health system from within, as the service provider is the soul of the service. The nurses of the Brown Sequard Mental Health Care Centre were subjected to questionnaires and interviews designed to evaluate the plague of stigma. The knowledge of the problem, the attitude of the participants towards psychiatric patients, and their adaptive responses were evaluated for correlation. 18.5% of the respondents believe in witchcraft as a cause of mental disorder. The survey revealed self-stigma responses amidst half of the psychiatric nurses who also reflect labelling of patients and co-workers, but the respondents denied being conscious that the psychiatric nursing profession faces social stigma. Nevertheless, the psychiatric nurses alleged to face discrimination at work and in the

compared to nurses from general hospital. During the survey, 76.9% of the respondent nurses confessed to suffer low job satisfaction related to the salary and the working environment. Strong relationship was established between demographic values of age, education, training, and promotion prospect with $p < 0.05$. Half of the participants earns less than 2 ½ times the minimum wage of Rs10,000 proposed by the government, and also complained of losing career opportunities, hence a factor contributing to low level of care (85.4% believing that treatment efficacy being 60% or less). With the ambiguous roles of working to promote health against stigma, nurses are being stigmatized by association to their work, and nurses are the renewed stigmatizers within the mental health system. A longitudinal survey of recommended upgrades is urged to monitor the remedy of the corroding service.

Keywords

Plague of stigma, stigmatisers, mental health nurses, Brown Sequard Mental Health Care Centre

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Ref: ABS2470121

EVALUATING THE NEED FOR THE INTRODUCTION OF A CARDIAC REHABILITATION PROGRAMME AT THE CARDIAC CENTRE FOR POST-OPERATIVE CARDIAC PATIENTS.

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It is no secret that treatment of a coronary care unit or surgical intervention may be viewed as a crisis or a dangerous opportunity. Analogous to the risks and benefits of medical and surgical intervention, the hospital experience itself may also be a dangerous opportunity to the patient's survival and subsequent social and emotional adjustment (Gregory, 2006). This study sought to evaluate the need for the introduction of a Cardiac Rehabilitation Programme at Cardiac Centre, Pamplemousses, for post-operative cardiac patients, perspective of healthcare professionals. The research focuses on the evaluation of the need for a cardiac rehabilitation programme of post-operative cardiac patients by healthcare professionals, for prevention of a secondary cardiovascular disease and as a performance measure in the care of patients with cardiac disease.

Quantitative and qualitative questionnaires were designed to obtain information from respondents on their socio-demographic data, the perceived benefits of Cardiac Rehabilitation Programme, the perceived scope of Cardiac Rehabilitation Programme, the perceived barrier to implement Cardiac

Rehabilitation Programme and knowledge on assessment of Cardiac Rehabilitation Programme at the Cardiac centre. The data collected from a sample of 86 respondents, out of a target population of 94 (91% response rate), was subjected to both reliability and for construct validity, with a view to ensure the accuracy, trustworthiness and possible generalisability of research findings. There is a common agreement among health professionals on the positive role Cardiac Rehabilitation Programme could have on them, patients and families. Consequently, they are willing to overcome all the barriers for the implementation of a Cardiac Rehabilitation Programme. Recognizing the complexities of achieving this, findings in this study emphasize the fact that introduction of Cardiac Rehabilitation Programme is favorable at Cardiac Centre.

It is recommended that training of healthcare professionals should be considered a fundamental part of any Cardiac Rehabilitation Programme which will be aimed at improving quality of life of patients. New research areas include exploring new ways of cardiac rehabilitation delivery to improve referral and participation rates as well as developing new exercise regimens that are more effective and versatile and that incorporates new technologies in cardiac rehabilitation to maximize its benefits.

Keywords

Cardiac rehabilitation programme, post-operative cardiac patients, healthcare professionals.

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Ref: ABS5820182

ASSESSING THE USE OF COERCIVE MEASURES IN THE PSYCHIATRIC INSTITUTION OF MAURITIUS

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The study aimed to assess the use of coercive measures within the Brown Sequad Mental Health Care Centre, the only psychiatric institution in Mauritius, where the mentally ill people are provided with inpatient treatment. The concept of coercion is an old practice, predating modern mental health care. Coercive measures used, are seclusion, restraint and involuntary medication and are justified according to the needs and challenges in the care of these patients and simultaneously see to their safety and security, due to the aggressiveness and violence attributed to acute psychotic symptoms in certain cases. The uses of coercive measures are mainly due to avoid or decrease the intensity of harm that can occur to the patients and others. It had been discussed in extensive literatures that with time it was observed the emergence of controversies using coercive measures in view of being ethically and morally against the mental health. But there is a total absence of study on the use of coercive measures in the BSMHCC as no study had ever been carried out.

The study employed mixed methods design, consisting of quantitative and qualitative nature, to be able to assess the use of coercive measures in the BSMHCC. The quantitative data collected the opinions of nurses through the delivery of questionnaires to gather information on their perception, the factors considered and the consequences that raised with the use of coercive measures, together with the demographic characteristics of the respondents.

The qualitative data was collected through interviews of two psychiatrists on scheduled date to avoid any confrontation with their work schedule and to be able to explore their views on the use of coercive measures in the BSMHCC.

With an average of 91%, the results showed that psychiatrists and nurses had a good theoretical knowledge of the coercive measures and they thought it should be used as a last resort means. Showing mean score < 2, the respondents agreed the use of coercive measures for the security and care of the patients, who lack insight of their illness and show traits of aggressive behaviour, to cause harm to themselves and others. Also noted, the lack of adequate training of the nurses (with an average 69% of respondents agreeing), who are mostly at the frontline when handling the aggressive patients and with the use of coercive measures, there can be disruption in the therapeutic alliance.

Keywords

Coercive measures, seclusion, restraint, involuntary medication, nurses, Brown Sequad Mental Health Care Centre

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Ref: ABS0520098

**IDENTIFICATION AND
QUANTIFICATION OF
MICROPLASTICS IN DIFFERENT
MEDIUM: A CRITICAL REVIEW**

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The continuous increase of plastic production and poor management of plastic wastes have resulted in a significant increase in the dumping of plastics wastes in the environment. As a consequence, microplastics, which are defined as sizes less than 5 mm, are emerging persistent contaminants of global concern. The microplastics are present in the environment as primary microplastics (manufactured in micro-scale) and as secondary microplastics (fragmentation of plastic wastes as a result of continuous weathering). This review focuses on the recent progress of microplastics in different environmental medium (water, sediments, and soil), from sampling to identification and quantification. Based on the reviewed publications, the current challenges in this research field and the possible ways to overcome the limitation are also discussed.

Keywords

Microplastics; Sampling; Identification; Quantification

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Ref: ABS5390111

**A STUDY ON THE MICROALGAE
BIODIVERSITY AND OCCURRENCE
OF CYANOTOXINS IN AN
IMPOUNDING RESERVOIR FOR
IRRIGATIONAL USE**

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Water supply from La Ferme impounding reservoir is primarily intended for agricultural use. However, water scarcity in the dry seasons may call local authorities responsible for potable water supply to resort to the purification of water from La Ferme for domestic use. However, there is a concern that the reservoir water is potentially befouled by anthropogenic activities within the catchment area. Nutrients from croplands, pollutants from a nearby solid waste transfer station, as well as wastes from surrounding animal and fish farms are suspected to leach into La Ferme reservoir. It is also suspected that the high altitude feeder canal Trianon Grosses Roches is exposed to nutrient pollution as it flows close to residential and industrial zones. The loading of nutrients in La Ferme could favour the growth of toxin-producing cyanobacteria which can eventually jeopardize human and animal health.

The aim of this research was, therefore, to assess the vulnerability of La Ferme impounding reservoir to eutrophication and contamination by pesticide residues.

This study examined the microbial safety and quality of water from La Ferme reservoir

and its three feeder rivers through an analysis of the level of contaminants (nutrients and pesticides), blue-green algae cell count and cyanotoxin level during the period 2017-2018. Water was sampled from the euphotic zone adjacent to the intake tower, three watercourses that discharge into La Ferme during rainy (November - April) and dry (June - September) seasons. The enumeration and identification of cyanobacteria at genus level were performed by Phase Contrast microscopy while dissolved oxygen (DO) and pH were determined by electrometric methods. The level of nutrients, total organic carbon (TOC) and cyanobacterial cell density were determined by instrumentation techniques while pesticides (viz. tebuthiuron) and toxin (viz. Microcystin-LR) were analysed by ultra performance liquid chromatography (UPLC).

During the overall study period, the mean cyanobacteria algal count and level of orthophosphate and nitrate in the lake were 189,061 cells/mL, 0.12 and 0.61 mg/L respectively. The mean level of orthophosphate and nitrate in lake water was found to be significantly higher ($P \leq 0.05$) during rainy seasons (0.13 and 1.2 mg/L respectively) compared to dry seasons (0.10 and 0.05 mg/L respectively). Annual mean orthophosphate and nitrate loading from the feeding rivers reached up to 0.09 mg/L and 0.03 mg/L respectively. Residues of tebuthiuron were also detected in La Ferme with a mean concentration of 0.3 mg/L while the level of microcystin-LR in the water and reservoir bottom sediment averaged to 0.4 and 0.2 mg/l respectively.

This study indicated the potential eutrophic status of La Ferme reservoir and detected the presence of pesticide contaminant and cyanotoxin in its watersheds. Such pollutants could compromise the ecological integrity of the reservoir and negatively impact the sustainable use of this natural resource. Empirical data gathered from this study can assist in the enforcement of existing guidelines developed for monitoring the raw water quality of our inland water bodies and

also inform future action plans for restoration and conservation of the same.

Keywords

La Ferme, Reservoir,
Nutrient, Eutrophication, Toxin, Pesticide

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KEYNOTE SPEECHES

KEYNOTE SPEECHES

INTEGRATING RESEARCH IN TEACHING AND LEARNING



Facilitator: Dr. Theng Yin Leng

Acting Executive Director, Ageing Research Institute for Society and Education, Research Director for Arts, Humanities, Education and Social Sciences, President's Office, Nanyang Technological University and Professor, Wee Kim Wee School of Communication and Information

She is the Founding Director of the Centre of Healthy and Sustainable Cities (CHESS) at the Wee Kim Wee School of Communication and Information, and Research Director at the Research Strategy and Coordination Unit (President's Office), Nanyang Technological University (NTU, Singapore).

In the area of research, Professor Theng's philosophy is about doing worthwhile, scientifically-based experimental Human-Computer Interaction in understanding users and their interactions, especially for Information Systems, in her earlier research on the World Wide Web and Digital Libraries, and with recent focus on interactive systems/devices for Healthcare and Education.

Her main research interest is to develop innovative tools, techniques, methods and models to assist in the design and evaluation of interactive systems/devices, making research relevant and impacting society.

Dr Leng's keynote speech was entitled 'Integrating Research in Teaching and Learning'. A full video of the keynote speech is available on <https://drive.google.com/file/d/1EdaY8Ub6uRrXW6tgT91RwkwS3VbtfnBd/view>



Dr. Theng Yin Leng delivering her keynote speech



Facilitator: Archaya Pratishtha ji Saraswat
Director
Indira Gandhi Centre for Indian Culture

She is an internationally acclaimed Indian Classical Dance exponent and a renowned Yoga guru hailing from a family of yogis. She has given more than 36 television shows on National and International TV channels, authored 5 books and 30 CDs and DVDs on her subject. She has travelled widely for promotion and propagation of Indian Classical arts and yoga and has won many awards and honors for the same.

The full keynote speech of Acharya Saraswat entitled ‘New Directions: Research in Arts, Humanities and Performing Arts’ is available on https://drive.google.com/file/d/1WOoC4GeV4DNvPJge_nYHIbberBuOw8uT/view.



Keynote speech by Acharya Pratishtha Saraswat

RESEARCH PERFORMANCE IN ACADEMIA



**Facilitator: Professor Christine Ennew, OBE
Provost, University of Warwick**

Christine Ennew is Provost at the University of Warwick where she supports the Vice Chancellor in the academic leadership of the University.

A key aspect of her role is leading the development and delivery of the University's academic strategy, ensuring that Warwick remains competitive and relevant within HE and beyond. She is responsible for the efficient and effective use of academic resources (including departmental resources, capital planning and space management, and information resources). In addition, she is Chair of the University's Equality and Diversity Committee and is the Executive Board lead for the University environmental sustainability strategy and its implementation.

Christine graduated from Cambridge University and completed her PhD at Nottingham. She was previously one of Nottingham's Pro Vice Chancellors and served as Provost and CEO of the University of Nottingham Malaysia Campus. She joined the University of Warwick in August 2016.

She is currently a member of the Advisory Board of the Observatory on Borderless Higher Education, a member of the Board of Directors for Common Purpose Student Experiences. She is also a Board Member for the Higher Education Funding Council for Wales (HEFCW) and Chair of its Regulation Committee.

Dr Ennew's keynote speech was entitled 'Research Performance in Academia'. A full video of her keynote speech is available on https://drive.google.com/file/d/1T5hmjRIJFHjkkAz3h_nPG6fnvopqG4ek/view?ts=5db6c7e6.

The background of the page features a vertical band on the left side with a gradient of grey and pink stripes. To the right of this band, there are several solid pink circles of varying sizes, some overlapping the stripes.

WORKSHOPS

WORKSHOPS

TURNING YOUR RESEARCH IDEA INTO A PROPOSAL FOR FUNDING



Facilitator: Professor Christine Ennew, OBE
Provost, University of Warwick

Christine Ennew is Provost at the University of Warwick where she supports the Vice Chancellor in the academic leadership of the University.

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A full video of Dr Ennew's workshop is available on

<https://drive.google.com/file/d/11wxd-4z4obFZyKsp1fqv6eNu0tudwxYJ/view?usp=sharing>

MASTERCLASS ON STATISTICS: ERRORS TO AVOID



Facilitator: Dr Kaviraj Sukon
Director General
Open University of Mauritius

Founder Director-General of the Open University of Mauritius that he set up in 2012. Dr Sukon is also the Chairman of the Mauritius Museums Council. He also holds a honorary position at the prestigious Imperial College London, UK.

He has been a consultant for several organisations including UNESCO, ILO, UNDP and ADEA. He has published research papers and supervised several masters and doctoral theses.

He has also established the Research and Consultancy Division of the Human Resource Development Council in May 2005. He holds a PhD from University of Mauritius/University of Loughborough (1997), a MBA with distinction (ranked first) from University of Surrey UK (2011), and a B.Sc. (Hons.) Mathematics and Physics from University of Mauritius (1993).

A full video of Dr Sukon's workshop is available on <https://drive.google.com/file/d/1ZX0elpUpDMFqDjjXDKEooXogZwqU9wbd/view?ts=5db6cb08>

RESEARCH IN MEDICAL AND MEDICAL-RELATED FIELDS



Facilitator: Dr Bharti Balambal
Project Manager
Moore's Cancer Center at
University of California San Diego

She holds an MBBS, MPH and PhD. She received her medical degree from the Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry University, Masters in Public Health (MPH) from the University of Pittsburgh, and PhD in epidemiology and biostatistics from the San Diego State University and University of California San Diego (UCSD) Joint Doctoral Program in Public Health.

Dr. Bharti is the Project Manager for the colorectal research program at the Moore's Cancer Center at UCSD. Her research is community-based with the objective to improve colorectal cancer screening in the medically underserved populations.

In addition to her research work, Dr. Bharti teaches Epidemiology and research methodology to medical and other graduate students, residents, fellows, and junior faculty at UCSD. Dr. Bharti is a visiting faculty at the Open University of Mauritius.

A full video of Dr Balambal's workshop is available on <https://drive.google.com/file/d/1s-lbyycA5QfN3NsLiEg9ZxOh5DG4s1SE/view?ts=5db6cb08>



DEBATE

DEBATE

HIGHER EDUCATION: TO BE OR NOT TO BE

Affirmative Team Members

- **Dr K. Sukon, Director General, Open University of Mauritius**
- **Dr H. Mariaye, Associate Professor, Mauritius Institute of Education**
- **Miss V. Pillay, Senior Advisor in Regulatory Affairs, African Leadership University**

Opposing Team Members

- **Mr K. Bhujun, Officer-in-Charge, University of Technology, Mauritius**
- **Prof L. Pellicione, Pro-Vice Chancellor & President, Curtin Mauritius**
- **Dr G. Chung Kim Chung, Executive Director, Service Diocésain de l'Éducation Catholique**



Dr Kaviraj Sukon, Director General, Open University of Mauritius

Founder Director-General of the Open University of Mauritius that he set up in 2012. Dr Sukon is also the Chairman of the Mauritius Museums Council. He also holds an honorary position at the prestigious Imperial College London, UK.

He has been a consultant for several organisations including UNESCO, ILO, UNDP and ADEA. He has published research papers and supervised several masters and doctoral theses.

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**Dr Hyleen Mariaye, Associate Professor,
Mauritius Institute of Education**

Hyleen Mariaye is Associate Professor and Head of the Higher Studies Cell at the Mauritius Institute of Education. She currently co-ordinates doctoral programmes run in collaboration with the University of Brighton and the University of Kwazulu-Natal. Her research interests are in Higher Education and Teacher Development Studies.



**Mr Kiran Bhujun, Officer-in-Charge,
University of Technology, Mauritius**

Kiran Bhujun is the Director of the Tertiary Education and Scientific Research Division of the Ministry of Education and Human Resources, Tertiary Education & Scientific Research of the Republic of Mauritius. Since July 2018, he is also the Officer in Charge of the University of Technology, Mauritius.

He is a Chartered Engineer from IIT Kanpur and further holds the PMP status from the Project Management Institute, USA. He has over 20 years of work experience, in an array of sectors and across several institutions, amongst which the Prime Minister's Office, the Ministry of Foreign Affairs, the Ministry of Public Infrastructure and the Council of Registered Professional Engineers of Mauritius.

His favourite quote is:

“A single candle can light up the world”.



Prof Lina Pelliccione, Pro-Vice Chancellor and President, Curtin Mauritius

Doctor of Philosophy, Master of Education, Bachelor of Education, Diploma of Teaching

Professor Lina Pelliccione is the Inaugural Pro-Vice Chancellor of Curtin Mauritius and commenced her role in January 2019. Prior to this role Professor Pelliccione held a number of senior positions at Curtin University since she began in a full-time capacity in 2001. She has had a wide range of experience serving on a number of internal and external Professional Committees and Boards.

Her background is in education and innovation, in particular in the field of Information and Communication Technology (ICT). She has researched and lectured in those areas that deal with the integration and effective use of ICT in teaching and learning.

In 2006 Professor Pelliccione was awarded a Carrick Australian Award for University Teaching citing her outstanding contributions to student learning.



Miss Verna Pillay, Senior Advisor in Regulatory Affairs, African Leadership University

Verna Pillay comes from a diverse background in higher education. She taught literature for several years at the University of Mauritius, and then went on to dabble in policy work at the Tertiary Education Commission. For the last 4 years, Verna has been with African Leadership University, first as their Director of Public Affairs and more recently as Senior Consultant in Regulatory Affairs and Quality Assurance.

Dr Gilberte Chung Kim Chung, Executive Director, Service Diocésain de l'Éducation Catholique (SDEC)



Since 2007, Dr Gilberte. Chung Kim Chung is the Executive Director of Service Diocésain de l'Éducation Catholique-SeDEC (then BEC), she leads a network of forty-six primary schools, eighteen secondary schools and one technical school in the Republic of Mauritius. In 2010, she was awarded Chevalier dans l'Ordre des Palmes Académiques, République de France.

She completed her doctoral thesis in 2016, gives voice to mature students, focusing on their motivations and lived-in experience as adult returners, particularly those of the Creole community of Mauritius belonging to a minority group, characterised by low income and lack of school achievement. Her fields of interest and publication are in early childhood, special education needs, inclusive education, educational leadership, education policy, education for sustainability and adult education.

A full video of Dr Balambal's workshop is available on <https://drive.google.com/file/d/1mcSnWIqpYPOxRMLL10kUO-wxbAGY8b1x/view?ts=5db6cb08>



Affirmative team members



DISCUSSION

PANEL

DISCUSSION PANEL

STRATEGIES FOR EFFECTIVE UNIVERSITY – INDUSTRY RESEARCH COLLABORATION

Facilitators:

Dr N. Gopaul, Research Coordinator, Mauritius Research Council (now MRIC)

Me S. Subbarayan, Legal Affairs Director, University of Mauritius

Dr R. Somanah, Director General, Université des Mascareignes

Mr A. Goolaub, Assistant Director, FAREI

Mr A. Meeto, Senior Adviser, Ministry of Technology, Communication and Innovation



Presentation by Discussion Panel Member



Dr Nitin Gopaul, Research Coordinator, Mauritius Research Council (now MRIC)

Dr Nitin Gopaul is presently Officer-in-Charge at the Mauritius Research and Innovation Council (MRIC), having joined the organisation in 2002 as Research Coordinator. His main responsibilities as Research Coordinator have included the management of the Council's Technology Transfer Office, development and management of the advisory services of the MRIC on Intellectual Property Rights and participation in the development of innovation, research, scientific and technological policies.

Dr Gopaul graduated with a First Class Honours in Chemical and Pharmaceutical Sciences from the University of Sunderland (UK), with awards from Glaxo, Fison and Pfizer pharmaceuticals. He undertook his PhD in Analytical Biochemistry at the William Harvey Research Institute (Queen Mary, University of London, UK) headed by Nobel Laureate Professor John Robert Vane, where he subsequently worked as Research Scientist in the Department of Experimental Therapeutics, investigating Type 2 diabetes and their causative factors in partnership with Merck-LIPHA (France). He also holds a General Postgraduate Certificate - Intellectual Property Law (University of Edinburgh, UK) and has acted as resource person for the World Intellectual Property Organization.



M^c Sivaramen Subbarayan, Legal Affairs Director, University of Mauritius

M^c S Subbarayan has been called to the bar in March 2005 at the Lincoln's Inn. He holds an LLB (Hons) from University College Northampton and and HE Dip in Journalism, University of Northampton. He is currently the Legal Affairs Director at UoM.



**Dr Radhakrishna (Dinesh) Somanah, CSK
Director General, Université des Mascareignes**

Dr D Somanah started his career as lecturer and researcher in Astrophysics and was the Director of the Mauritius Radio Telescope.

He is one of the pioneers of professional astronomy in Mauritius. He has won several awards one of which the award by the International Astronomical Union (IAU) and NASA. The minor planet Somanah 19318 (found between Mars and Jupiter) in our solar system was named after his name “Somanah” in 2007 for his contribution to research in astronomy.



**Mr Akhilalandjee Goolaub, Assistant Director
(Extension and Training), FAREI**

Mr A Goolaub is the Assistant Director (Extension and Training) at FAREI. He joined the Ministry of Agriculture in 1992, AREU, now FAREI, in 1997 and now FAREI. He holds an MSc Crop Science with specialization in Plant Biotechnology.



**Mr Avinash Meeto, Senior Adviser,
Ministry of Technology, Communication and
Innovation**

Avinash Meeto is the Senior Adviser of the Minister of Technology, Communication and Innovation (TCI) since June 2017. In line with Vision 2030 of the Government, he proposes innovative ways to transform Mauritius into an inclusive high-income country by using the full potential of technology.

He has 20 years of experience in the IT Industry in Mauritius. He is also a Board Member of the National Computer Board. He is also a Red Hat Linux Certified Engineer and was a TEDx speaker in 2016. Avinash is an avid programmer, amateur photographer and musician.



PRESENTATION
BY
PUBLISHERS

ONLINE LIBRARY PRESENTATIONS



Exhibition by Online Libraries

SCIENTIFIC RESEARCH EVOLUTION, DIGITAL ERA

ROLE OF ANALYTICS, BUILDING THE FUTURE OF RESEARCH



Facilitator: Karen Metcalf, Regional Sales Director responsible for Reference Solutions portfolio in Emerging Markets, Elsevier

Karen Metcalf holds an honors degree in Business Administration from the University of Cape Town. Karen joined Elsevier in 2003, working in various roles in the organization.

She worked as the Regional Manager for Elsevier for Sub-Saharan Africa, working closely with governments and funding bodies in Africa to provide access to scholarly content and research management tools to academic and research institutions in Sub Saharan Africa, in South Africa she worked closely with the Department of Science and Technology, the National Research Foundation, academic and research institutions to advance the research agenda in South Africa.

WHY EBSCOHOST, NOT GOOGLE FOR RESEARCH



**Facilitator: Bronwyn Rassmann,
EBSCO Information Services**

Bronwyn Rassmann has been employed by EBSCO Information Services for the past 10 years and a couple months and is the Senior Regional Sales Manager focusing on academic and government markets in Southern Africa. Bronwyn has a BCom Honours Degree in Marketing Management from the University of Johannesburg. She also belongs to the Golden Key International Honours Society for Academic Achievement.

Bronwyn has spent the last 10 years actively engaging with the market in the Discovery realm and prioritizes content and the accessibility thereof. In her spare time Bronwyn enjoys mountain biking, snowboarding, reading and design.

THE SCHOLARLY WRITING AND PUBLISHING PROCESS (KEY FOCUS AREAS; THE PUBLISHING LANDSCAPE, PUBLICATION ETHICS, CHOOSING THE RIGHT JOURNALS AND AVOIDING PREDATORY PUBLISHING



Facilitator: Sibuz Zondi, Emerald

Sibuz has been in the academic publishing industry for more than 18 years. His first publishing job was with Heinemann Educational Publishers as an academic representative based in Johannesburg. In 2004, he joined Oxford University Press SA (OUPSA) as the regional manager in the higher education department.

He was based in OUPSA's Johannesburg office and his task was to grow commercial operations in the Southern Africa including Botswana and Lesotho. In 2010, Sibuz joined Emerald as a Business Manager for Sub-Saharan Africa. Currently, Sibuz serves as Emerald Publishing's Vice President for Africa and as the local South African Office Director. His role involves licensing negotiations, platform usage, access to content, research writing training, general business development, acquisitions, brand management and people management.



Exhibition by Online Libraries

DEMOCRATIZATION OF HIGHER EDUCATION & RESEARCH THROUGH INVESTMENT IN HIGH IMPACT DATA



Facilitator: Joy Owango, Clarivate Analytics

Joy Owango, focuses on building research capacity and creating collaborations with government and academic partners for Clarivate Analytics. She is passionate about helping researchers communicating their research.



ORAL PRESENTATIONS



ORAL PRESENTATIONS

LIST OF ORAL PRESENTATIONS

EDUCATION		
ABSTRACT No.	TITLE	AUTHOR
ABS0910162	Addressing the Education and Skills Mismatch in the Mauritian Economy	Assoc. Prof V. Tandrayen-Ragoobur
ABS6480147	An Analysis of the Factors Inhibiting Academic Integrity – Insights from Coursework-Based Assessments at Middlesex University Mauritius Business School	Mr N. Boodeo
ABS0460186	An Appreciation of Preferred Learning Style for HRM Students at the Université Des Mascareignes	Dr N. K Betchoo
ABS5860220	Analyzing Factors Influencing Mathematics Performance at Form III Level in Mauritius	Dr K. S Angateeah
ABS5070065	Assessing Perception and Satisfaction Level of Cardiac Surgery Patients Towards Quality of Healthcare Services	Dr A. Luximon-Ramma
ABS7400073	Assessment of E-Health Adoption at the Cardiac Centre of Pamplemousses Using the Diffusion of Innovation Theory Framework.	Dr M. Putteeraj
ABS2070031	Can Open and Distance Learning Encourage More Women to Acquire Higher Education? A Case Study at OU	Ms T. Jutton
ABS9020157	Changing the Face of Legal Education in Mauritius: Moving from a Knowledge-Based to a Skills-Focused Curriculum	Ms K. A. Appadoo
ABS7080037	Community Learning and Engagement in Higher Education: the Clen Experience at the University of Technology Mauritius.	Mrs A. Boolaky
ABS1090213	Dealing with Feelings: Emotional Labor and Exhaustion among Secondary School Educators.	Mr S. S Beedassy
ABS9780054	Design and Technology Educators' Assessment for Learning Practices: Observations and Artefacts in Three Classrooms	Dr C. Boodhoo
ABS4260211	Diary Writing: Becoming a Reflective Practitioner Through Daily Writing	Mrs S. Rajiah
ABS5410097	Difficulties Encountered by a Level Biology Students in Inquiry Learning Assessment Tasks. A Theoretical Analysis.	Mr M. S. Cassam atchia
ABS7620201	Digital Technology and the Culture of Teaching and Learning in Higher Education: The Case of Mauritius	Ms B. N. Neehar Maherally
ABS3560177	Educators' Perceptions of the Use of ICT for Teaching and Learning in the Higher Education Sector in Mauritius	Ms A. Hingun



EDUCATION		
ABSTRACT No.	TITLE	AUTHOR
ABS1390041	E-Learning, Plateformes d'enseignement et Développement Des Compétences Transversales: Réflexion sur les Expérimentations de 2011-2017 à L'université Des Mascareignes	Dr K. Moortee-Saurty
ABS2780019	Ensuring Relevance of Higher Education Through Evaluation of the Employers Needs and Graduates' Satisfaction	Dr F. Khodabocus
ABS5260039	Evaluation of Parents' Perception of Oral Care and its Impact on the Oral Health of their Children	Dr J. Somanah-Bhugowandeen
ABS6200104	Exploring the Memoryscape of Primary Trainee Teachers' in Constructing School Context during School Placement.	Ms M.C Thondee
ABS0310012	Flipped Classroom Teaching in Higher Education: An Assumption or an Inevitable Tool	Mrs D. Seedoyal-Seereekissoon
ABS0610109	Future-Oriented Higher Education Pathway - Listening to Students' Voices	Mrs B. S Beebeejaun-Roojee
ABS9280107	Genuinely Caring for our Students-Consumers! Understanding the Impact of Higher Education Quality on Students' Well-Being	Dr V. Teeroovengadum
ABS2580084	Implementing Changes in Teaching and Learning, Focusing on Mathematics and Statistics Support to Non-Specialist Students.	Mr B. K. A Hoolash
ABS0680095	Innovative Approaches to Learning Management System Design to Support Non-Traditional Online Learners	Prof L. Pelliccione
ABS4130036	Insights into Campus Based Experiences of Pre-Service Primary Trainee Educators	Ms P. Auckloo
ABS8960029	Investigating the Application of the ISO 9001 2015 Standard in Post-Secondary Education Institutions in Mauritius.	Mr P. Dussaya
ABS9510226	Investigating the Effectiveness of Jigsaw Approach in Textile Craft -An Experience with Holistic Trainee Educators	Mrs A. Engutsamy-Borthosow
ABS7610215	Investigating the Impact of Spiral Teaching on Students' Understanding in Mathematics	Mrs H. Madarboccus
ABS3870219	Let's Play! The Game is on to Make Poetry Fun and Accessible at Lower Secondary Level.	Mrs M. Jawaheer
ABS2930206	Meditation as a Trajectory Towards Developing Empathy: A Case-Study of an Induction Session for Pre-Service Undergraduate Trainee-Teachers in Mauritius	Mrs H. Hookoomsing
ABS3890205	My Child has Special Educational Needs. What Comes Next?	Ms S. Rajiah

EDUCATION		
ABSTRACT No.	TITLE	AUHTOR
ABS9740212	Realities of Positive Atmosphere in Preschools: Views of New Private Preschool Teachers in Mauritius	Ms S. Rajiah
ABS7680108	Roadblocks Faced by Students and their Implications for the Future of Higher Education Institutions	Mrs N. C Congo-Pottaren
ABS1230224	Teaching of Hindi for Trainee Hindi Educators: Challenges in Teaching Strategies in the Context of Mauritius.	Dr K. Goodary
ABS4510021	Teenage Boys' Engagement and Disengagement with Reading for Pleasure	Ms S.B Illahibaccus-Sona
ABS3010207	The Regulation of Social Media by Publicly-Funded Tertiary Education Institutions in Mauritius	Mr J. Beesoon
ABS8320048	Understanding the Role of Support Teachers in the Mauritian Education System – A Case Study	Mrs S. Thapermall-Ramasawmy
ABS4700006	University of Mauritius – Contributing to the Making of Mauritius a Model of SD as a Sids Through Education	Prof R. P Gunpath

BUSINESS LAW AND MANAGEMENT		
ABSTRACT No.	TITLE	AUTHOR
ABS2790003	A Content Analysis of Outcomes of Corruption Cases in the Public Sector from 2002 to 2018	Mr S. Peerthum
ABS3610123	A Financial Education E-Platform for Improved Financial Literacy of Mauritian Small and Medium Enterprises Towards Leveraging Future Growth	Dr D. Mauree-Narrainen
ABS5270032	An Articulated Analysis of Taxation and FDI Attraction in Mauritius	Mr Y. Boodhun
ABS1270002	An Assessment of the Transfer Pricing Legal Framework in Mauritius	Ms A. Beebeejaun
ABS4150011	An Information Retrieval System for the Mauritian Judiciary	Mr S. Pudaruth
ABS7890024	Analysing Conversations on Facebook Pages of Fast Food Outlets in Mauritius	Dr S. Peeroo
ABS8240198	Assessing Green Consumption Behaviour: Applying and Extending the Theory of Planned Behaviour	Ms D. Kodye

BUSINESS LAW AND MANAGEMENT		
ABSTRACT No.	TITLE	AUTHOR
ABS5630141	Assessing the Financial Performance of Listed Companies in Mauritius	Mrs K. Odit-Dookhan
ABS5170102	Assessing the Use of Marketing Tools in Political Campaigns: The Case of Mauritius	Mr M. Pompeia
ABS4760045	Bringing Organisation Value Through CRM 2.0	Mrs N. Bheekharry
ABS6540140	Customer Adoption Behaviour Towards Mobile Banking in Mauritius	Mrs K. Odit-Dookhan
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ABS2160158	Does Immigration Affect Residential Real Estate Prices: Evidence from Australia	Mrs N. Gopy-Ramdhany
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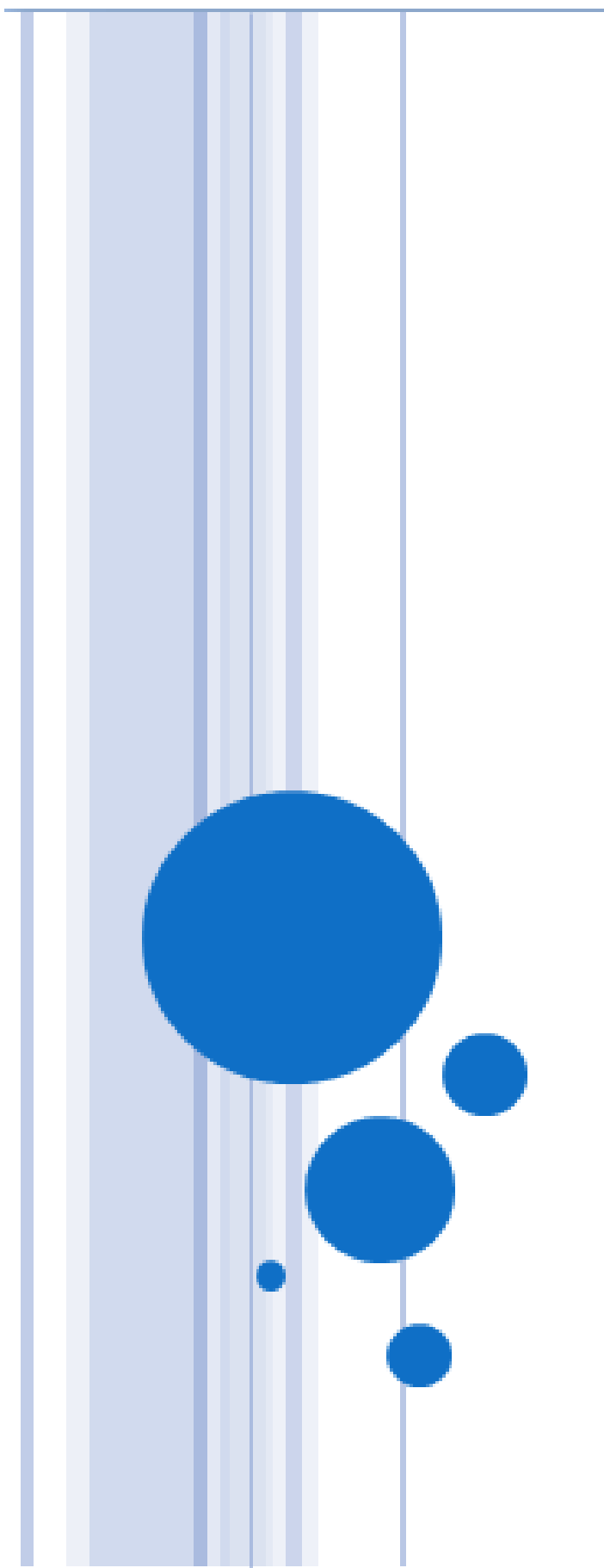
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EDUCATION

ABSTRACTS

Ref: ABS0910162

ADDRESSING THE EDUCATION AND SKILLS MISMATCH IN THE MAURITIAN ECONOMY

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Matching skills and jobs has become a high-priority policy concern for many countries (World Economic Forum, 2014). Skills mismatches arise when workers have either fewer or more skills than the jobs require. High and continued skills mismatch is costly for employers, workers and society at large. For individuals, in particular, over-skilling or over-qualification means lower returns on investment in education, lower wages and poor job satisfaction. For firms, it may reduce productivity and increase the labour turnover rate. At the macroeconomic level, this contributes to structural unemployment and reduces GDP growth through workforce underutilisation and a reduction in productivity.

Mauritius, being a small island economy having only its human capital as main resource has to use this resource efficiently to move to a high income status. Addressing issues of unemployment, especially as regards women and the youth, skills mismatch, underemployment, lack of skills or skills gaps, overdependence on foreign workers, amongst others, are of utmost importance in ensuring that a sufficient number of skilled workers and an appropriate local workforce with the right mix of skills are available to meet the

demand and needs of the labour market. Mauritius is presently characterised by a persistent degree of skills mismatch and as such high unemployment rate.

To the best of our knowledge, no study has addressed the degree and problem of education and skills mismatch in Mauritius over the years and the effectiveness of the different programmes put forward to tackle the question. The specific objectives of the study are to measure the degree of education and skills mismatch across gender, age, education, occupation, region and sectors of activity. We analyse the labour supply side by using individual/household level data from the Continuous Multi-Purpose Household Surveys (CMPHS) for the last five years starting 2013 to 2017. Second, we investigate the demand side of the labour market through interviews with key informants. The purpose is to find out the current patterns of skills in the major economic sectors and assess the current and future skills needs of both public and private organisations.

Two methods of estimating skills mismatch are used. The Realized Match method (Verdugo and Verdugo, 1989), is applied to measure education-job mismatch by two variables; years of schooling and occupational group of a job holder. The second approach (Cohn and Khan, 1995 and Kiker et al., 1997) is adopted whereby the mode of level of schooling as a substitute of mean, and standard deviation are applied. Workers who are above the mode value are recognised as over-educated while those below the mode value are under-educated.



This study is relevant to both the institution and the economy. From an institutional perspective, we will be better able to know the education and skills mismatch in the current labour market. The institution will also have greater knowledge on the demand of the labour market in relation to its current and future skills needs. Programmes could therefore be designed accordingly to meet these skills specificities required by both the private and public sectors.

Keywords

Skills Mismatch, Unemployment, Labour Market, Mauritius

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Ref: ABS6480147

**AN ANALYSIS OF THE FACTORS
INHIBITING ACADEMIC INTEGRITY
- INSIGHTS FROM COURSEWORK-
BASED ASSESSMENTS AT
MIDDLESEX UNIVERSITY
MAURITIUS BUSINESS SCHOOL**

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A major issue preoccupying the higher education sector worldwide is the

“unethical” behaviour by students.. Advertently or inadvertently many students succumb to this practice which may sometimes result in a daunting experience. According to Brannan *et al.* (1991), academic dishonesty can include, but is not limited to; cheating in examinations and coursework assessment, plagiarism, outsourcing assignment materials and academic fraud (falsifying academic documents).

For the purpose of this research, academic dishonesty will be confined to plagiarism and outsourcing of assignment materials, specifically essays and reports. This study aims at deciphering the factors which inhibit academic integrity in these two situations. In particular, data from the Middlesex University Mauritius Business School for both undergraduate and postgraduate levels have been used in this study. Through multiple regression analysis, the significance of different factors which lead to plagiarism and assignment outsourcing are analysed and their prevalence in the context of coursework based assessments are assessed.

The results show that such factors like; similar essay titles, fear associated with failure, the need for better grades, lack of planning and the lack of feedback on previous work are all significant factors resulting in plagiarism and hence academic dishonesty. Moreover, there is a higher dependency on assignment outsourcing due to the ease of outsourcing the work, Turn-it-in-proof designs, clustering of submission times, and lack of clarity on the marking criteria. Finally, this research proposes recommendations about how to deal with such factors and concludes that 'feed-forward' and learning analytics can be important tools in fostering academic integrity among students at the Middlesex

University Mauritius Business School and directs future research in these areas.

Keywords

Academic integrity, academic dishonesty, assignment outsourcing

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Ref: ABS0460186

**AN APPRECIATION OF PREFERRED
LEARNING STYLE FOR HRM
STUDENTS AT THE UNIVERSITÉ DES
MASCAREIGNES**

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Student learning typically falls into three categories namely visual, auditory and kinesthetic learning styles according to the VARK leaning style theory developed by Fleming and popularly branded as the VARK model. This model recognises that students have different approaches to learning and they process information in the form of preferred learning modes. The learning style model was adapted to the Mauritian reality in a teaching and learning situation at the Université des Mascareignes (UDM) with the objective of finding out which learning style was the preferred mode of the student and how it encouraged learners

to be more effective either in their learning ability or performance in examinations. A sample of 50 students was chosen from a student population of 400 on campus at the university in the department of Business and Management focusing on human resource management (HRM). Taking into consideration that HRM courses are essentially taught ones with emphasis on oral performance of the lecturer with a combination of reading and writing ability regarding dissertations or essays, the auditory and the reading and writing variables were isolated and examined from the VARK model.

The research findings provided the following information. Firstly student's preferred learning mode namely auditory/reading and writing prompted their learning behaviour into effective learning. Secondly, the students' preferred learning mode could be best matched with the learning strategy developed by HRM lecturers namely lecturing, reading and note taking techniques developed both concretely and incipiently. A third hypothesis confirmed that students' use of auditory/reading and writing as their modality preference showed an increase in their level of comprehension and motivation in learning. This study purported that HR courses developed at the UDM were taught modules emphasising effort in lecture delivery, oral presentation and the use of reading and writing as evidenced both in the course content and learning requirements. The findings supported the existing teaching strategy while stating that improvements should be made in the auditory/reading and writing with some opening in the visual area where mind mapping and graphics might also enhance teaching and learning. The accurate understanding of the teaching methodology with the selected learning style at the UdM could be a suitable learning

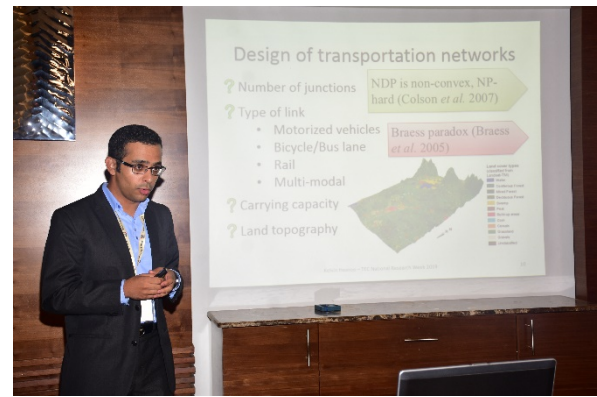
reinforcement in such a traditional, classical but ever changing field as HRM.

Keywords

Student learning, teaching, learning preferences. VARK model, adaptation, HRM, university

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Oral presentation by participant

Ref: ABS5860220

ANALYZING FACTORS INFLUENCING MATHEMATICS PERFORMANCE AT FORM III LEVEL IN MAURITIUS

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The aim of this study is to analyse factors influencing mathematics performance of Form III Mauritian students in private secondary schools. Students of both genders constitute the sample population of the study with a total of 474 students (male = 218 and female = 256) among 12 selected private schools. A quantitative approach (questionnaire) is used to obtain information concerning factors influencing performance in mathematics from students' point of view. Exploratory factor analysis and confirmatory factor analysis is performed on data in SPSS IBM 20 software to inspect the validity and reliability of instrument and data. Structural equation modelling in LISREL 9.2 computer program is used to study the effects of the factors being examined on mathematics performance. The results determine that attitude and motivation have positive direct effects on mathematics' achievement.

Technology and peer influence have no significant direct effect on mathematics achievement. Peer influence has a positive indirect effect on mathematics achievement mediated by motivation while technology has two negative indirect effects on mathematics performance mediated by motivation and attitude respectively. Motivation also influences achievement through attitude. It has a positive influence on students' attitudes towards maths. Similarly, peer influence affects motivation positively.

Keywords

Mathematics performance, secondary school, factor analysis, structural equation model.

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Ref: ABS5070065

ASSESSING PERCEPTION AND SATISFACTION LEVEL OF CARDIAC SURGERY PATIENTS TOWARDS QUALITY OF HEALTHCARE SERVICES

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In the healthcare sector, the concept of patient care has become a very significant issue in ensuring effective health care provision. Quality care has become a key component and increasing importance in health care delivery system and it has been observed that in recent years, the importance of patient satisfaction has increased particularly with media and technology. The aim of this study is to assess the perception and satisfaction level of cardiac surgery patients towards quality of health care service and to integrate the findings to improve cardiac services in Mauritius. The study has mainly a descriptive and mixed methods design using a convenience sampling of 275 participants from patients who have been operated for cardiac surgery at the Cardiac Trust Fund for Specialised Medical Care, Pamplemousses centre. Questionnaire design is based mainly on SERVQUAL framework and the rest based on literature. Correlation and inferential analysis statistic was used to investigate relationships and differences in variables

including demographic variables, quality dimension and patient satisfaction. Among the five service quality dimensions, the 'Empathy' dimension appeared to be the most important and significant dimension to produce a sense of satisfaction. The implication of the overall results is that 'Empathy' represents the core factor for satisfaction at the Cardiac centre. The research also shows that there is a strong positive correlation between satisfaction level of services and quality of health service. There is a significant difference in perception and satisfaction level among the respondents based on age (p -value = 0.941) and education level (p value = 0.000) which is less than 5 %, gender has no significant difference in perception to service quality dimension (p - value = 0.590). The Quality service dimension, which has a direct impact on patient satisfaction, remains empathy. The study evaluated the quality of health services from the investigated patients' expectations and perceptions toward the service quality of the health sector, while providers' attitudes were not undertaken. To get a complete and accurate vision of health services at the cardiac centre, further empirical researches are needed to cover both patients and health care providers. In addition, research on the factors influencing quality of health service and patient satisfaction can be done in the future.

Keywords

Quality health care, satisfaction, cardiac centre, surgery patients, servqual model

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Ref: ABS7400073

**ASSESSMENT OF E-HEALTH
ADOPTION AT THE CARDIAC
CENTRE OF PAMPLEMOUSSES
USING THE DIFFUSION OF
INNOVATION THEORY
FRAMEWORK.**

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Innovation has been called the lifeblood of an organization and usage of various transformative e-Health innovations are progressing comprehensively, but at an exceptionally respectable constant rate globally. In Mauritius, however, despite the potentials of e-Health solutions and a large number of promising projects, E-Health adoption is still a slow and a complex issue. This study was designed to assess e-Health adoption using the Diffusion of Innovation theory which probes into innovation adoption through 5 major attributes while also testing and understanding the relationships among the different attributes of e-Health. The proposed model was

empirically tested against data gathered from 107 respondents, specifically health care professionals from the different departments of the cardiac centre, sample which catered for 95% of the population. A pre-tested questionnaire consisting of dichotomous and multiple-response scales was administered after being cleared by the administration for data collection, responses to sets of statements measured on the five-point Likert scale were analyzed using weighted means and inferential support was sought by means of correlation, multiple linear regression, and cross-sectional analyses. The findings showed that all the perceived attributes, i.e. relative advantage, compatibility, complexity, triability, and observability displayed a significant relationship with e-Health adoption decisions, however, the complexity dimension exhibited a highly significant impact on e-health adoption decisions. A regression analysis to determine predictability of the different dimensions on adoption was positively drawn ($F(5, 101) = 17.067, p < 0.001$), with 41% of the variation in adoption of e-Health accounted by the 5 dimensions, $p < 0.01$. Furthermore, a gender-based difference was noted in the adoption of e-Health with that female nurses being more reluctant ($t = -1.779, p = 0.075$). The present study suggests that Rogers' innovation adoption theory can be successfully superimposed to examine the e-Health adoption decisions. Findings highlighted the major factors that influence of e-Health adoption decisions as well as an outlook on the adopters' profile existing within the medical institution. The study results could efficiently influence decision makers via an understanding of the facilitating forces and inhibiting factors to proactively introduce interventions for the adoption success of e-Health.



Ref: ABS2070031

**CAN OPEN AND DISTANCE
LEARNING ENCOURAGE MORE
WOMEN TO ACQUIRE HIGHER
EDUCATION? A CASE STUDY AT OU**

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It is a fact that women and girls make up half of the world's population. While there are growing efforts geared towards promoting gender equality as per the Sustainable Development Goal 5, there are still existing loopholes preventing its proper materialisation.

This research aims at assessing whether open and distance learning is conducive to encourage more girls and women to acquire higher education. With the emphasis on 'SDG 5', institutions and universities offering courses in fields traditionally perceived to be male-dominated, such as science, technology, environmental and informative technology, mathematics and management training leave no stone unturned when promoting their programmes to males and females alike and there are no entry barriers or any other factor which can inhibit females from joining such programmes. On the other hand, the female learners are assured of full support by the institutions. Moreover, at the level of Open University of Mauritius, all educational materials developed and in use currently are non-discriminatory.

The objectives of this research are:

- To explore the existing female to male enrolment ratio at the Open University of Mauritius;

- To determine factors which influence girls' choice to embark on learning at OU;
- To assess if learning in the ODL environment is gender-biased
- To come up with recommendations and measures to encourage more girls to acquire quality education in line with SDG 4 & SDG 5

A sample of 200 learners at postgraduate level- namely from the 'MBA programmes' was chosen for the study from an overall population of 600 students. A stratified sampling technique has been used for greater representativeness based on gender and cohort. A structured questionnaire will be administered to the learners.

Exploratory factor analysis will be conducted as well as confirmatory factor analysis. Possible causal relationships will also be analysed.

Keywords

Open and Distance Learning Higher Education

Ref: ABS9020157

**CHANGING THE FACE OF LEGAL
EDUCATION IN MAURITIUS:
MOVING FROM A KNOWLEDGE-
BASED TO A SKILLS-FOCUSED
CURRICULUM**

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This research is based on the premise that the Mauritian legal educational system is failing to empower our next generation of lawyers about the potential transformative reach of law. This research will show that the curriculum of most law schools in Mauritius

focuses on knowledge of substantive and procedural aspects of the law, while giving less importance to the application of legal skills. The Mauritian legal education system has tended to concentrate on "what lawyers need to know" instead of "what lawyers need to do". It will be argued that curriculum planning must take into account the academic, the experiential, the technical and the pragmatic aspects of the subject matter. However, it is the sad reality in many Mauritian law schools that the legal curriculum over-emphasizes legal knowledge at the expense of the institutional, investigative and interpersonal capacities that good lawyering requires. To keep up with the intellectual versatility required of legal professionals, it is believed that the legal curriculum should be designed in such a way as to take into consideration lawyers' role as "problem solvers, legislative drafters, institutional designers, transaction cost engineers, facilitators and mediators." It will be proposed that the legal curriculum in law schools in Mauritius needs to include not only legal knowledge, but also legal skills such as legal advocacy, negotiation and interpersonal skills, and drafting and research skills. The methodology used for this research will be a comparative analysis, borrowing from experience gained from robust and successful legal education systems such as that of the US and the UK, to propose the development of a holistic curriculum which would include modules such as advocacy, representation of clients, criminal and civil trial practice, drafting, legal research, transactional drafting, communication and soft skills as well as moot court programs. The main outcomes of this research will be to improve the existing curriculum across Mauritian law schools by including a set of skills-based courses to equip the aspiring lawyer with the practical

grounding that he/she would need to be a successful and competent legal professional, may it be in the court room, as a legal adviser working for a corporation, as a pro-bono lawyer, or as a mediator working to solve disputes in an amicable manner.

Keywords

Education, Curriculum Development Law

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Ref: ABS7080037

**COMMUNITY LEARNING AND
ENGAGEMENT IN HIGHER
EDUCATION: THE CLEN
EXPERIENCE AT THE UNIVERSITY
OF TECHNOLOGY MAURITIUS.**

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The two core Higher Education functions have traditionally centered around research and teaching. However, over the past decade, a third pillar associated with Community Engagement in Higher Education Institutions (HEIs) has emerged and is defined as the "sustainable networks, partnerships and

activities between HEIs and communities at local, national, regional, and international levels" (Jacob et al. 2015). Community Engagement, mainly arises through education, outreach, and service-learning bridging the symbiotic relationships existing between communities and HEIs (Goddard & Jaana 2008). University-Community engagement should not be limited to philanthropic activities only but it should constitute a new paradigm integrated in the institutional mission of HEIs (Laing 2016).

Community Learning and Engagement (CLEn) is an innovative credit based mandatory component, introduced in the School of Business Management and Finance undergraduate programmes at the University of Technology, Mauritius (UTM) since 2015. The CLEn initiative "strives in integrating community learning and social responsibility as a cornerstone of undergraduate education. It is an off campus, field based initiative which promotes civic engagement contributing to the intellectual, personal, and professional development of students"(CLEn 2015). As at date, more than 1000 students have successfully completed the initiative in more than 80 Non-Government Organisations (NGOs).

The objective of this study is to assess the current CLEn initiative from the perspectives of the two direct beneficiaries (Students and NGOs) and to obtain insights for expanding the scope of community engagement in Mauritius and beyond. The methodology adopted both qualitative and quantitative approaches with survey and interviews conducted with students. Another survey was administered to representatives of the NGOs which have enrolled students under CLEn.

The study showed that 89.4% of the students participated in the social activities while 41.7% were involved in the administrative duties of the NGOs. Furthermore, 47.8% of the students assisted in the education of the vulnerable group associated with poverty, drug abuse, basic writing and reading skills. The CLEn initiative is helping in achieving the sustainable development goal of providing education to the poor and illiterate (United Nations, n.d). The study uncovered the different benefits of CLEn to students in terms of increasing their awareness to societal problems, improving their communication, people and employability skills, enabling them to better understand the functioning of NGOs and prospecting possible careers in the civic sector.

Due to budgetary constraint, 60% of the NGOs surveyed rely extensively on volunteers. Students enrolled under CLEn, therefore represent an important pool of young volunteers who can sustain operations of the NGOs. The research findings gave support to the fact that CLEn initiative should be extended to other HEIs as a stepping stone in boosting the civic sector and developing social enterprises in Mauritius.

This study has assessed the first experience of programme based community engagement at the UTM and has uncovered the benefits to the civil society and students. It has also provided insights for paving the way to the development of Community Learning and Engagement as the third core function of a HEI.

Keywords

JEL classification: I23, J24, L31

Community Engagement, Higher Education, employability skills

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Ref: ABS1090213

**DEALING WITH FEELINGS:
EMOTIONAL LABOR AND
EXHAUSTION AMONG SECONDARY
SCHOOL EDUCATORS**

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Currently, in Mauritius, improving the quality of teachers' emotional labor has become an urgent need for most secondary school educators because the new curriculum reform highlights the role of emotion in teaching. In real-world classroom settings, Educators regulate their emotions on a daily basis contributing to a persistent disconnect

between the emotions teachers actually experience and those they choose to express. Accordingly, educators routinely hide or fake discrete positive and negative emotions in the classroom, with this "emotional labour" being associated with not only lower teacher motivation and poorer physical health, but also higher rates of burnout and attrition. Education researchers have investigated the phenomenon of emotional labor of teaching. These researchers tend to assume that teaching is similar to other occupations in service section that require employees to manage their emotions and emotional display for profile making. Therefore, teachers should perform emotional labor. Theoretically, performing emotional labor will generate emotional dissonance. In this sense, if teaching involves emotional labor, teaching should be per se unpleasant, frustrating, and even alienating. However, many studies found that emotional labor of teaching would bring desirable outcomes to teachers, such as: increase in job satisfaction, commitment, self-esteem, and work effectiveness. This research paper forms part of my PHD thesis. Though it is still ongoing, the reflection on the literatures around the topic has brought several key ideas. Within its methodology, a mixed method was used from a pragmatic researcher perspective and till now a correlation has been found between teacher exhaustion and emotional labor.

Keywords

Emotional labor, burnout, teacher exhaustion, emotional display, emotional dissonance

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REF: ABS9780054

**DESIGN AND TECHNOLOGY
EDUCATORS' ASSESSMENT FOR
LEARNING PRACTICES:
OBSERVATIONS AND ARTEFACTS IN
THREE CLASSROOMS**

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The existing literature on 'assessment for learning' emphasises that it is the educator's responsibility to assist learners to take the next steps in their learning (Gardner, 2011). Assessment guidelines indicate that both educators and learners should act upon the insights provided into students'

understanding. Despite increasing research interest in educational assessment, educators' 'assessment for learning' conceptions and habits are under-researched. Little is known about educators' 'assessment for learning' practices, predominantly in the Design and Technology community, in the Mauritian context.

This research aimed to address specific assessment concerns by looking at the 'assessment for learning' practices of Design and Technology educators. The main research question for this study was--How are the 'assessment for learning' practices of the Design and Technology educators' community in Mauritius framed? A mixed-methods research (Leech & Onwuegbuzie, 2007) was conducted to understand the complexity of Design and Technology educators' 'assessment for learning' approaches. An ethnographic methodology (Fetterman, 2010) was adopted to investigate educators' 'assessment for learning' practices in their natural settings.

This presentation focuses on the findings generated through multiple data sources gained from observing three educators. The findings revealed that the educators adopted several characteristics of 'assessment for learning' in their classrooms, while they neglected many vital features. This study provides insights into teaching, assessment and policy formations in Mauritius, and have broader implications for other educational settings in the global community.

Keywords

Assessment for learning, Design and Technology, mixed-methods research, assessment literacy

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REF: ABS4260211

**DIARY WRITING: BECOMING A
REFLECTIVE PRACTITIONER
THROUGH DAILY WRITING**

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While reflective writing is common amongst teachers around the world, the practice seems to be very rare in Mauritius. The idea behind this study is to find out how keeping a daily journal in Mauritius help preschool teachers in their professional practice. Through the use of a reflective journal preschool teachers will therefore have the opportunity to assess areas such as "managing the classroom, designing instruction, establishing assessment strategies and interacting with students, colleagues and parents" (Jones, 2014). During teacher training, preschool teachers are required to keep a daily journal record and are taught the benefits and purpose behind the latter. Unfortunately, the daily journal seems to not find its place anywhere in the preschool although it is an important tool both for the teachers and the children's monitoring of progress.

This study has been conducted using a qualitative research design and an interpretivist paradigm. Interviews have been conducted after a focus-group discussion. Using the case-study methodology,

participants took part in a focus-group discussion in order to know what they think about keeping a daily journal. The same participants were requested to keep a daily journal for a period of one week, after which there was an interview to know how each participant felt about keeping the daily journal for that particular period of time. They were then asked to continue keeping the daily journal for a month and a focused group discussion was carried out again. 6 teachers from public preschools and 6 teachers from private preschools took part in the study. Gibbs' reflective cycle has been used to direct this study (Dye, 2011, p.230).

The findings of this study reveal that despite having learnt about diary or daily journal during their Teacher's Certificate in Early Childhood Education course at the Mauritius Institute of Education, preschool teachers refrain from using one as it is not compulsory. However, the participants have become fully aware of the benefits of keeping a daily journal during this study. Although initially the participants discussed mainly the problems they would encounter in keeping a diary, by the end of the study they all mentioned that they can benefit a lot from this practice. Furthermore, it can be seen that their attitude towards classroom management, teaching and learning approaches and strategies as well as recording observations have changed considerably through the use of diary writing. The participants have also been able to find ways of organising themselves to find time to write their diary, which has also helped them in identifying their own strengths and weaknesses not only as a teacher, but in their day to day lives. Hence, in the future, the professional development of preschool teachers with respect to the use of diary writing or daily journal have to be

looked into by the Mauritius Institute of Education. There is a need to equip them with the advantages of writing their own diary or daily journal and how they can become reflective practitioners. This can be done through interactive workshops.

Keywords

Daily journal, professional practice reflective practitioners

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Ref: ABS5410097

DIFFICULTIES ENCOUNTERED BY A LEVEL BIOLOGY STUDENTS IN INQUIRY LEARNING ASSESSMENT TASKS. A THEORETICAL ANALYSIS.

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The number of students opting for science subjects, including biology, at the level of Grade 10 and Grade 12 in Mauritius has been decreasing alarmingly over the past decades. This indicates a decline in students' interest towards science in such an era where scientific literacy is considered fundamental to face the global and local challenges in our society. Closer analysis of data revealed that the decline is more acute in Biology. Several reasons have been formulated to explain this declining interest towards A level Biology:

bulky syllabus, low scoring subject, outdated teaching strategies used at classroom level, limited and/or absence of practical and other hands-on activities, lack of opportunities for developing science process skills, including inquiry skills and limited scope of work in the field. However, the perception of students on Biology as a low scoring subject remains one of the key factors for the decline in the number of students opting for Biology at A level. Indeed, percentage pass in A level Biology is around 50% on average compared to 70% in Chemistry and 80% in Physics. Data was produced by document analysis and focus group discussion with educators and students of Biology.

The findings revealed that one of the main reasons for the low performance of students is that 60 % of the A level Biology qualification is allocated to CIE Assessment Objectives AO2 and AO3, which are 'Handling information and Problem Solving' and "Experimental skills and Investigations" respectively and these are assessed mainly in paper three and paper five. However, paper five remains a major challenge for students and educators. Most students lack inquiry skills, a requisite to successfully reach AO2 and AO3. Instead of involving students in "practical hands-on" activities required to tackle Paper five, educators use an "alternative-to-practical" approach, an inappropriate method of teaching for preparing students for AO2 and AO3.

This paper will in the first instant present the situation in Biology education at A level with regard to enrolment and performance. It will also document the reasons for the low performance of students in Biology at A level by exploring the complexity of paper 5 in relation to the assessment criteria as documented in the CIE reports. Students' and educators' perceptions through their own

voices on the challenges they faced will be analysed drawing on the relevant theoretical framework.

Keywords: A level Biology; CIE Assessment objectives; inquiry skills, performance; theoretical framework.

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Ref: ABS7620201

DIGITAL TECHNOLOGY AND THE CULTURE OF TEACHING AND LEARNING IN HIGHER EDUCATION: THE CASE OF MAURITIUS

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Digital Technology and the culture of teaching and learning in Higher education are constantly advancing. Understanding the impact of digital technology on the culture of teaching and learning is crucial for higher education institutions in Mauritius. Previous research studies have tended to focus on either digital technology and teaching (Hendel-Giller et al, 2011) (Kirkwood, 2014) or digital technology and learning (Scheiter and Gerjets, 2011) thereby overlooking the relationship between digital technology and the culture of teaching and learning in higher education. This research study attempts to plug the gap by providing a critical discussion of the Mauritian scenario.

The main objectives of this paper are as follows:

- i. To investigate how academics currently use digital technologies to teach students
- ii. To investigate how students currently use digital technologies in the classroom to learn.
- iii. To discuss the impact of digital technology on the culture of teaching and learning in Higher education in Mauritius.

This study has adopted the qualitative research method. Participants were recruited using the snowball sampling technique.

Moreover, unstructured interviews were used to collect in-depth data from participants.

Overall, most academics expressed their positive regard towards the use of digital technologies for teaching in higher education. Most of them agreed that digital technologies provide a wide range of opportunities to students. They claimed that it has contributed to a more collaborative classroom environment. Nevertheless, it is interesting to note that few lecturers argued that the learning phase normally tends to be slower when students make use of digital technologies in the classroom. They claimed that students tend to get distracted and lose focus, thereby affecting their overall performance. Moreover, they assert that it is too time consuming for the benefits gained. This study contributes to knowledge by providing an in-depth discussion of the subject matter in the Mauritian context. Authorities may use the suggested strategies to enhance digitalised quality education in Mauritius. The way forward is to promote active learning and help academics to use digital technologies more effectively.

Keywords

Digital technology, culture, learning, teaching, Higher education, Mauritius

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Ref: ABS3560177

EDUCATORS' PERCEPTIONS OF THE USE OF ICT FOR TEACHING AND LEARNING IN THE HIGHER EDUCATION SECTOR IN MAURITIUS

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Institutions worldwide are now equipped with the latest technologies and policy makers, educators, and school leaders are advocating their inclusion into the education system as an efficient instructional tool and potentially initiating new opportunities for teaching and learning. The Mauritian government's vision of shifting the focus from an agrarian and tourist based economy to a 'cyber island' and the 'knowledge hub of the African region' has led to significant changes in the school curricula, in a bid, to integrate ICT as a subject. The proposed study aims to gain an insight on educators' use of ICT as a pedagogical tool for teaching and learning.

The research questions sought will measure teachers' technology usage including software as well as other instructional tools and materials, their perceptions of training and support needs, and factors influencing the uptake of ICT in classrooms and barriers that teachers face during technology utilization in the teaching-learning process. In addition, this study will examine another important concept related to the degree of integration of ICT in the sector, that is, teachers' perceptions of self-efficacy. Bandura (1997) explains self-efficacy as a critical influence within behavior that guides course of action, time, energy, and emotional investment one has in connection to a task. Downey and Zeltmann (2009) extended the idea of self-efficacy by defining technology self-efficacy as one's ability to judge their capability to use technology. A mixed method (exploratory sequential research designs) will be adopted for this study consisting of semi structured interviews to explore the perceptions of teachers of ICT, followed by a survey questionnaire to examine the factors that affect its effective integration in the class. This study will contribute to the field of education and add to the body of knowledge on educators' use of ICT as a pedagogical tool for teaching and learning. It will also help to understand the barriers to the implementation and integration of ICT in the higher education sector in Mauritius. The study will help to understand the relationship between ICT and teachers' preferences for professional development and how far this contributes to the notion of self-efficacy.

Keywords

Teaching and learning, ICT, quantitative, qualitative, survey, questionnaire, educators, perceptions, self-efficacy, technology

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Ref: ABS1390041

**E-LEARNING, PLATEFORMES
D'ENSEIGNEMENT ET
DÉVELOPPEMENT DES
COMPÉTENCES TRANSVERSALES:
RÉFLEXION SUR LES
EXPÉRIMENTATIONS DE 2011-2017 À
L'UNIVERSITÉ DES MASCAREIGNES**

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Le modèle d'éducation dominant demeure la reproduction d'un savoir « savant » où connaître et mémoriser prévalent sur construire et co-construire (Endrizzi, 2012). Cette recherche est pertinente parce qu'elle démontre que travailler de façon collaborative demeure toujours un acte difficilement à mettre en place. Il l'est d'autant plus dans un contexte soumis à la compétition où les leçons particulières, l'obtention des bons résultats, l'admission dans des écoles prisées, et décrocher une bourse d'étude sont des enjeux importants et ont des répercussions en aval. Il devient alors, à nous enseignants en particulier car il y va de notre identité professionnelle, de réfléchir sur le pouvoir des traditions et des

pratiques, à leurs influences sur notre mission en tant qu'éducateurs.

Cette recherche, qui prend appui sur plusieurs études auprès des responsables pédagogiques et enseignants-pédagogues, et également sur des expérimentations avec des étudiants sur des plateformes d'enseignement, se veut être un regard porté sur l'école de demain, vers un nouvel idéal éducatif, une école collaborative misant sur les Technologies de l'Information et de la Communication (Tic) pour une société du savoir. Elle démontre que même si comme de nombreux pays, l'île Maurice est prise dans un processus de mutation technologique, aspirée à devenir un 'knowledge Hub' dans la région de l'Océan Indien, fondé sur la société du Savoir où la qualité, l'efficacité, l'égalité des chances d'accès à l'éducation pour tous tout au long de la vie, implique que la logique de la FOAD ne peut être celle de la diffusion du savoir mais bien la logique de service au savoir (Rumajogee, 2000). Cette logique nous engage à répondre à la mission de l'école qui est également le développement cognitif de l'apprenant. Elle nous fait prendre conscience, en tant qu'enseignants, que l'innovation technologique n'est pas synonyme d'innovation pédagogique, que cette dernière est quelque chose d'autre, toujours imparfaite, jamais définitive. De ce fait, celui qui innove avec les Tic dans le développement des compétences transversales, à travers des scénarios pédagogiques, constamment remis en cause, est un acteur qui entre dans le débat social pour négocier dans un mouvement collectif d'innovation sur les évolutions de l'école.

Keywords

Ile Maurice, Société apprenante, Système éducatif, Pédagogie, Plateforme

d'Enseignement, Technologie de l'Information et de la Communication, Compétences transversales

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Ref: ABS2780019

**ENSURING RELEVANCE OF HIGHER
EDUCATION THROUGH
EVALUATION OF THE EMPLOYERS
NEEDS AND GRADUATES'
SATISFACTION**

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In view of ensuring quality of education for its students and to ensure that graduates are well-equipped with the necessary skills and prerequisites to meet employers' needs and expectations of the job market, a Graduates Satisfaction Survey (GSS) and an Employers' Needs Survey (ENS) are carried out every two years at the University of Mauritius (UoM). The surveys also help to keep track of Graduates and to evaluate the relevancy of programmes of the institution. The Employers' Needs Survey seeks employers' views on the performance of UoM graduates in the workplace. It targets a wide range of companies from small firms to large businesses which recruit UoM Graduates. Whereas, the UoM Graduates Satisfaction Survey evaluates the satisfaction of Graduates, with respect to their learning experience, their Programme of Studies, their

job hunting process and working status. Both surveys are extended to our Partner Institutions.

A 50% response was obtained for both the ENS and GSS surveys in 2017 and results revealed that students were mostly satisfied with their Programme of Studies and learning experience at the University. Three out of four graduates claimed to recommend their Programme of Studies to others. In terms of skills acquisition, most Graduates perceived the skills they developed as adequate while some recommended for more adaptable programmes with additional work placement, internships, assignments, research work and up-to-date contents (especially in the fast-changing fields such as Computer Science and Information Technology fields). Improvements were observed in the skills graduates possess, it seems that more effort is required from the part of the University to improve, refine and inculcate modern 21st Century key skills to graduates.

Among identified skills that were not adequate or sufficient in graduates were communication, ethics, critical thinking and business acumen attributes. As the labour market is evolving, there is a need for improved services and employers tend to become more demanding in terms of the quality and skills required by graduates whom they wish to employ.

Suggestions made by Graduates for improved employability include more job placement and internships to familiarise them with the working environment. Further, industries indicated their willingness to collaborate with the university to provide for more internships and training to graduates. A number of additional initiatives were proposed such as: establishing profiling of students to choose the right students for the right course; aligning courses and training programmes with the demand of the market, improving interpersonal skills through personality development programmes and inculcating work etiquette among graduates

for them to be more disciplined and have a greater sense of responsibility.

The University has thus made a huge step this year to provide an international dimension to its programmes and to encourage more student-oriented learning. UoM programmes are embarking on the Learner-Centred Credit System- ECTS based. It is expected that such endeavour will meet the modern requirements of the future job market and will encourage more mobility of UoM graduates both locally and internationally.

Keywords

Graduates Satisfaction, Employer's Needs, Surveys, University of Mauritius, skills, attributes

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Ref: ABS5260039

EVALUATION OF PARENTS' PERCEPTION OF ORAL CARE AND ITS IMPACT ON THE ORAL HEALTH OF THEIR CHILDREN

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Oral hygiene practices form part of our daily ritual, where parents play a vital role in maintaining their children's oral health. However, observations by the dental fraternity have noted high prevalence of oral diseases such as dental caries, mouth ulcers, halitosis and gingivitis amongst children, suggesting that many parents are themselves not aware of good oral hygiene practices. The focus of this study was to determine the attitudes, beliefs and level of oral health consciousness of Mauritian parents towards oral care, in attempt to analyze its impact on the oral hygiene status of their children.

A mixed methodology approach was used to collect data for analysis. A highly structured questionnaire was randomly distributed across 6 private dental clinics to 100 parents. Their respective children were examined by a dentist to determine their oral hygiene status using of the Simplified Oral Hygiene Index (Greene & Vermillion, 1964). The main findings of this study revealed that parents showed a positive perception of oral care however they did not use the recommended oral hygiene methods and

lacked knowledge on the proper dietary requirements for their children; moreover, majority of the parents (53%) did not take their children for regular check-ups at the dentist. Data obtained from a focus group which comprised of 6 professional dentists indicated that poor diet was the major causative agent for high prevalence of dental caries, acute dental pain and chronic infection affecting milk teeth.

Based on our findings a number of recommendations have been proposed, such as the development of more effective oral health campaigns to create awareness of the proper use of oral hygiene methods. Training of dental professionals to help support and encourage parents to visit dental clinics and also to educate Mauritian households to become more health conscious is also a necessity which should not be overlooked.

Keywords

Oral hygiene, oral diseases, parents, children, Simplified Oral Hygiene Index, perception, attitudes

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Ref: ABS6200104

**EXPLORING THE MEMORYSCAPE
OF PRIMARY TRAINEE TEACHERS'
IN CONSTRUCTING SCHOOL
CONTEXT DURING SCHOOL
PLACEMENT.**

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The present study considers memory as a constructive process which maps and explores how trainee teachers' construct primary school contexts while being on professional practice. Memory is essentially captured in the storying of personal histories while learning to teach. This study also explicate how memory captures the influence of perceived aspects of personal and singular experiences on own construction of educational theory and practice. Maps of walk trajectories, pictures, collages and artifacts are thus optimized as visual sources of data to trace the latter's' memoryscape, that is landscape imagined and interpreted using the trainee's memories. I chose a set of narratives of memory which exploit sites of recollection (classrooms, the school kitchens and school yards) and personal accounts on events among others. Conceptually I draw on an ecological model to situate the data while I use a critical interpretative approach as my analytical tool. Transect walk interviews and in-situ observation were used with five trainee teachers.

Keywords

Memoryscape, transect walk, visual methods, narratives, knowledge construction, primary school context.

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Ref: ABS0310012

FLIPPED CLASSROOM TEACHING IN HIGHER EDUCATION: AN ASSUMPTION OR AN INEVITABLE TOOL

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The traditional face-to-face lectures were effective decades ago in Higher Education. However, its efficacy is being questioned, nowadays, for the Generation Z and Millennials. The latter are technology-savvy and 'always connected.' It is becoming more and more challenging to retain students' attention using traditional lectures as they are 'known' to be multi-tasking. Often, when one would be delivering a lecture, one can notice students getting bored, or diverted by their smartphones. This paper addresses a potential way of increasing students' engagement in class by introducing Flipped classroom in Higher Education, particularly for the BA (Hons) Advertising, Public Relations and Media at the Middlesex University. Flipped classroom was chosen as recent studies (Gilboy et al, 2015; Pierce and Fox, 2002; Steen-Utheim and Foldness, 2018) had proved beneficial. A simple model of Action Research methodology (Dan, 1996), that consisted of planning, acting, observing and reflecting, was used. Video lectures were sent to students, for them to watch outside the classroom setting. During the actual face-to-face time, they were given practical exercises so that they had more hands-on experience. An observation of the practical session followed by a reflection on

the feedback from the student lead to some critical findings. Most of them enjoyed the flipped classroom as they were able to watch the videos 'several times' and they learnt 'innovatively'. Nevertheless, the major drawback was that there were some students who were not watching the video lectures at home. These led to future scope of research in the field. In this era, where Augmented and Virtual Reality or Internet of Things are generating interest, there is no doubt that flipped classroom is going to be an inevitable teaching tool to correspond the needs of the technology-savvy generation. However, there is still need for further research before its full implementation. Firstly, the actual role of the lecturer needs to be redefined as face-to-face lectures will not be conducted. Secondly, the issue of students not watching the online lecture materials prior to class needs to be tackled properly. A possible research area would be to test the implementation of flipped classroom in other areas such as Computer Science, Law or Business Management.

Keywords

Flipped Classroom, Student's engagement, Higher Education, Teaching and Learning

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Ref: ABS0610109

FUTURE-ORIENTED HIGHER EDUCATION PATHWAY -LISTENING TO STUDENTS' VOICES

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Higher education in Mauritius comprises of both public and private institutions. It is a very dynamic sector which has the mission of being the driver of innovation and of economic and social growth. There are several pathways and mechanisms to ensure relevancy, quality and currency in higher education. One of the fundamental canons of this mechanism is the quality of teaching and learning experiences offered by the higher education institutions. In order to ensure that quality education is being imparted to students, there is a need to review and assess current practices regularly. The purpose of this research is to support and reinforce student-centered reforms by giving voices to students who are at the receiving end of the system. The data that informed this report was drawn from three sessions of one-hour focus group interviews conducted with six pre-service trainees who had completed their B.Ed in December 2018. A purposive sampling design for the selection of the participants was conducted which met the following criteria: a willingness to share their experiences, forming part of the same

study and participants were from mixed ability groups (Creswell, 2002). The main themes of the focus group inquiry included: factors influencing decisions to join the institution, their experiences about the course content and course delivery. Data was analyzed using the content analysis procedures (Patton, 2002). The findings were both encouraging as well as a cause for concern. There were several loopholes which emerged namely inadequate space for sharing ideas and discussion, very heavy theory classes where the link made to workplace realities was superficial and courses were mostly content-driven. Nevertheless students were of view that the institution is the best place for teacher training. They pointed out that the institution provides a meeting place for people with the same motivation and where they could discuss about issues pertaining to the profession. In the light of the above it is imperative that the stakeholders should revisit current practices in order to bring changes and improvements which are student-centered specially if the institution wants to continue in its drive to enjoy the privilege of being the 'one-stop shop' for teacher training.

Keywords

Experiences, students' voices

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Ref: ABS9280107

GENUINELY CARING FOR OUR STUDENTS-CONSUMERS! UNDERSTANDING THE IMPACT OF HIGHER EDUCATION QUALITY ON STUDENTS' WELL-BEING

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The prevailing environmental dynamics in the higher education sector globally are such that quality assurance theories and concepts are now central to the development of higher education practices and policies (Hazelkorn, 2015). As highlighted by a recent UNESCO report, "while the quality of universities was unquestionable when they were serving a small elite, institutions in today's massified higher education systems are under tremendous pressure to change and adapt" (UNESCO, 2018, p.23). Consequently, the last three decades have witnessed extensive applications of quality management and marketing theories and concepts to studies in higher education (Bunce, Baird and Jones, 2017; Duque, 2014; Hladchenko, 2015; Nixon, Scullion and Hearn, 2018; Tomlinson, 2017; Woodall, Hiller and Resnick, 2014). In particular, much research has been done on the evaluation and prediction of service quality, student satisfaction and loyalty in higher education. Adhering to the idea of adopting a less consumerist approach to higher education and building on conceptual arguments both from the higher education (Dean and Gibbs, 2015; Elwick and Cannizzaro, 2017; Teeroovengadum et al, 2016) and service management (Anderson and Ostrom, 2015; Hurley, Trischler and Dietrich, 2018)

literature, we advocate that better understanding the link between the quality of higher education, students' satisfaction and subjective well-being will help to better understand the deeper and nobler importance of the need for continuous quality improvement. In light of the knowledge gap identified, we aim to contribute to the existing literature in the field of higher education quality by proposing and empirically testing a theoretical model linking higher education quality, student satisfaction and subjective well-being in the higher education context. We posit that the effects of higher education quality and satisfaction on well-being can be explained by the bottom-up spill over theory (Campbell, Converse and Rodgers, 1976; Diener, 1984), while the specific link between perceived higher education quality and satisfaction as studied previously, is grounded in the expectancy disconfirmation theory (Oliver, 1980) and the stimulus-organism-response theory (Mehrabian and Russell, 1974).

In view of testing the hypotheses set, a cross-sectional survey design is adopted in this study. We collected data from a sample of higher education students in Mauritius. The targeted population thus comprised of students enrolled in Mauritian Public Universities. We estimate the model and test the hypotheses between the latent variables using a variance-based approach to structural equation modelling, specifically partial least squares structural equation modelling (PLS-SEM). PLS-SEM is particularly appropriate when the focus of the research is on prediction (Evermann & Tate, 2016; Hair, Hult, Ringle, & Sarstedt, 2017) and when latent variables are measured using formative measurement models (Hair et al., 2017). We make use of the SmartPLS software (Ringle,

Wende, & Becker, 2015) which enables the use of both basic and advanced analysis using PLS-SEM (Hair, Sarstedt, Ringle, & Gudergan, 2018). Primarily the results demonstrate that about one fifth of university students' well-being is explained by the quality of their student life and their satisfaction with higher education services. In light of the findings appropriate policy recommendations are formulated.

Keywords

Higher education; Well-being; Quality; Student Satisfaction; spill-over theory

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**IMPLEMENTING CHANGES IN
TEACHING AND LEARNING,
FOCUSING ON MATHEMATICS AND
STATISTICS SUPPORT TO
NON-SPECIALIST STUDENTS**

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Faced with new and progressive challenges in the Higher Education system, Middlesex University Mauritius, a private British university campus, seeks to enhance students' experience in the way they receive support from academics. The pedagogical and socio-economic forces that have driven the higher learning institutions to adopt and incorporate new ways of teaching and learning, include greater communication, increased cooperation and collaboration, cost-effectiveness and pedagogical improvement (Sife, Lwoga & Sanga, 2007). This presentation focuses on the numeracy support that Middlesex University Mauritius provides to students and members of staff. Non-specialist mathematics and statistics students are those who study these modules as part of an undergraduate or postgraduate programme. Through surveys done as part of a doctoral programme, it was revealed that most non-specialist students go through negative emotions when they discover that they must study, to some extent, mathematics and statistics. These emotions can be "fear" and "anxiety", although the findings also revealed that a small proportion of students feel "joy" and excitement". It is also interesting to note that a few students chose their respective undergraduate programmes, thinking that they would not



have to study mathematics and statistics. There might be several reasons for them to assume such a thing. Sometimes, they choose programmes without going through the breakdown of the modules they have to study. Most of the time, they simply do not connect the titles of the modules mentioned in the prospectus, to mathematics and statistics. One such example is "Financial Data Analysis", which is a module studied by first year BA (Hons) Accounting and Finance undergraduate.

Following interviews of students and members of staff and focus group interviews of students, numerous mechanisms have been put in place to provide an adequate amount of support to students and staff who seek help in numeracy. In the hope that students are better prepared to study in their first year, a "statistics refresher" booklet has been written and distributed to them, so that they can self-learn a few topics at the start of their academic year. With regards to members of staff (and other students), as it is usually tough to have them all in a room, or have them free at the same time, a platform has been created where materials and video tutorials can be uploaded to facilitate their preparation. A "Centre for Mathematics and Statistics Teaching & Learning", better known as CeMaSTeL was founded at the university in 2018. This gives the students a platform where they can voice out their feelings about mathematics and statistics. The web address for CeMaSTeL is <https://cemastelmdx.edublogs.org/> and online video tutorials on certain topics, recorded by the CeMaSTeL lead, B.K. Ashley Hoolash, are uploaded regularly. The long term plan is to have students participate in video tutorials as well. Hoolash & Kodabux (2014), and Kodabux & Hoolash (2015) analysed the impact of students being

guided by the peers, at a British campus and concluded that this process is extremely beneficial to those who seek assistance in their studies.

Keywords

Non-specialist students, mathematics and statistics support, innovation

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REF: ABS0680095

**INNOVATIVE APPROACHES TO
LEARNING MANAGEMENT SYSTEM
DESIGN TO SUPPORT NON-
TRADITIONAL ONLINE LEARNERS**

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An Australian University launched two of its fully online initial teacher education courses in 2009 and 2010, after more than 30 years of successful traditional teacher education. Offering fully online courses with a national reach in a highly diverse, multicultural society extended an educational opportunity to those people marginalised for a number of reasons from more traditional tertiary study modes. As Kift and colleagues (2010, p. 12) claimed:

"In the face of increasing diversity, equal opportunity for success delivered through the curriculum is within our institutional control and, quite simply, is our legal and moral responsibility"

Admission to these two courses were through non-traditional means which required the courses to be carefully tailored to the online mode and remain protective of course quality.

The key objective of the study was to determine how the Learning Management System (LMS) design impacted on student learning experience.

With increased student diversity, universities must take a more holistic approach to supporting new students and work with professional and academic teams to include

curriculum design elements that encompass more than formal unit content (Kift et al. 2010). Accordingly, the university-mandated LMS interface, Blackboard, was redesigned to ensure not only that it welcomed and informed students, modelled language use and explicated their course, but also that it enabled social constructivist learning (Vygotsky, 1980; Bruner, 2009). The key elements of this design, a number of which emanated from a report commissioned by the School in 2012 (Phillips, 2013) that helped to achieve this, were design commonality, organisation, signposting, aesthetics and design principles and semantic enhancement through images.

Many lessons were learned; principal among them was that the student cohort characteristics demanded particular organisational and pedagogical practices that were quite different to the 'business as usual' practices for the face-to-face mode.

A New Blackboard Usability survey (n=283) was conducted across the two fully online courses and revealed that, 79% of students reported that the consistency of the LMS design was beneficial to their learning. Key findings include that: 87% liked the aesthetics; the majority found the structure easy to use and navigate; and 91% found the design consistency impacted positively on their experience.

Students identified that the common LMS structure supported their learning more effectively than the previous design, allowing them to focus on learning content rather than on accessing the learning.

The data revealed that the common LMS structure impacted positively on student learning and experience, and consequently, course reputation. University student



experience data showed a positive impact on student satisfaction with the course, from 76.5% in 2013 to 81.6% in 2016.

The design approach outlined here is now utilised for all courses and for all delivery modes. The study informed a generalised stronger focus on improving student experience and learning accessibility. This includes the design of images and icons, compatibility in design between the LMS interface and its mobile app, and continued focus on digital multi-literacies, with learning analytics being explored to monitor and review innovations and initiatives.

Keywords

Online learning, Non-Traditional Learners, Learning Management System, Innovative Design

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Ref: ABS4130036

INSIGHTS INTO CAMPUS BASED EXPERIENCES OF PRE-SERVICE PRIMARY TRAINEE EDUCATORS

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This paper aims at exploring the voices of pre-service primary trainee educators in the context of the training programme offered by the Mauritius Institute of Education (MIE). In the recent years, a lot of emphasis has been placed on the development and enactment of the new National Curriculum Framework (2015) in line with the Nine Year Continuous Basic Education (NYCBE) project. Following these recent changes and recommendations, the MIE has also reviewed its Teacher's Diploma Primary (TDP) Full-Time Programme in 2016.

Till today, all primary school teachers in the Republic of Mauritius have to complete a compulsory training at the MIE prior to joining mainstream primary schools. This is applicable for all educators who would teach core subjects and optional languages. However little is known about the learning gains that trainees benefit from their training in order to carry out their missions as soldiers on the field.

From a phenomenological perspective therefore, this paper uncovers the views and perspectives of a sample of 100 trainees, representing one third of the cohort who joined the MIE in 2016 and who have completed the freshly reviewed TDP Programme. The methodology drew from a qualitative lens (Silverman, 2010), and the methods adopted to collect data included a

questionnaire, a focus group discussion and field notes that captured the perspectives and voices of trainees mainly by the end of the programme (Smith et al., 2009). These voices are important for they lead towards an appreciation of the dynamics involved in developing the learning gains for trainees in the context of a training programme. These also contribute towards the representation of trainees' voices so often under-estimated in the midst of policy development and enactment.

Some initial findings from this ongoing study reveal that trainees have been positively involved in a number of on and off campus related components that enhanced their professional skills. Their readiness to tackle the complex challenges in the primary school were noted. Trainees also revealed increased confidence as individuals who prior to that, had little preparation to work in the primary schools.

Keywords

Learning gains, teacher training programme, trainee educators' voice

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Ref: ABS8960029

INVESTIGATING THE APPLICATION OF THE ISO 9001 2015 STANDARD IN POST-SECONDARY EDUCATION INSTITUTIONS IN MAURITIUS

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This paper aims at investigating the application of the ISO 9001 2015 standard in the current management system of Post-secondary education institutions in Mauritius. In addition, it assesses the importance of each Quality Management principles present in the ISO 9001 2015 standard in Post-Secondary Education Institutions for a small developing economy. For this study, a quantitative method has been used with the design of a questionnaire. Data was gathered from non-academic staff of different post-secondary education institutions and analysed statistically. The

research has shown that there is only a little application of the QM principles present in the ISO 9001 2015 Standard. However, post-secondary education institutions acknowledge that these principles are important in the management of an institution in the pursuit of quality management. It was also found that there is a difference of perception between private and publicly funded institution regarding the actual QM practices, but same perception was observed for the importance of each QM principles considered.

Keywords

Quality, Quality management, Post-Secondary Education, Higher education, ISO9001:2015

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Ref: ABS9510226

**INVESTIGATING THE
EFFECTIVENESS OF JIGSAW
APPROACH IN TEXTILE CRAFT-
AN EXPERIENCE WITH HOLISTIC
TRAINEE EDUCATORS**

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The Jigsaw teaching approach is a cooperative learning technique which was implemented with a group of trainee primary holistic educators in Textile Crafts. The aim of this research study is to promote trainees' intrinsic motivation and to enable them to experience various teaching and learning experiences such as collaborative learning and peer teaching with the intention of gradually shifting focus from transmission to a transactional mode of teaching and learning so as to improve quality of teaching and learning in Textile Crafts.

Textile Crafts falls under the ARTS in the primary curriculum, which aim to holistically develop students' creative selves. Relevant and challenging teaching strategies are recommended to generate interest and motivate learners. This research study explores a constructivist approach to teaching and learning. The study is not solely geared towards finding a way to develop creative skills and acquisition of technical skills, but also to foster trainees' social skills. Consequently, a qualitative approach to the research would reveal the different perceptions which participants have of the same situation. Hence, an evaluative case study approach was chosen for the research study and the data collecting tools used were observations, questionnaires and on-spot practical work.

Findings reveal that this particular student-centred approach instigates and motivates students to undertake responsibility for their learning process, develop and acquire the appropriate technical skills and techniques especially in this component of the Teacher's Diploma Primary Holistic Programme. The affective domain cultivated through Jigsaw learning, contributed to the enhancement of learning at cognitive and psychomotor level as well. This student-centred style of teaching induces and maintains the level of motivation of students. It particularly endorses group working skills and emphasizes on team work in the learning of techniques in Textile Crafts as a medium to success. Consequently, learners are highly engaged in their learning process of textile crafts-related topics. Learning of Textile Crafts through the Jigsaw strategy, has further developed trainees' sense of appreciation and engagement which shape and enrich their role as future educators by providing opportunities for focused social interaction and student interdependence; advocates good class management, facilitates monitoring of students, and induces reflective practise. Jigsaw approach as a teaching strategy stimulates effective teaching and learning and promotes both academic and social goals for students, for practical-based learning areas.

Keywords

Textile craft, holistic education, jigsaw, education, creativity, collaborative learning

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REF: ABS7610215

**INVESTIGATING THE IMPACT OF
SPIRAL TEACHING ON STUDENTS'
UNDERSTANDING IN
MATHEMATICS**

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This study aimed at investigating the impact of spiral teaching on students' understanding in Quadratics at O-level. It focussed on how spiral teaching can help students construct their understandings of mathematical concepts. The study was conducted in a Boys' State Secondary School in the North of Mauritius with five weeks of

implementation. Participants consisted of eight Grade 10 Additional Mathematics students and four Mathematics teachers.

The study used a mixed method research design and data was collected using the instruments: questionnaire, written tasks and interviews. In the quantitative phase, a 5-point Likert Scale was administered to the 10 participants. The qualitative phase involved interviews and observations with selected participants. The interviews focused on each identified common difficulties of students.

Collected data was presented in descriptive form and selected work of students were presented for analysis purpose. Tables, pie charts and bar graphs were used to analyse the data collected. The study showed that spiral teaching was an effective pedagogy that improved Grade 10 learners understanding in the topic. The study recommended that spiral teaching should be researched in all subjects and should be made clearly understood by all teachers in order to be able to use and apply it during their teaching. Overall, this research study produced positive results with regards to content.

Keywords

Spiral teaching, Quadratics, Grade 10

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Ref: ABS3870219

**LET'S PLAY! THE GAME IS ON TO
MAKE POETRY FUN AND
ACCESSIBLE AT LOWER
SECONDARY LEVEL**

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There is extant research on the use of interactive games as a teaching resource in EFL/ESL contexts. The prevailing literature indicates that games can increase the level of extrinsic motivation in adolescent learners and help develop their communicative and cultural competences as well as build upon their metacognitive skills in an enjoyable learning environment. EFL/ESL adolescent learners often perceive poetry as challenging especially since they have difficulty in understanding the specificities of this particular genre. The aim of this case study is to investigate whether board games can be adapted to develop the analytical skills of grade 8 learners whilst increasing their level of extrinsic motivation for poetry. Methodologically, lesson observations, a questionnaire and a worksheet have been used as qualitative data collection tools. Findings indicate that most grade 8 participants find board games to be an interesting resource which helped in developing their growing understanding of the use of stylistic devices within the poems they studied. The findings further reveal that board games also enabled most participants to identify the theme(s) of the poems studied with more confidence. Lastly, the findings

also accentuate that all the participants particularly liked the aspect of healthy competition within the literature classroom and felt more motivated to participate in classes on poetry where board games had been used.

Keywords

EFL/ ESL Literature Teaching Methodology, Game boards, Motivational Theory

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Ref: ABS2930206

**MEDITATION AS A TRAJECTORY
TOWARDS DEVELOPING EMPATHY:
A CASE-STUDY OF AN INDUCTION
SESSION FOR PRE-SERVICE
UNDERGRADUATE TRAINEE-
TEACHERS IN MAURITIUS**

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In a global context of hyper-globalisation, hyper-technology, ever-present and readily

accessible masses of information, and blurring of frontiers (e.g. geographical, cultural, social), we are faced with a techno-centric world that is questioning humanism (Oozeerally, 2015). This encourages a techno-centric perspective on communication. There is often a surface layer conception of communication, drawing on reductive models such as Shannon and Weaver (1948) which is a mathematical and transmission model, that does not take into consideration the complexities of human interaction (Morin, 2008; Jorg, 2011). Stereotypical and rigid conceptions of communication are often based on transmission of information in a dehumanised way, without sufficient recognition of subjectivities and the hermeneutic dimension (Robillard, 2008). Empathy is considered to be an imperative interpersonal quality and skill for effective communication (Brown, 2013), and part of the complex dynamics of caring for our fellow human beings (Stephany, 2014). As part of an induction programme for undergraduate level pre-service trainee-teachers, meditation was used as a pedagogical tool and contemplative practice (Miller, 2014) for developing awareness, experience, and understanding of empathy as inherent to effective communication. The meditation session was carried out, with 42 trainees, as one half-day workshop forming part of a series of communication skills focused workshops over the course of one induction week. The communication skills focused induction week formed part of a broader 5 week induction programme, prior to students' commencing their respective undergraduate teacher-training courses. The aim of this paper is to discuss meditation as a trajectory for helping the trainees to develop an awareness and understanding of empathy as a concept which is inherent to the

complexity of communication (i.e. the place of the self and the 'other', or alterity, within communication dynamics); and experience empathy through a meditation focused on promoting loving-kindness and self-realisation. Findings show that the trainees developed a more reflective approach to understanding the concept of empathy, and a positive response to experiencing empathy through meditation; as well as an enthusiastic request for additional sessions. Therefore, this research opens avenues for further exploration of sustainable spaces for meditation, as a pedagogical tool and contemplative practice (Miller, 2014), within their undergraduate pre-service teacher-training, extending beyond an induction session and into the provision of such as part of pastoral care within the broader structure of the course of study.

Keywords

Education, Meditation, Pastoral Care, Communication, Empathy

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Ref: ABS3890205

MY CHILD HAS SPECIAL EDUCATIONAL NEEDS. WHAT COMES NEXT?

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Having a child with special educational needs can be difficult for parents. This study aimed at investigating how families and parents with a special child collaborated in education of the latter in Mauritius. There are a number of Non-Governmental Organisations (NGOs) and special schools which offer special education to the special children. However, the authors have contemplated that trainees do not interact much with the parents of the children in their class. Educational programs are strengthened when families and school personnel work together (Friend, 2011). Qualitative research methods such as interviews and focus groups discussions were adopted for this case study to explore the perception of parents with special children about collaboration in their children's education. Parents of children from various NGO's and special schools were informed about the study for their voluntary participation. Responses were analyzed for content, combined together, sorted and charted to identify themes. A number of common themes emerged from the review of literature and focused group

discussions and interviews including-transport facility, teacher attitude, computer literacy, goal-setting, planning and implementation of activities, evaluation of activities and review. Findings from the study contribute in promoting collaboration of parents in the education of their children with special educational needs. The communication between school and parent, parent and teacher, teacher and children needs to be reviewed and analysed at all time. Furthermore, attention is drawn to the fact that a set of recommendations is proposed at the way parents need to be trained so that so that they can collaborate effectively in the education of their children. Hence, this study opens new avenues of training for Higher Education institutions in Special Education Needs.

Keywords

Parental collaboration, Special Education Needs, training

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REF: ABS9740212

REALITIES OF POSITIVE ATMOSPHERE IN PRESCHOOLS: VIEWS OF NEW PRIVATE PRESCHOOL TEACHERS IN MAURITIUS

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A conducive learning environment is caring and responsive, emotionally safe, and

focuses on helping learners make the transition necessary to succeed in school and in life [1]. In Early Childhood Education settings, more emphasis is laid on the positive atmosphere in the preschool. This study explored how aspiring preschool teachers created a positive atmosphere in the preschool setting they work. 60 new aspiring preschool teachers working as assistant teachers in private preschools who joined a professional development teacher education program have participated in focus group discussions about how they created a positive atmosphere in the preschools where they work and the challenges they come across in the process. While literature speaks of never leaving beginning teachers learn on the job in a sink-or-swim situation how to establish and manage a conducive classroom learning environment, participants in this study have been trying to create a positive atmosphere in the preschools where they work. The circle of courage was used to analyse data collected. Findings from the study show that participants have tried to implement knowledge gained during their training to organize the indoor and outdoor spaces in preschools to create more spacious settings based on safety, fun, and security. They also mentioned how the positive atmosphere can be established through the attitudes of teachers who regulate the behaviours and learning patterns of students and who come to class well prepared. Yet, they explained that the constraints they face in terms of time management, available of resources, parental expectations for academic work and proper planning, hinder their efforts. Consequently, it is felt that the Early Childhood Care Education Authority (ECCEA) could consider setting new standards in terms of space before granting permit to open a preschool. At the same time, new modules and workshops could be

organized by Mauritius Institute of Education for the preschool sector which would enable teacher students further develop their skills and competences in creating positive atmosphere in their respective settings. Courses and workshops could also be run for managers of preschools on the importance of creating a positive atmosphere at school and how they could lead changes at school level so that teachers could be better supported in their efforts to create a positive atmosphere.

Keywords

Positive atmosphere, Private preschools, Conducive learning environment

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Ref: ABS7680108

ROADBLOCKS FACED BY STUDENTS AND THEIR IMPLICATIONS FOR THE FUTURE OF HIGHER EDUCATION INSTITUTIONS

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The landscape of higher education (HE) has changed significantly during the last decade. There has been the entry of many institutions into the HE space. This mushrooming of intuitions has led to a cut throat competition as many are targeting the same clientele. This is an additional advantage for students. Institutions are more aware of the need to offer services that meet the needs of their clientele and which can provide them with

the necessary goodwill to keep attracting students in the years to come. This case study focuses on identifying the roadblocks faced by students in HE institutions because these impact on their learning experience and ultimately impact on the goodwill of the institution (Yin, 2014). These implications of these roadblocks for HE institutions are also identified (Drape et al, 2016). Data was collected by means of three focus group discussions with six students in each group. Purposive sampling was used as it was important to get the views of those who had never attended any HE before and thus did not join in with already tested coping mechanism (Alvi, 2016). Findings show that while the students are eager to join HE institutions, they find themselves quite overwhelmed with the new environment and the various demands that are imposed on them. They found it hard to transit from being secondary students to become students in a HE institution, where they are immediately treated as adults and are expected to act and react as adults. Despite being given programmes handbooks, they admitted that they had difficulties in understanding all the intricacies involved. Other roadblocks mentioned by students concerned time management, access to library resources, financial resources, personal problems, lack of study skills, low motivational levels at times and stress because of too many assignments and examination stress. This led them to missing deadlines for applications in exceptional cases to submitting assignments late and being according to them 'unjustly penalized'. Furthermore, they felt that they were not fully prepared for the world of work and not enough attention was given to developing their oral, written and interpersonal skills. From the roadblocks identified it became clear that the students, as they started to

grapple with the complexities of higher studies, they needed support to ease this process. The major implications for HE institutions are that they need to address these roadblocks in order to thrive in the future. A thorough review of the services and facilities that they offer is urgently required so as to be able to provide services which are tailor-made for the students. Consequently, various recommendations were put forward. They revolve around having a student support service, a counselling service for students as well as providing them with a student buddy system amongst others. These recommendations would go a long way to transform the learning experience of students and improve the credentials of the HE institutions. HE institutions have to come up with an agile response to their clientele's needs to ensure their long term survival.

Keywords

Roadblocks, HE institutions, implications

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Ref: ABS1230224

**TEACHING OF HINDI FOR TRAINEE
HINDI EDUCATORS: CHALLENGES
IN TEACHING STRATEGIES IN THE
CONTEXT OF MAURITIUS**

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The teaching of Hindi at University level in Mauritius has always been a challenging task. In view of the Mauritian exposure of Hindi language, this language is neither considered as the FL nor SL, it lies in between both. Pedagogues have been teaching Hindi through a conventional manner so far to a great extent. However, unlike regular graduate students learning the language, the teaching and learning of Hindi in terms of trainee educators for the primary and secondary schools are far more complex and require for innovative and proactive teaching strategies. This paper aims at exploring those teaching measures adopted at the Mahatma Gandhi Institute in Mauritius and measure their effectiveness in relation to the learning outcomes of specific language teaching and learning modules. The research methodology used for this paper is primarily results and feedback through surveys, analysed from the usage of various innovative and adapted activities in line with module objectives. Data collected from observations, peer micro teaching and brainstorming have provided ample materials for analysis of the topic. A sampling of the cohorts (year-wise/semester-wise and module-wise) from August 2017 to December 2018 has also been retained for analysis of findings. Among the findings, it has been noted that trainee educators are essentially ICT-inclined in both acquiring

pedagogical materials and also in terms of classroom engagements. The level of classroom participation and trainees' emancipation in project works and active learning pedagogies have also been noted worthy. As results, the overall development of trainees' cognitive and emotional spheres has also been positively highlighted.

Keywords

Teaching Strategies, Hindi Resources, Techno-pedagogical methodologies, Adapted Learning Activities, Active Learning Pedagogies, ICT-inclined teaching, Classroom Engagements.

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Ref: ABS4510021

**TEENAGE BOYS' ENGAGEMENT AND
DISENGAGEMENT WITH READING
FOR PLEASURE**

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This thesis investigated the effectiveness of literature circles as a pedagogical strategy in encouraging reading for pleasure and language learning of teenage boys particularly twelfth graders. In attempting to engage the latter in reading for pleasure, this study drew from two theories namely Vygotsky's (1978) sociocultural theory of learning and Krashen's (1988, 2004, 2014) theory of second/foreign language acquisition. The fundamental idea behind the two aforementioned theories is that reading for pleasure provides learners with comprehensible input of the reading language which is further enhanced in authentic communication activities. This dissertation applied the two theories to twelve literature circles whereby three participants read a common text and constructively discussed it among themselves. Three research tools namely unstructured observation, reflective diaries, and focus group discussion were used to scrutinize the participants' reading experiences with literature circles. The findings revealed that the participants had a rewarding reading experience with literature circles within which their unwillingness turned into willingness to read for pleasure. Language improvement in terms of vocabulary, spelling accuracy, and reading fluency were also noted. However, the twelve literature circles proved to be insufficient for the participants to master

grammar precision and avoid word for word translation from Mauritian Creole to English. This study therefore raises implications for local secondary English educators, curriculum developers of English, educational policy, and stipulates the need for further research with a larger sample size to enhance local teenage boys' reading engagement and language learning through literature circles.

Keywords

Reading for pleasure, literature circles, language learning, twelfth grade boys.

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Ref: ABS8320048

**UNDERSTANDING THE ROLE OF
SUPPORT TEACHERS IN THE
MAURITIAN EDUCATION SYSTEM -
A CASE STUDY**

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There has been a major change in the education system in Mauritius over the past

few years. We have shifted from the 6-5-2 system (six years of primary education followed by five years of secondary education to obtain the School Certificate and then two years to obtain the Higher School Certificate) to the Nine Year Continuous Basic Education (NYCBE). The high rate of failure at the end of the primary education cycle as well as the high number of students who still lack the basic numeracy and literacy skills at the end of these six years are among the reasons why we have moved to the NYCBE system. In addition, based on UNESCO SDG4 (which is 'to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'), the government is providing support to all our learners through the NYCBE. One of the significant measures of the NYCBE reform has been the setting up of the 'Early Support Programme' (ESP) in the early years of primary school. The aim of the ESP is to provide additional support to those Grade 1 and 2 pupils who have learning difficulties in numeracy and literacy. The classroom teacher or the Head Master of the school is the one who selects the pupils who have learning difficulties in numeracy and/or literacy. The pull-out system is used. This assistance is provided by Support Teachers (STs) who have been recruited by the Ministry of Education and who have followed a one-year training at the Mauritius Institute of Education. The aim of this study is to develop understanding of the role of STs. A few STs have been interviewed and observed while they were teaching. Informal discussion has also taken place with the classroom teachers to find out how the STs are helping them with students having learning difficulties in numeracy and literacy. Informal discussion was also initiated with the Head Masters of these different schools. The major outcome of this

study is that the time allocated for working with the students having learning difficulties is not enough according to the STs. In addition, no resources are provided to work with these students. The STs feel that they are perceived as being 'miracle workers' and that the job is very demanding. An interesting observation made during the research is that many of the STs leave the job afterwards as they receive better job prospects. This means that we lose the resources invested in their training. They should be better motivated to keep on working as STs, that is, their status should be improved. In addition, the STs have followed only a certificate course. Consequently, it would be good to have a diploma course for the STs. Furthermore, the schools/ministry could help them in terms of resources. Finally, the STs should spend more time with these pupils.

Keywords

NYCBE, ESP, pull-out system, support, Support Teachers, learning difficulties

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Ref: ABS4700006

**UNIVERSITY OF MAURITIUS -
CONTRIBUTING TO THE MAKING
OF MAURITIUS A MODEL OF SD AS A
SIDS THROUGH EDUCATION**

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Over the last decade, and with a view to plan for the future, Mauritius has placed strong emphasis on achieving a sustainable economic development, with the ambition to become the regional platform for trade and investment in Africa; a bridge between Africa and Asia and a model of sustainable development for similar SIDS. As a major tertiary education provider in Mauritius, the University of Mauritius (UoM) has formulated Education for Sustainable Development (ESD) as a key policy in its strategic plan more than a decade ago. In this way, UoM, with a 50 years' history in building human capacity across all the sectors of the economy, responded by transforming its curricula across the various faculties so as to empower graduates with the knowledge and skills to integrate sustainability principles in their respective professions as well as contribute in multidisciplinary projects.

UoM uses an array of techniques to integrate SD principles in learning; formal curriculum like: programme of studies, workshops, student placements, and informal curriculum like: organisation of activities, e.g. world

food day mainly led by students; regular activities of different students association, visits to enterprises and seminars presented by industry professionals. Through multidisciplinary projects, students are trained to develop competence in applying social, environmental and economic considerations while working individually and in teams composed of members from different background. This integrative approach has enabled teams at the university to work on projects of national importance such as Legislative Review for Maurice Ile Durable, including dissemination workshop for the public, a Creole Language dictionary, Land-Based Ocean Economy, Greening the Mauritian Economy, Green Banking Practices, Eco-friendly beauty care products and Ecotourism among others. This has allowed the university to address sustainability issues at national and regional level through student/research projects, while also playing a key role in disseminating knowledge underpinning sustainable development to the community at large. UoM has been able to offer education adapted to the needs of the economy by working closely with industry, e.g. master programmes in the field of climate change and heritage management.

UoM intends to further consolidate the industry-university link as well as forge international alliances to offer state-of-the-art education in SD. The eco-campus project, a living example of student engagement towards sustainable development, will be further developed to serve as a model of SD for universities, driven by a pole of innovation in sustainability. This pole will also strengthen links with industry to address key research and innovation issues in associated areas of sustainable development, while the university will promote



entrepreneurial activity and commercialisation of applied research outcomes through the university's incubator and knowledge transfer office.

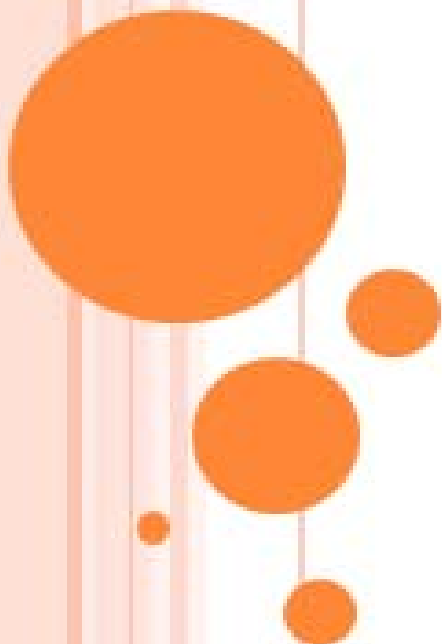
UoM intends to further adapt to the changing professional and pedagogical needs of our forthcoming generations, and has already embarked on transforming its degree programmes to implement a learned-centred credit system (LCCS), paralleling the European Credit Transfer and Accumulation System (ECTS) which will improve the learning experience of our students while training them to deal with the practical, complex problems they will face in their future work environment.

Keywords

Education for Sustainable Development, Learner-Centred Education, Sustainable Small Island Developing State



BUSINESS
LAW
AND
MANAGEMENT



ABSTRACT

Ref: ABS2790003

**A CONTENT ANALYSIS OF
OUTCOMES OF CORRUPTION CASES
IN THE PUBLIC SECTOR FROM 2002
TO 2018**

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There is a growing concern among citizens of Mauritius that the national anti-corruption agency, the Independent Commission against Corruption (ICAC), is ineffective in prosecuting cases of alleged corruption offences. While this seems to be the situation, there is a paucity of literature on the actual effectiveness of the ICAC in fighting corruption in the public sector. The aim and objective of this empirical research are to fill this legal gap and sensitise decision-makers of the need for reviewing the existing anti-corruption legislation and adopting policy measures to enhance ICAC's effectiveness.

Relying on court judgments and relevant *stare decisis* of the cases, this empirical research examines the phenomenon of public-sector corruption, using the 'content analysis' method to test the given hypothesis by adopting a four-step procedure described below:

- i. Retrieving all court judgments in respect of alleged corruption offences where public officials have been prosecuted by ICAC. Differentiating the judgments into cases which were dismissed and those which resulted in a conviction.
- ii. Appraising data contained in the judgments so as to understand the ratio

decidendi of each case; the legal principle underlying decisions of courts of law.

- iii. Reducing the data to manageable proportions to better understand the multi-faceted aspects of public-sector corruption.
- iv. Synthesising and organising the resulting information to assess the prosecutorial efficacy of the ICAC. For analysis purposes, data extracted from the judgments in respect of 120 public officials charged with alleged corruption offences, was reduced and analysed using the TASP framework, which represents four dimensions of corruption, namely; the different forms of corruption (TYPE) and the associated impugned acts (ACTIVITY) in the public sector, the places where the corrupt acts occurred and which have been grouped into three categories reflecting the public sector; namely Ministries & Government departments, Local Authorities and Statutory Bodies (SECTOR) and the profile of the PERPETRATOR of the offence.

Only 37% per cent of all public officials, prosecuted by ICAC have been convicted. The findings confirm the hypothesis that ICAC (Mauritius) has not been successful in prosecuting cases of alleged corruption offences against public officials.

Considering the ICAC of Hong Kong as the benchmark for measuring prosecutorial efficacy, with an 84% conviction rate, it is submitted that the ICAC of Mauritius, with a relatively lower success rate, has failed to make a meaningful impact in successfully fighting corruption. Another interesting finding is the fact that 75% of the convictions arise out of acts of bribery. Abuse of discretion and conflict of interest account for the remaining 25%. This tends to



indicate that the value-added effect of the Prevention of Corruption Act (PoCA), which has replaced the repealed sections 125 to 133A of the Criminal Code Act, and which criminalised the offence of bribery by public officials prior to enactment of the PoCA in 2002, is minimal.

Policy Implications. The findings call for urgent actions from our policy-makers to review and clarify leading relevant legislations and re-orient the approach towards fighting public-sector corruption to instil public confidence in our institutions.

Keywords

Corruption, Prevention of Corruption Act, Independent Commission against Corruption, content analysis, public sector.

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Ref: ABS3610123

A FINANCIAL EDUCATION E-PLATFORM FOR IMPROVED FINANCIAL LITERACY OF MAURITIAN SMALL AND MEDIUM ENTERPRISES TOWARDS LEVERAGING FUTURE GROWTH

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Many Small Medium Enterprises (SMEs) lack the financial knowledge and skills of managing their organisations, and are seen to go bankrupt, falling prey to many financial challenges which force them to close down. Hall's (1992) findings show that the inability to understand accounting concepts and system significantly increases the chance of going out of business. On a further note, it is also observed by some worldwide researchers that SMEs owners who are financially literate make more informed decisions. Their higher knowledge of financial products allows their businesses to generate higher yield increasing their ability to leverage credit for future growth. Financial literacy is defined as the ability to make informed judgements and to take effective decisions regarding the use and management of money (Noctor et al., 1992), which ultimately dictates attitude and the financial habit of an individual (Beal and Delpachitra, 2003; Mandell and Klein, 2009).

SMEs in Mauritius covers diverse economic sectors. They make up an approximate 40% of the GDP share and absorb nearly 54.6% of employees in the job market (MoBEC, 2016). The main constraints highlighted across studies relate to access to finance (Pissarides et al., 2003) and training facilities, existing infrastructure, technology and institutional support framework (Lal and Peedoly, 2006). There is a need to incorporate SMEs activities with financial institutions to bring coherence and build a good synergy between SMEs and the concerned institutions. This study is one of its kind which investigates into the financial education of SMEs. The research objectives are to discern the current financial awareness and knowledge of SMEs, (quantify the IT readiness of entrepreneurs and tailor an interactive e-platform to make the latter more financially literate. A dual methodology approach comprising of both quantitative and qualitative were adopted. Two focus groups were conducted where inputs from sampled SMEs and SME service providers were gathered. For the quantitative approach, a survey design using stratified random sampling was used to gauge into the awareness and knowledge of financial products, procedures and obligations, identify and evaluate the financial education needs of the SMEs in Mauritius.

The research findings have uncovered the relative low financial knowledge especially for SME owners having basic education and the lack of awareness about basic financial planning tools useful for the business. Furthermore, SMEs are found to have resource constraint and that the sustainability of their growth demands a holistic strategy. The solution developed is an e-platform comprising of an informative website with SME Networking and several other features

for an entrepreneur learning corner. The outcome of the feasibility study provides a prototype to impart basic financial education and other supports related to the financial decision making process of SMEs. It also paves the way for government and other key stakeholders to develop a full fledged e-platform to further enhance the financial assistance strategy for the benefit of SMEs.

Keywords

Small medium enterprises, financial literacy, e-platform; financial education

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Ref: ABS5270032

**AN ARTICULATED ANALYSIS OF
TAXATION AND FDI ATTRACTION IN
MAURITIUS**

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Most of the countries in the World are competing among themselves to provide favourable tax rates so as to attract more Foreign Direct Investment. The purpose of this paper is therefore to investigate the perception on tax attracting FDI in Mauritius.

Descriptive Analysis, Factor Analysis and a Regression Model were used for analysis method. Seven factors were identified in the study that was used in the regression model which are Political Stability, Technological Advancements, Educated Labor force, Availability of Infrastructure, Exchange Rate Stability, Favorable Tax Regimes and Corruption Perception. Questionnaires were used to collect data based on the factors that tax may have an impact on FDI. Using SPSS, statistics were run on the data collected and the regression model was built up.

It was concluded that tax was not only the sole factor that can contribute for FDI in an economy. Political stability, Educated Labor Force and Exchange Rate Stability were other factors identified that may impact on FDI in Mauritius. Also, it was recommended that in the context of Mauritius, the government can laid emphasis on these economic factors for the growth of the economy rather than only focusing on tax.

Keywords

Foreign Direct Investment; tax; Descriptive Analysis; Factor Analysis; Regression Model

Ref: ABS1270002

**AN ASSESSMENT OF THE TRANSFER
PRICING LEGAL FRAMEWORK IN
MAURITIUS**

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Globalisation has enabled some business entities to expand their operations into a large global market by establishing their own networks of subsidiaries and branches in other countries. Indeed, the enterprise becomes a multinational company through this type of foreign direct investment in other parts of the world. One unique characteristic of a multinational group is that firms within the same group have the ability to set their own prices for transactions with other members of the same group. The price of an intra-group transfer is called a "transfer price" and the process of determining such prices is called transfer pricing. In fact, the Organisation for Economic Development and Cooperation (OECD) had promulgated the arm's length principle (ALP) back in 1970 as a means of regulating the manner in which transfer prices are determined between related parties. In essence, the ALP requires that the amount charged by one related party in a particular transaction need to be the same as if the parties to that same transaction were not related.

Being a member of the OECD, Mauritius has legislated the arm's length principle in its domestic tax law in the year 1995. That is,



Section 75 of the Mauritius Income Tax Act 1995, Act No. 16 of 1995 (Mauritius Income Tax Act) was introduced to require business entities to apply the ALP in their dealings with related parties.

The main research objective is to assess the transfer pricing legal framework in Mauritius. In particular, the study aims to:

- a) examine the main reasons behind the regulation of transfer pricing;
- b) investigate on the adoption and implementation of transfer pricing rules by multinational entities (MNEs) in Mauritius and will analyse the challenges faced by such MNEs to comply with Section 75 of the Mauritius Income Tax Act; and
- c) compare the transfer pricing rules of Mauritius with the related laws of some selected countries that have adopted the ALP as well as a comprehensive transfer pricing legislation such as South Africa, the UK and the US with a view to make the requisite recommendation to address the challenges faced by MNEs in Mauritius.

At present, due to the vagueness of the legal provision on transfer pricing, there is the risk that transfer pricing policies are rarely implemented in practice. In other words, the lack of legislative guidance and reliable practice notes in this area may cause significant uncertainties as to the manner in which taxpayers need to handle their related party transactions. Yet, as of date, no research has been conducted to assess the understanding of MNEs on the transfer pricing rule in Mauritius and the challenges faced by them in implementing transfer pricing policies in Mauritius. As such, the study seeks to assess the adoption and implementation of transfer pricing rules by MNEs in Mauritius.

The comparative study to be conducted for this research aims at bringing forth some recommendations for Mauritius stakeholders to adopt in order to prevent losses of tax revenue arising from transfer pricing manipulation by MNEs.

Keywords

Transfer pricing in Mauritius; Section 75 of Mauritius Income Tax Act; Multinational companies and transfer pricing abuses.

Ref: ABS4150011

AN INFORMATION RETRIEVAL SYSTEM FOR THE MAURITIAN JUDICIARY

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Conducting an exhaustive search of the literature is a sine qua non to the process of legal advocacy and this part of the legal work is remarkably time consuming and costly. In the meanwhile, due to the rapid evolution in the Information Technology sector and the Open Data movement the number of legal documents available online continue to grow exponentially, but accessibility and searchability have not kept pace with this growth rate. Legal systems in the world are generally based on one of the two basic systems of civil law and common law. Interestingly, Mauritius has a 'hybrid' legal system; combining both the civil and common law practices. Its legal system is governed by principles derived both from the French Code Napoléon and the British common law. This legal hybridity does not only make legal research even more complex and time consuming but also affect the rate

at which cases are decided and judgments are delivered. To address both the limited access to large repositories of legal data and the judicial constraints faced by the Mauritius Judiciary in terms of resources, budget, labour and time, we developed an information retrieval system to assist in the retrieval of legal documents. The database contains around a thousand acts and judgements of the Supreme Court of Mauritius for the years 1968-2017. The information retrieval engine allows queries to be formulated in a natural language. The system is designed with respect to the hybrid legal system of Mauritius. It offers a unique bilingual feature where queries can be entered in French and results are displayed from both English and French documents and vice versa. The system is adapted to help users to decide which of the retrieved documents are most likely to convey their retrieval needs, firstly by ranking the retained documents in a descending score and secondly by displaying a summary of each statute. In order to evaluate the effectiveness of the legal information retrieval system in the context in which it will eventually be used, and for the purposes for which it has been built, a survey-based evaluation scheme was devised. The results indicate that the use of the system significantly improves both the search experience and speed at which legal documents are retrieved. A majority of respondents confirmed that the information retrieval system is an indispensable tool for conducting cost-efficient and timely legal research. This research project will redound to the benefit of the society considering that the information retrieval system is freely accessible to both laymen with no or different levels of legal knowledge and jurists with completely different professions (e.g. students, scholars, lawyers, attorneys,

notaries, legal assistants) having different information retrieval needs.

Keywords

Information retrieval, natural language, processing legal documents

Ref: ABS7890024

ANALYSING CONVERSATIONS ON FACEBOOK PAGES OF FAST FOOD OUTLETS IN MAURITIUS

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With the pervasiveness of social media across the globe, organisations have adopted social media platforms to reach and interact with existing and potential customers (Shanahan, Tran, & Taylor, 2019). Organisations in Mauritius are leveraging social media as a marketing tool with the aim of increasing customer engagement. However, studies on the adoption of social media by organisations in Mauritius are scarce. This paper aims to address this gap by analysing how fast food restaurants in Mauritius are using Facebook to engage customers.

Social media have transformed the marketing realm as they are interactive channels which allow dialogue conversations between the company and its customers and among customers (Peeroo, Samy, & Jones, 2018). Customers on social media are no longer passive recipients of marketing messages, but have been empowered by being able to actively create and influence marketing messages. This study will analyse the conversations on the Facebook pages of fast food outlets to determine how these companies are using social media to engage customers. The research questions are (1) what are the types of messages that fast food outlets send to

their customers? and (2) what communication strategies are used by fast food outlets?

A qualitative approach was adopted to examine the use of Facebook by fast food outlets in Mauritius. Facebook was chosen as it is the social platform with the highest number of users in Mauritius (Internet world stats, 2018). The penetration rate of Facebook among young consumers is high and this explains why fast food outlets worldwide have created their Facebook page. The fast food industry is so popular among young consumers that these consumers are tagged 'the fast food generation' (Gaber & Wright, 2014). We have selected Mc Donald's, KFC and Pizza Hut as these are international fast food chains which have all set up local Facebook pages. Content analysis was used to analyse the posts on the Facebook pages of these three outlets.

Corporate posts of fast food outlets have been categorised as engaging, entertaining, incentive and informative. This study shows that compared to Pizza Hut, KFC and Mc Donald's post more engaging contents i.e. corporate posts which explicitly ask customers to carry out a specific action and encourage customers to engage with the company. However, Pizza Hut uses mostly informative contents to pass on information. This study adds to the body of knowledge by showing that McDonald's and KFC use their Facebook page to recruit staff. By observing the interactions on the Facebook pages, it was found that Pizza Hut and McDonald's embrace an egocentric communication strategy, while KFC uses a conversational communication strategy. However, all three fast food outlets adopt a secretive communication strategy as they opt to respond to customer complaints through private channels or they delete unfavourable posts.

The managerial implication from this study is that managers should actively monitor online conversations on their Facebook page and engage in conversations with them to quickly detect the online sentiment which will guide appropriate actions.

Keywords

Social Media; Facebook; Fast Food; Content Analysis

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Ref: ABS8240198

**ASSESSING GREEN CONSUMPTION
BEHAVIOUR: APPLYING AND
EXTENDING THE THEORY OF
PLANNED BEHAVIOUR**

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Over the past decades, consumption levels have been on the rise, thus causing the depletion of natural resources, loss of biodiversity and a gradual degradation of the environment (Kostadinova, 2016). However, consumers are now conscious that their purchasing decisions are harming the environment and have started to look for environmentally-friendly products (Laroche, Bergeron & Barbaro-Forleo, 2001; Kahn, 2007; Lee, Hsu, Han & Kim, 2010). Several frameworks have been put forward to investigate the intention and behaviour of consumers (Ajzen, 1991). One such framework is the Theory of Planned Behaviour (TPB), the most inclusive and effective theory for predicting intentions and behaviours (Conner and Armitage, 1998; Wu & Chen, 2014; Maichum, Parichatnon & Peng, 2016). A number of studies have used the TPB framework to investigate the behaviours of consumers towards green products (Wu & Chen, 2014; Maichum et al., 2016; Paul, Modi & Patel, 2016; Yadav & Pathak, 2017). Consequently, understanding the antecedents of purchase intention and behaviour towards green products is fundamental to marketers (Chan & Lau, 2000; Chaudhary and Bisai, 2018) since it helps in designing the strategies for developing the right niche for green products (Tantawi, O'Shaughnessy, Gad & Ragheb, 2009). Nevertheless, it was pointed out in the

study of Mostafa (2007) that in spite of the keen interest and intent of consumers to save the environment, the consumption of green products is still in an infancy stage. Therefore, it is crucial to focus on the factors that influence consumers to buy green products. Building on the theory of planned behaviour (TPB), this study aims to understand green consumption behaviour in a Small Island Developing State (SIDS) such as Mauritius. The study further attempts to extend the TPB by including two additional variables, environmental concern and environmental knowledge in the framework. Data was collected from 277 consumers using a questionnaire survey. The structural equation modelling was used to verify the goodness-of-fit and direct effects of the extended TPB model. The findings revealed that environmental knowledge directly influenced green consumption behaviour, whereas environmental concern influenced the consumers' intention towards green consumption behaviour through the mediating effect of attitudes, subjective norms and behavioural control. This study provided support for the extended TPB framework in a unique cultural context. The findings of this study could also support future policies and actions focused on providing information and knowledge about environmental contribution of green products to the consumers, producers, companies, and society.

Keywords

Environmental Concern, Environmental Knowledge, Green Consumer Behaviour, Green Purchase Intention, Theory of Planned Behaviour

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Ref: ABS5630141

ASSESSING THE FINANCIAL PERFORMANCE OF LISTED COMPANIES IN MAURITIUS

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Companies represent the main sectors of national economy, having a pivotal role in achieving and maintaining a high rate of sustainable economic growth. On the other hand, performance is a key framework in today's economic environment shaped by quick changes, fierce competition and globalization. Performance can be divided into two categories namely financial and non-financial measure and evaluated in three dimensions in terms of productivity, profitability and market premium. The performance of a company is the most essential since it encourages people to come to it specially the financial performance. It is

so because most stakeholders tend to look for any company that shows high performance for investment around the world. However, performance is a strenuous concept, in terms of both definition and measurement. Though there have been several studies conducted on companies financial performances in Mauritius, there is no research focusing on the extent to assess the financial performance and the factors affecting these firms. Therefore, this study attempts to analyze and get an insight on the factors affecting the financial performance and the trends of the financial performance across the sectors of the firms listed in the Stock Exchange of Mauritius over a period of 7 years. The study used secondary data obtained from annual reports where a sample of 30 listed companies in different sectors were examined for the period 2011 - 2017. Two methods of data analysis were used, firstly by way of financial ratio analysis where mostly the DuPont Analysis with the indicator of financial ratio such as ROA and ROE were used to see the trend and the level of financial performance among the sample firms. Secondly, the method of statistical analysis such as the correlation, hypothesis testing and regression has been utilized to determine the factor affecting financial performance. Return on assets was taken as a proxy while the independent variables include; return on equity (Roe), liquidity (Liq), leverage (Lev), capital structure (Cs), size and age. The results showed that the overall trends of financial performance are quite satisfactory despite it varies in different sector and even amidst of the global financial crisis. Among the different sectors, it can be concluded that companies in the industry, commerce and investment sectors have been performing well with desirable ROA thus this can be a good option for investors to invest and maximize their return. The

findings of statistical analysis, concluded that there is positive significant relationship between Roe, Liq, Cs and Lev but it is not correlated with ROA, while size and age proved to have no effect on financial performance.

Keywords

Listed companies, financial performance, financial ratio analysis, statistical analysis and Mauritius.

REF: ABS5170102

**ASSESSING THE USE OF
MARKETING TOOLS IN POLITICAL
CAMPAIGNS: THE CASE OF
MAURITIUS**

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The use of marketing techniques in politics is gaining popularity due to the benefit it generates in the process of electoral support. Similar to many emerging nations, politicians in Mauritius are turning towards marketing tools. Therefore, to develop a broader understanding of the trend, this work aims to assess the use of marketing techniques used in political campaigns during post-independence general elections held in Mauritius. Exploratory in nature, this research adopted the inquiry process of understanding, a qualitative form of research design. Press cuttings derived from the ten (10) past general elections were observed three months before the elections date and a total of 177 articles were analysed. The data were collected from the Mauritius National Archives (MNA) where newspapers cuttings together with editorials and specific literature based on politics in Mauritius were obtained.

The findings show that slogan is a powerful tool used by the politicians to capture the attention of the voters and ignite the willingness for electoral support. It was observed that for the ten last general elections 4 times the winning political alliances uses a two words creole slogan instead of long sentences. It has also been found that successful political alliances were capitalising on particular words like 'change', 'future', 'progress' and 'new' as they were perceived to be captive and attractive. It was only in 1987 that the appearance of caps with the printed logos appeared in the press. Newspapers adverts are also used mainly to announce public gathering and the core leader's messages to be shared with voters. In the 1995 campaign, that time opposing political alliance launched their campaigns with coloured newspaper advert some months before the election. Another mode of communication is the use of TV spot which is different with developing state since there is a single national television channel the Mauritius Broadcasting Corporation (MBC) which has been for long the preferred audiovisual support media by politicians. The findings further indicated that politicians from the traditional parties were those who introduced new marketing techniques during campaigns and the congruency with the commercial product is very high. Since the last decade, the use of internet was also popular with Websites, WebTV and Facebook pages where politicians communicated directly with the voters. The study winds up with a conclusion that politicians are trying to adapt their communication style timidly by making use of modern technologies to enhance relationship with voters similar to commercial marketers. This study recommends that politicians adopt an integrated marketing communication

approach since politicians can no longer rely on the umbrella themes and ideological appeals of earlier times. But the main limitation of the study was its generalisation in another context since the electoral system is not the same everywhere. Nevertheless, it gives an interesting insight into the contribution of marketing techniques in political campaigns in Mauritius. Future research may look into a comparative analysis between another developing country having a similar electoral system and Mauritius.

Keywords

Political Marketing, Politicians, Marketing Techniques, Elections

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REF: ABS4760045

BRINGING ORGANISATION VALUE THROUGH CRM 2.0

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Customer relationship management (CRM) is an essential marketing tool for acquiring, servicing, retaining and building long term relationships with customers. The benefits of CRM include better targeting and customer loyalty resulting in increase in revenue. Web 2.0 has changed the business landscape at a frenetic pace. Traditionally CRM was focused on customer transaction and now with social media platform, both customer transactions and customer interactions are observed- transforming CRM to CRM 2.0 or social CRM. Social communication mainly social network is one of the main drivers for this transformation. The aim of this paper is to understand how company and customer co-create necessary knowledge for insight and value.

Through critical analysis of literature it has been found that the social customer is not passive and wants to be a participant to share his/her experience whether bad or good with peers and others. The traditional CRM tools are not suitable as customer is no longer the object of sale but instead defined as the subject line. To engage vibrant social customer new tools and strategies have to be developed and CRM 2.0 is designed to do that.

Keywords

Web 2.0, e-marketing, CRM, CRM 2.0, customer collaboration

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Ref: ABS6540140

CUSTOMER ADOPTION BEHAVIOUR TOWARDS MOBILE BANKING IN MAURITIUS

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Nowadays, with an increase in the use of mobile phones, banks have developed innovative mobile banking services in order to improve customers' banking convenience and at the same time to minimize operation costs. The growing demand for smart phones has made Mobile Banking application become a feasible option for banks. These applications allow customers to self-on-board online, effect their bill payments and transfer of funds at finger touch. However, despite such benefits, the usage of Mobile Banking in Mauritius is found to be low among bank customers. The aim of this study is to analyse the aspects of the customer adoption behaviour towards mobile banking. This research will provide Mauritian banks with a better understanding of customer adoption towards Mobile Banking services. In addition to that, it will help them to plan their marketing strategies and promotion approaches for Mobile Banking services in the future. Five factors from the Innovation Diffusion Theory (IDT) and three factors from the extended Technology Acceptance Model (TAM) were



integrated to determine the adoption of Mobile Banking. A survey research using a stratified sampling method was conducted among the 151 customers by means of a questionnaire that was designed in a Likert scale format. Data analysis was carried out by using SPSS and the research hypotheses were tested through the use of factor analysis, regression, Pearson Chi-Square test and cross tabulation to statistically generate the relationship between the independent and dependent variables. Findings indicate that security, privacy and reliability of Mobile Banking are the main obstacles among the non-users. Mobile Banking applications is found to be suitable and satisfied by the users of Mobile Banking. It is also observed that compatibility, perceived ease of use and perceived credibility have a positive relationship while trialability is the only factor found to have a negative effect to the adoption of Mobile Banking in Mauritius. Findings also indicate that there is an association between age, education, type of smart phone and type of internet connection and Mobile Banking usage. However, Mobile Banking usage is not associated with gender and salary. Furthermore, value barrier and usage barrier are found to be the main obstacles to Mobile Banking usage. The study is significant to the Mauritian Banking Sector as Mobile Banking is a trend that has started and will stay for some time. Hence, Mobile Banking application developers will have an insight of the expectation of customers which will enable them to provide a more personalized service to the customers as well as stimulate the growth of Mobile Banking.

Keywords

Customer adoption, Mobile banking, Behavioural Intention, TAM, IDT, Mauritius

Ref: ABS3120210

DETERMINANTS OF INTELLECTUAL CAPITAL PERFORMANCE IN MAURITIUS

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Intellectual capital (IC) is an important intangible asset that has considerable impact on the success of organizations and has ascended as a key factor for their future success and long-term profitability in the age of knowledge based economy where tangible assets are slowly being replaced by intangible assets. It has accordingly become imperative for decision makers in the organizations to be aware of the factors affecting intellectual capital performance so as to take actions towards improving their future financial performance. Despite numerous empirical studies on intellectual capital and its effects on financial performance, determinants of intellectual capital performance is the missing ring in the field of IC research. Moreover, the relatively few studies carried out on the determinants of IC performance have focused mainly in developed countries as well as on the banking sector with inadequate consideration given to examine intellectual capital practices of business within emerging countries (Al-Hamadeen & Suwaidan, 2014). Also, they have provided mixed empirical results with respect to the influence of the various determinant factors. Hence, this paper tries to fill this gap, by investigating the main determinants of intellectual capital performance for the 152 largest companies in Mauritius over the period 2007 to 2016. This study departs from the existing ones methodologically as it uses a dynamic panel

vector autoregressive model that takes into account the dynamic nature of the hypothesized link. The value added intellectual capital index (VAIC) developed by Pulic is used in this study to measure the intellectual capital performance of companies. Our results indicate that firms profitability, efficiency and size as independent variables have a positive and significant effect on intellectual capital performance. The other independent variable, barriers to entry, has a negative influence on intellectual capital performance. Meanwhile, leverage does not significantly influence the intellectual capital performance.

Keywords

Intellectual Capital, Intellectual Capital Performance, Value Added Coefficient Index.

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REF: ABS2160158

**DOES IMMIGRATION AFFECT
RESIDENTIAL REAL ESTATE
PRICES: EVIDENCE FROM
AUSTRALIA**

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leading to population increases in some countries. Consequently, the population increase might have led to more housing demand. This study is being conducted to find if immigration has been affecting housing prices in Australia, by using data for eight states on a quarterly basis from 2004 - 2017. To study the dynamic nexus between housing prices and immigration a panel vector autoregressive approach (PVAR) will be used. The bi-directional causal relationship between the two variables will also be studied. Further analysis will be undertaken to find if in some states the link between immigration-housing prices is more important. The regression results indicate that in the short run immigration positively and significantly affects housing prices; whereas in the long run there is no significant relationship. From the regional breakdown and analysis, it is discerned that in some states in the long run there is significant and positive relationship between immigration and residential real estate prices. In the long run, it is noted that housing prices affect migration in a negative and significant way.

Keywords

Residential Real Estate Prices, Immigration, Australia, PVAR

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Worldwide migration flows have been gaining momentum over the past years,

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Ref: ABS9780196

**ENVIRONMENTAL ACCOUNTING
SYSTEMS OF SMALL AND MEDIUM
SIZE HOTELS IN MAURITIUS**

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The past decade has witnessed an increasing number of calls for the 'greening' of the tourism sector through the applications of environmental management systems (EMSs) (Gibassier and Alcouffe, 2018) as applied to various hotels across the globe. Currently, the world is facing several environmental challenges namely climate change, pollution, extinction and destruction of ecosystems, excessive consumption of resources and increasing production of solid waste. Hotels' operations have a significant impact on the environment (Hernáiz, 2017), hence the question that arises is how small and medium hotels incorporate environmentally-friendly practices in their day-to-day strategy.

The concept of EMS provides an approach for integrating lines of inquiry about the internal and external drivers and managerial processes (Bebington and Larrinaga, 2014) that may foster firms' environmental performance and their economic position in the market (Antheaume, 2013). Extant research have primarily focused on the effectiveness of EMS in big sized hotels. While, the study of EMSs in small and medium hotels is at an embryonic stage (Chan and Hawkins, 2012), their impact on

the environment calls for a pressing need to investigate on their ability and willingness EMSs. This study aims to address this research gap by exploring and evaluating the application of EMSs in small and medium hotels in Mauritius. This project will help to identify the current environment management practices and challenges of the small and medium sized hotels in Mauritius.

Furthermore, with the intent of gauging an in-depth appraisal of the status quo of environmentally-friendly practices and policies in small and medium hotels in Mauritius, a qualitative approach was adopted. Initially, based on the premise that a case study approach allows an insight into the phenomenon being investigated, data was collected from three stratum of employees from a three-star hotel. The findings were fed into the questionnaire design. Also, a series of in-depth, semi-structured interviews were conducted and relevant documents were collected for further analysis. The targeted sample population comprised of managers and accountants dealing with the management and accountability of the hotel's environment.

Results from the study corroborate with existing scholarship that by the management accountant could play a key role in improving environmental management of the hotels. Furthermore, the results highlighted that while hotels were engaged in environmentally-friendly practices, they were unaware that these represented some of the elements of EMS.

Keywords

Environment Management Systems, controls, Small and Medium sized hotels.

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Ref: ABS7380010

**EXPERT AND NON-EXPERT
EVIDENCE RELATED TO SAFETY ON
THE WORKPLACE**

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A workplace is a place where majority of workers earn their living. Nowadays, with the evolution of technology, new forms of hazards (Chemical, Electrical and so on) are being noted. Basically, a workplace has numerous hazards which are the concern of one and all. Sometimes, there is also the presence of third parties in any workplace such as customers, young persons, visitors and so on, making them prone to these hazards. It can also be said that not all persons in this environment will have same level of knowledge concerning safety and health hazards. Thus, to eliminate any occupational safety and health risks in any organization, new approaches are being adopted. In Mauritius, the main piece of legislation is The Occupational Safety, Health and Welfare Act 1988 that has been repealed and replaced actually by 'The Occupational Safety and Health Act 2005' (OSHA 2005). Health and Safety regulations are important at work as there are more injuries and less hygiene and safety at work. The injuries are caused by a number of factors and the severity of an injury can be non-fatal or even fatal.

Through an expert and non-expert evidence, this research aimed to provide relevant legal

issues pertaining to safety regulations on the workplace to avoid accidents and to provide more and better awareness to prepare workers and citizens for the future on the workplace. 'The Duties of employers', 'Onus of Proof', the 'Risk Assessment Process' and 'Safety & Machinery' has been scrutinised and analysed.

The OSHA 2005 has brought many changes in our local system. Both the private and the public sector are duly responsible for its genuine compliance. In addition, it is also of paramount importance to take note that our sources of law are borrowed from both English Law and French Law. This empirical research regarding 'Expert and Non-Expert Evidence Related To Safety On The Workplace' has shown to what extent employers and employees may collaborate for better efficiency or even increasing effectiveness at work. Reference has been made to various law cases with the objective of increasing the understanding of safety at work. Further recommendations would be to consider the strict application of an Occupational Safety and Health Management System (OSHMS) at each place of work. Guidelines of this manual have already been set out by the Ministry of Labour, Industrial Relations and Employment. Its aim is to allow an organisation to identify and control its safety and health risks, reduce accidents at work and improve performance. It has been set out in such a way to form part of the management system of an enterprise. It also makes reference to preventive and corrective action and performance review. It is a crucial element.

Keywords

Accident on the Workplace, Expert and Non-Expert Evidence, Safety and Health Risks

Ref: ABS7390075

EXPLORING THE MULTIGENERATIONAL TALENT POOL OF THE MAURITIAN TERTIARY EDUCATION SECTOR

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Research in generational differences at the workplace has gained a lot of momentum since the last two decades (Lyons and Kuron, 2014) since it is claimed that an understanding of generations enable managers to better attract, engage and retain talent (Dencker, Joshi and Martocchio, 2008). Many studies on generational studies conducted worldwide have used the popular classification of the US classification, which is Baby Boomers, Generation X and Generation Y. However, the use of this classification has been criticized as it fails to take into consideration the socio cultural and historical context (Ting et al., 2018). It is also argued that it may not be relevant to just superimpose the generational classification of one society to another as they do not experience the same set of events in their formative years (Lyons and Kuron, 2014). Moreover according to Parry and Urwin (2017), the prior assumption that these generation categories are universal, invalidate many studies done on generational diversity at the workplace. Hence there is a need to identify the generational cohorts specific to a particular context and compare that with the US classification to know whether the US one can be adopted before undertaking any studies related to generational diversity.

This study seeks to explore the generational cohorts characterizing the talent pool of the tertiary education sector of Mauritius and bring empirical evidence to whether the US classification is relevant to Mauritius. A qualitative approach will be adopted to identify the key events experienced during the formative years and how participants were affected by them. In depth interviews will be used to collect data. Interviews will be transcribed and analyzed to form generational cohorts.

Theoretically, this study will add to the existing literature by providing empirical evidence on whether the US classification is relevant to the Mauritian context. The generational cohorts of Mauritius as well as their characteristics will also be revealed and this classification can be used as a foundation for further studies in fields like marketing, sociology, psychology and human resources management. Practically, the findings will add value by providing evidence-based information about the generational composition of the workforce of the tertiary education sector of Mauritius. Universities play a crucial role in accelerating national and economic development by creating, transferring and disseminating knowledge. People are their main assets and by understanding the characteristics of the generational cohorts in the talent pool, university administrators will be equipped to manage and deal with challenges linked to generational diversity at the workplace.

Keywords

Multi generational talent pool, generational cohorts, tertiary education sector

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Ref: ABS5270114

**FROM OFFSHORE TO GLOBAL
BUSINESS: WHAT ARE THE
PROSPECTS?**

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In the 1990s, the Mauritian financial sector, which was largely dependent since then on the banking and insurance services, faced a

turning point as the offshore sector was implemented through the enactment of the Mauritius Offshore Business Activities Act 1992. This sector modified the whole financial panorama of the island and contributed enormously in making the financial sector one of the pillars of the Mauritian economy. The offshore sector intended to allow resident corporations to be incorporated and registered in Mauritius though they would be conducting business outside Mauritius, thereby providing them with benefits such as taxation relief, easy business incorporation processes, confidentiality and other corporate incentives. For Mauritius, it brought foreign investment, it created employment, it led to infrastructural development, etc.

As the years went by, the offshore sector, due to pressure from international organisations and competition from other small island offshore jurisdictions, witnessed significant transformation. It came to be known as the global business sector with management companies operating to represent the global business companies. More recently, a series of amendments were recommended in the budgetary measures as a response to the US FATCA legislation and the OECD/ G20 BEPS project.

The case of Mauritius demonstrates that, despite the fact offshore jurisdictions are often tagged to be applying a lenient regulatory framework, a plethora of regulatory requirements need to be satisfied by and are applied to global business companies. The thriving of the offshore sector would, may be, not have been possible if it is not backed by a strong regulatory framework.

This research paper, by adopting a qualitative approach, aimed at (i) assessing the development of the offshore sector in Mauritius, (ii) analysing the rationale behind the various amendments that were brought to the legal framework from its inception and (iii) investigating the consequences of the amendments on the protagonists of the sector.

The paper eventually establishes that, theoretically, a strong regulatory framework circumscribes the global business sector, but, realistically it faces serious challenges ahead as the stakeholders handle opposing challenges: on one side, there is the strong will of policy-makers to demonstrate good faith towards the IMF, OECD and other international bodies, and to shun away money laundering and other suspicious practices in the jurisdiction while on the other side, operators wish to maintain their essential commitments towards their clients, of which confidentiality, for e.g., lies as a very quintessence. In this rift, the prosperity of the island as an offshore jurisdiction is put at stake.

The study contributes to the rather scarce literature on offshore legal issues. The current research works available consist primarily of empirical investigations but the legal analysis is not well developed. Thus, it provides a scrutiny of the different regulatory tools existing in the legal framework. The conclusion validates that the global business sector, if appropriately regulated, adds to the prominence of the financial sector but the concerns of the operators should not be ignored.

Keywords

Financial regulation, Global Business Companies, Offshore Sector, Compliance

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restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution." (Renner, Sean & Jill, 2008) Recognising the importance of a universal understanding to describe green jobs, this research includes all its dimensions including its drivers, best practices, measures to facilitate the implementation of green jobs and green practices within an organisational setting.

The major objectives of the research were set as follows:

- i. To identify the level of awareness of green jobs among Mauritian firms
- ii. To investigate to what extent firms are ready to embark into green jobs
- iii. To identify the drivers and challenges for shifting from brown to green jobs
- iv. To make recommendations to address the challenges facing green jobs.

The quantitative research approach was used whereby an online survey questionnaire was administered to collect data. The sample included all categories of organisations ranging from the agricultural, construction, retail, manufacturing to tourism and financial sectors. A total of 500 respondents were contacted to fill the e questionnaire. 150 questionnaires were submitted and 130 were retained for analysis. The results showed that the implementation of green jobs in Mauritius is still at an early stage with potential of doing better. The Spearman rho correlation found no relation between sector activity and the level of awareness regarding green jobs. A Pearson Chi square test was also conducted and showed that there was no

REF: ABS9580188

**INVESTIGATING THE
IMPLICATIONS OF ADOPTING
GREEN JOBS IN MAURITIAN
COMPANIES**

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This study investigates the challenges faced by Mauritian organisations to implement "green jobs". Green jobs are defined as "work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or

relationship between the measures to facilitate green jobs and the number of years that organisations exist. The major drivers of green jobs were related to technology and the need to innovate followed by the consumer preferences. Regardless of the sector in which the companies were operating, they faced same difficulties to implement green jobs. While issues related to "costs" scored highest means, "absence of government policies" scored the lowest mean in this category.

However, the Kruskal Wallis Test indicated that the production and provision of green products and services depended on the sector activity with the retail sector scoring the highest rank. Furthermore, the study revealed that although some firms did not have green jobs, they did engage in green practices like the use of renewable energy, initiatives aimed at minimising pollution and maximising the use of day light. Based on the findings of this research, it is recommended that there is a need to sensitize organisation decision makers that although the cost of shifting from traditional jobs to green jobs might be high, green jobs offer better return on investment in the long run in view of high consumer preferences for green products. Policy makers should thus reinforce awareness and information campaigns about green jobs.

Keywords

Green jobs, drivers, challenges

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Ref: ABS4710192

KEY DETERMINANTS AFFECTING PROJECT SUCCESS IN SMES: LITERATURE REVIEW

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The small and medium enterprises (SMEs) play a major role in the development of a country and act as catalysts for the economic growth and in improving living standards (Chang & Cheng, 2019). Projects' success undertaken by SMEs are highly influenced by several factors and a comprehensive insight of them is worthy to prevent project failures (Matinaro, Liu, Lee, & Poesche, 2019). Several studies have reported many underlying issues in successfully implementing projects in SMEs and the rate of project failures are quite alarming (Banerjee, 2014; Sternad, Krenn, & Schmid, 2017). Unlike bigger organisations, SMEs are limited in terms of finance, resources, knowledge, market intelligence, long-term strategy and reliable customers (Higuchi, Mhede, & Sonobe, 2019; Khan & Burton, 2016). Despite the benefits of SMEs, few frameworks are available to support business entrepreneurs in attaining sustainable growth (Banerjee, 2014).

A recent report highlighted that employment of SMEs in Mauritius accounted for around 48% in 2015 compared to 46% in 2007. Moreover, SMEs generated 35% of Gross Value Added in 2015 compared to 32% in 2007 (Jawahir, 2015). Despite the gradual

rise, Mauritian Government has highlighted the importance to improve the economic growth by boosting the SMEs sector. Since project success (PS) is multidimensional, business entrepreneurs often face major challenges to identify the determinants they should include in their businesses. Thus, it is crucial to explore and model these determinants and their focus areas that can be used in evaluating the PS.

The aim of this research work is to conduct a literature review to identify the factors that are exclusively contributing to PS in SMEs. This study also investigates the relationship between PS in SMEs and its determinants to provide a systematic way that can allow Mauritian business entrepreneurs to benchmark their businesses and evaluate to which extent their projects are aligned with the PS determinants.

The determinants and their respective focus areas were identified and regrouped under three main categories namely 1) the entrepreneur characteristics (age, gender, work experience, education level, and business ability), 2) the firm characteristics (size, capital, and origin of business), and 3) independent variables (financial resources, communication and marketing strategies, technology and software, knowledge, social network, supply chain facilities, motivation, government support and encouragement, project management and business plan). The results showed that all determinants and their focus areas impact the PS. Moreover, most researchers have highlighted that financial resources have the most significant influence on PS. Lack of financial resources is found to influence the degree of investment in communication and marketing strategies, technology and software, project management and business plan. Moreover,

technology and software are found as another important focus area for PS due to recent technological advances and e-business.

Regardless of all the project failures, advancement in the SMEs sector can lead to numerous benefits in the employment sector in Mauritius. This research work can help business entrepreneurs with a holistic approach towards understanding SMEs in Mauritius and points out the key determinants they can consider to ensure success and sustainable growth.

Keywords

Project Success, Sustainable Growth, Small to Medium Enterprises (SMEs), Mauritius

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Ref: ABS9640099

LEADERSHIP STYLE ON EMPLOYEE MOTIVATION AND THE CULTURE FOR INNOVATION IN THE MAURITIAN PUBLIC SECTOR

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The aim of the study is to investigate the leadership style in the Mauritian public sector on employee performance and the way leaders motivate their employees to innovate. The research helps explain whether differences in the leadership style (democratic, autocratic and laissez-faire)

which is/are currently adopted by the line managers in ministries and departments matter.

In the public sector, the quality of service delivered is often criticised for its sluggishness. As such, the government has embarked on a series of reforms and transformation strategies. Leaders of organisations play an important part in motivating their employees, encouraging them to innovate and to adopt new technologies in performing their tasks to become more productive and efficient. Lack of leadership can lead to a climate of demotivation affecting the service delivery.

This paper uses survey instruments to capture the effects of leadership style on employees' performance and on the creation of an environment for innovation. The findings reveal the most dominant leadership style that has significant positive effect on the overall performance of employees is the transformational leadership. In fact, more than 75% of employees agreed that they perform better when they are not pressurised to perform, when they form part of the decision process and when there is good communication from their leaders. Our analysis also shows that innovation is positive and significant only under transformational leadership than under transactional or laissez-faire.

Keywords

Leadership, Leadership Style, Employee Performance, Innovation

Ref: ABS4810209

**RELATIONSHIP BETWEEN
EXCHANGE RATE AND STOCK
PRICES: EVIDENCE FROM STOCK
EXCHANGE OF MAURITIUS**

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Many companies, which undertake foreign activities or buy/ sell goods from foreign markets, will find their values and hence their stock prices being affected by changes in exchange rates. Hence when investors are purchasing stocks, the value of their investments might vary as exchange rates fluctuate. This study is being undertaken to find the link between exchange rate and stock prices in the Mauritian context. For the purpose of the study, time series data will be collected for the period 1990 to 2016. A panel vector autoregressive approach (PVAR) will be used to establish the dynamic relationship between stock prices and exchange rate. Other macroeconomic variables, such as gross domestic product (GDP), interest rate and inflation rate will be included as control variables. The results indicate that both in the long run and in the short run, exchange rate is insignificant in explaining the variations in stock prices. Whereas for the control variables, it was noted that they have a positive and significant effect on stock prices.

Keywords

Exchange Rate, Stock Prices, SEMDEX, PVAR

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Ref: ABS1030221

**REVISITING TRADE-BASED MONEY
LAUNDERING**

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Over the few years, trade-based money laundering has evolved from being addressed as “the next frontier” (Cassara, 2015) to “the final frontier” (Bell, 2018) of anti-money laundering regulations. As per the Global Financial Integrity (2017), trade-based money laundering eases transnational crime which is estimated to range each year between \$1.6 and \$2.2 trillion. The heavy regulation of the financial services system, has led to an increasing reliance on international trade that represents “a ready-made vehicle” for money laundering (“Trade and Money Laundering”, 2014). Thirteen years ago, whilst addressing the money laundering vulnerabilities of trade, the Financial Action Task Force (2006) highlighted that trade-based money laundering constituted one of the three most targeted methods of money laundering. While today it is still one of the most heavily relied typology, with time the modus operandi used by money launderers to launder illegal proceeds through trade has faced significant changes. Money launderers

have increasingly been adopting sophisticated schemes to move dirty money across countries and thwart regulatory measures. They are assisted by the dynamic environment of international trade that enables the adoption of various methods and techniques (Asia Pacific Group on Money Laundering, 2012). The rapid expansion of the international economy further expands avenues for money launderers to exploit the international trade system. Moreover, at present there are no internationally recognised standards that specifically address trade-based money laundering; rather the Financial Action Task Force (2008) has advocated best practices for member countries to strengthen their national AML frameworks. Several regulatory approaches have been proposed. This study provides a revised theoretical understanding of trade-based money laundering. In particular, it analyses the increasing reliance on this typology as well as the mechanisms that are heavily adopted. The techniques used to avoid detection when laundering illegal proceeds through trade are also explored. The different regulatory approaches to address this money laundering method are examined. Drawing on secondary data that came principally from the literature on trade-based money laundering such as academic journals, official reports, typology reports, case studies and newspaper articles, this study sets the scene for further research on this typology. It provides a revised examination of the modus operandi of this typology to assist both the private sector and the regulatory agencies gain a better insight into trade-based money laundering for the identification and adoption of enhanced preventive measures.

Keywords

Trade-based money laundering, modus operandi, regulatory approach

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Ref: ABS2190130

THE ABILITY OF THE BAYESIAN VECTOR AUTOREGRESSIVE MODEL IN FORECASTING THE TOURISM DEMAND IN MAURITIUS

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There exists a rich amount of studies on the modelling and forecasting of tourism demand in the tourism literature, and research have employed different techniques from traditional regression approaches to modern econometric ones (See Witt and Witt, 1995; Li et al., 2005; Song and Li, 2008 for a survey of the literature). However, the application of the Bayesian Vector Autoregressive (BVAR) model in the modelling and forecasting of tourism demand remains more fairly limited. Among the only exceptions feature the studies of Wong et al. (2006) and Assaf et al. (2018). Moreover, the literature has also neglected to a large extent island economies cases which are economically heavily dependent on tourism as well as vulnerable to international economic conditions. Thus, this study aims at modelling and forecasting of tourism demand for the case of Mauritius. The latter poses as a good case study given it is a tourism based economy and it is also one of the best performers of the African continent with a relatively good economic success story. In particular, the forecasting performance of the BVAR is evaluated against three other models namely the VAR, the Autoregressive and Moving Average (ARMA) model and the Generalised Autoregressive Conditional Heteroskedastic (GARCH) model using the root mean square error (RMSE), the mean absolute error

(MAE) and mean absolute percentage error (MAPE) criteria. Despite that BVAR models are often applied to reduce the risk of over parametrization, one interesting question that arises is which variables among the potential determinants of tourism demand should be included in the models? As such, this study employs the Bayesian Model Averaging (BMA) approach to address this issue of model uncertainty (Raftery et al., 1997). Hence, this study somehow departs from existing literature as it applies the BVAR in the modelling and forecasting of tourism demand in Mauritius and uses the BMA approach for the selection of potential explanatory variables.

Keywords

Tourism Demand, Forecasting, Bayesian VAR, Mauritius.

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Ref: ABS3250059

**THE ROLE OF CORPORATE
GOVERNANCE ON THE
PERFORMANCE OF MAURITIAN
FUNDS**

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As long as corporations have existed scandals have followed suits, cases such as Madoff and Ivan Boesky have rocked the confidence of investors and highlighted the need for a proper structure of governance in funds. Mauritius represents an oasis of stability; the choice of investment does not rely solely on firms but increasingly on different types of funds such as mutual funds and closed-end funds. The market for different financial products is accommodating newer types of funds such as ETFs; this study will, therefore, focus on the effect of corporate governance on a different type of funds in Mauritius.

The study is important because corporate governance is a matter that will phase out any time soon, it is important in the survival of firms, funds, banks and other institutions. It may also be useful for regulators to identify what factors have an impact on performance so that when the code is improved the findings can contribute as helpful inputs.

The literature on corporate governance in Mauritius is centered on the firms, Mahadeo and Soobaroyen (2012) focus on board composition and performance of Mauritian

listed companies; they find that women remain underrepresented on boards. Furthermore the age, independence and educational background of the directors have an impact on short term performance. Beehary et al. (2009) analyses mutual funds in Mauritius and found that positive alphas were present in their sample highlighted superior skills of investment managers in picking stocks. Further finding that mutual funds that are heavily investing in local stock have been able to beat the market.

The sample will be focused on funds for the past 5 years (can be more providing there is data availability). Since corporate governance data is not available for Mauritius on databases such as Bloomberg or DataStream, they will need to be hand collected therefore restricting the years of observation. Some independent variables to be collected will be the board size, female representation on the board, remuneration of the directors, management team size, and management fee. Several performance measures will be used, accounting-based ratios such as ROA and ROE; the Sharpe ratio will also be calculated and regressed against corporate governance variables to determine the effect of governance on outperformance.

The presence of large boards bring the hindrance of effective communication and also a lack of cohesiveness which leads to the development of conflicts, therefore we expect that as the board size and the management team increases, performance will worsen. Similar to Carter et al. (2003), we expect that the representation of women on the board will have a positive relationship with performance because women improve the quality of monitoring (Huse and Sollberg, 2006). On the other hand, it is

expected that when management fee increases it will impact the return that is available to shareholders, therefore higher fees will lead to worse performance.

Keywords

Mauritian funds corporate governance
Investment funds

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Ref: ABS7920088

TRADE OPENNESS AND EXCHANGE RATE: A META-ANALYSIS

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The factors that usually cause exchange rate to fluctuate have long been explained in many theoretical and empirical studies. Trade openness remains one of the key determinants of these fluctuations in exchange rate, especially in developing countries (Ouattara & Strobl, 2008; Elbadawi et al., 2012; Gnimassoun, 2012). Defined as the ratio of the sum of imports and exports of goods and services to gross domestic product, trade openness is usually used as an indicator of trade policy restrictions, such as tariffs and quotas, in a country. Consequently, an increase in trade openness through the lifting of existing trade restrictions causes a reduction in the price of imports. This, in turn, entails depreciation in the respective country's exchange rate. Nevertheless, in the empirical literature, the results on the trade openness and exchange rate nexus were mixed and divergent; while most studies revealed a negative relationship between trade openness and exchange rate, some found a positive relationship and very few even demonstrated a null relationship. To this end, the present study aims at investigating the underlying elements influencing the trade openness and exchange rate nexus within a meta-analysis framework. In particular, on the basis of the literature available, a thorough examination of our data set is done to obtain answers to a series of questions highly relevant for both researchers and policy-makers: (1) Do data

characteristics, specification characteristics and estimation characteristics systematically influence the estimates? (2) Do home country's characteristics affect the size of the impact of trade openness on exchange rate? After the removal of outliers, our data set consists of 295 estimates extracted from 60 studies. The oldest study in our sample was published in 1979 and the most recent in 2017. We start by checking for the presence of publication bias within our data set. Both visual and formal methods confirm its presence. However, Rosenthal's Fail-safe N value proves that the latter would not affect the conclusions drawn from our analysis. On the other hand, the random-effects meta-analysis of the trade openness estimates extracted from 60 studies generates a partial correlation coefficient of -0.245 [p-value = 0.000] with a 95% confidence interval [-0.288, -0.203]. This suggests that the effect of trade openness on exchange rate is negative and statistically significant. In addition, it is obvious from the observed effect size, which ranges from -0.288 to -0.203 that the size of the impact of trade openness on exchange rate varies across studies. As such, in order to understand the reasons behind such variation, a meta-regression analysis is carried out using the effect sizes of the trade openness as the dependent and a set of moderator variables as independent. We employ the Bayesian model averaging techniques to cater for model uncertainty, and to retain the most important variables that may influence the effect of the trade openness on exchange rate. Our findings reveal that the variation in the impact of trade openness on exchange rate are due to country characteristics, data characteristics, estimation characteristics and publication characteristic.

Keywords

Trade Openness, Exchange Rate, Meta-analysis

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Ref: ABS9410166

WILL TELEWORKING TRANSFORM THE WORKING ENVIRONMENT IN MAURITIUS?

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Millions of people around the world are now working away from traditional offices. Telework, which existed since the 1970s (Nilles, 1975), is also known as telecommuting, remote work or ICT-mobile work, and refers to working from any alternative work of place other than the traditional office. According to the 2017 State of Telecommuting in the U.S. Employee Workforce Report, 2.9 percent of the total U.S. workforce, work from home at least half of the time, up from 1.8 million in 2005 (Flexjobs, 2018). Teleworking comes with a number of benefits like promoting work-life balance, increasing productivity,

reducing real estate costs, boosting higher employee morale and lowering the level of stress as highlighted in an article by Loubier (2017) from Forbes.

The practice of this concept is still at a budding stage in Mauritius and there is no research as at date that has been carried out to investigate its implications for the country. In addition to the advantages of teleworking highlighted by Loubier (2017), Mauritius has a lot to benefit in terms of gas consumption. As at 2017, there were 519,265 vehicles on the roads of Mauritius. In a report by the Road Development Authority (RDA), Dorsamy and Poochua (2013) mentioned that traffic congestion was already costing the Mauritian economy around Rs 4 billion annually in 2008. Ten years later, with the exponential increase in the number of vehicles, this amount should have increased many fold. Moreover, road traffic accidents keep increasing and had reached 29,627 in 2017 (Statistics Mauritius, 2017). To address this issue and given the escalating rate of pollution, and inflating travel costs in the country, teleworking is being envisaged to provide solutions.

This study looks at the extent to which employees might be motivated to transition into this new mode of work and is based on the theoretical framework of the Self Determination Theory (SDT) which offers a powerful understanding on the attitudes of individuals to motivation (Gagné & Deci, 2005). A mixed-method approach will be used to collect both qualitative and quantitative data. Stratified sampling will be used to select respondents from different sectors including the Banking, ICT/BPO, Education and General Services. A sample of around 250 people will be targeted for the purpose of this investigation. A questionnaire has been designed to collect

both quantitative and qualitative data using a 5-point Likert scale and open-ended questions. Furthermore, in-depth focus group discussions will also be carried out with members from each target group to triangulate data obtained from the questionnaires and dig deeper into the actual opinions and views of the respondents.

In the initial stage of data analysis, an exploratory factor analysis will be carried out using SPSS to investigate variable relationship and group common items into constructs. Further statistical analyses for the comparison of different grouping variables will be carried out in order to identify the promoting and inhibiting factors of teleworking in Mauritius. A framework towards the adoption of teleworking for future reference will be the end product of this research work.

Keywords

Flexible workplace, telework, telecommuting

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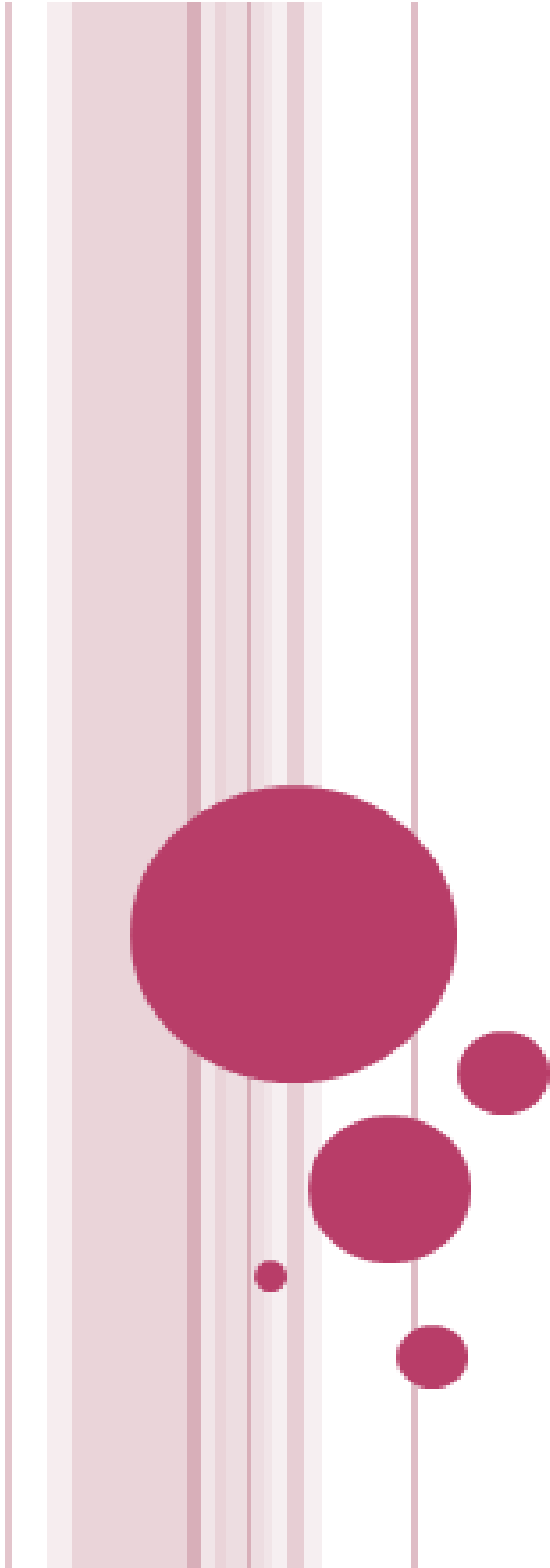


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ARTS & HUMANITIES



ABSTRACT

Ref: ABS9130046

AN INVESTIGATION INTO THE USE OF HINDUSTANI CLASSICAL MUSIC AS A STRESS-BUSTER IN REGARD TO POLICE OFFICERS IN MAURITIUS.

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Hans Selye, reckoned as the father of stress, defined stress for the first time way back in 1936 as "the non-specific response of the body to any demand for change." Everyone from every walk of life confronts stressful situations in her/his life on a daily basis, though one person may react positively, while another, negatively to stressful stimuli. Having said this, it is widely recognized by not only police officers and their close relatives themselves, but also psychologists and researchers world-wide that policing is a very stressful and anxiety-laden job. Given the nature of their duties, police officers are prone to fall a prey to physical, psychological/emotional as well as psychosocial stress (stressors) and their undesirable outcomes (stress-related physiological, psychological and behavioural responses and symptoms) (Toch, 2002, Chitre, 2014). When they are not controlling heavy traffic congestions, running after and arresting felons, drug dealers, rapists and murderers, they are reprimanded by superiors and criticized by ungrateful civilians; hence, experiencing the dilemma of being powerful, at one time, and powerless, at another (Kirschman, 1997 as quoted in Toch, 2002). Police officers in Mauritius are no exception, as they are not spared of stress and all sorts of distraught

conditions in their daily lives. Fully aware of the difficult and stressful situations in which the Mauritian police officers, more often than not, find themselves, the authorities concerned are trying to turn every possible stone to reverse this downward spiral and bust the negative and detrimental effects of stress on those officers. Yoga sessions, group and individual therapy sessions, sports events, stress relief outdoor activities, and workshops and working sessions on stress management, among others, are held on a regular basis (The Police Journal, 2014). However, music, especially Hindustani classical music, which, given its meditative and spiritual nature (Saxena, 2009), could be used as an antidote to the harmful effects of stress, has never been used as a stress-buster among police officers in Mauritius. This presentation will reveal how police officers who have voluntarily listened to Hindustani classical music during their working hours reacted behaviourally and psychologically to this new kind of stimuli. These preliminary findings were obtained through a study involving some 40 Police Officers from different Police Stations and Units in the Western Division. Data on how they reacted to Hindustani music were collected from four listening sessions and focus group discussions engaging those Police Officers.

Keywords

Stress, Police Officer, Hindustani Classical Music, Stress-buster, Behavioural Response, Psychological Response

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Ref: ABS5890168

**ANALYSIS OF THE EMERGENCE OF
MUSICAL STYLES: A
CONSTRUCTIVIST GROUNDED
THEORY APPROACH**

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Music is accepted as a tool for social change, but not many realise that social change affects music as well. These two go hand in hand and the ever-changing times also call for music to change along with it. In today's society, music has changed from being a vital need to an instrument of consumption. Consequently, in this consumerist society, music is subject to profound changes concerning their functions, significance and social use about which one has to have a deeper understanding thereof. Over the last five decades, musical styles, in societies in general, have grown in number due to various factors which are, however, poorly understood. Mauritian musical genre, namely Sega music, has evolved into multiple styles which reflect contemporary social, cultural, economic and political circumstances. What drives this process of music-making? What decisions do producers/composers take while making music? What motivates the producers of music to take such decisions?

As MacCallum, Mauch, Burt, & Leroi, (2012) put it, the music we listen to is primarily the product of aesthetic choices made by producers (i.e composers, performers). Drawing on frameworks from social-psychology and symbolic interactionism, this research tried to explore the qualitative elements such as behaviours, attitudes, opinions, and beliefs to comprehend the trends in the emergence of musical styles. This research intended to situate these contemporary trends in the creation of new variants of Sega music, subsequently, permitting to understand their impact on the evolution of the Mauritian history of cultural development. With a constructivist perspective, which propounds that reality is co-constructed, the views of eleven artists, especially those in the field of Sega music, were captured through unstructured interviews and analysed using the Constructivist Grounded Theory Method (Charmaz, 2014). After analysis, it was found that the factors contributing to the emergence of styles in the Sega music were mainly from the sociological perspectives and revivifying Sega music was established as the core category of this grounded theory. The core category 'revivifying Sega music' subsumes six other categories namely; 'reinvigorating Sega music,' 'appealing to the younger generation,' 'leveraging new Sega for economic gain,' 'developing audience and enhancing supply,' 'communicating social and other issues,' and 'procuring self-satisfaction'. Each one the above-cited theme is an abstraction of the various factors underlying the complex process of Sega music-making. Each of these themes was found to have contributed significantly to the creation of different Sega styles. A conceptual framework has been proposed trying to explain and make sense of what inspires and motivates music makers to do

music the way they do. This theory of Revivifying Sega Music attempts to describe and explain the emergence of a wide range of styles and also suggests sources for related research as well as future directions of study.

Keywords

Music making, musical style, constructivist grounded theory, revivifying music, Sega

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REF: ABS0560015

ARGUING FOR CREATIVE PRACTICE AS RESEARCH: TAKING THE DEBATE FORWARD

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It is an undeniable fact that higher education institutions in Mauritius lay much emphasis on research, as it is widely acknowledged that the latter contributes immensely to not only the advancement of the disciplines in which research works are undertaken and new findings are obtained, but also the expansion of new knowledge and understanding, in general. Moreover, as an over-spill outcome, research practice also helps in creating trained researchers having developed competence in research skills and procedures (Newbury, 2002), in addition to becoming more critical, reflective as well as reflexive (Kitchener, 1983). However, when

we talk of research in our country, we tend to think of and restrict ourselves to only the well-established, conventional research practice in such traditional fields as Education, Social Sciences and Humanities, Science, Technology, Agriculture and Engineering, and Business, Law and Management, among others. On the other hand, only a casual gleaning of the extant literature on research reveals that in other developed countries around the world, there are fully-anchored, well-grounded and valid research practices in such fields as the Creative Arts, be it performing arts, visual arts or creative writings, which have attracted many takers for several decades now. In this regard, James Cook University had added a new element in its definition of an academic research leading to a PhD as "the process leading to the production of original scholarly or creative work to be presented for the purpose of obtaining the degree" (Davis, 2003). (Emphasis is mine). Such research practices, the nuts-and-bolts of which are still unfamiliar to many of our academic-cum-artists, are yet to become an integral part of our research environment and culture. This presentation will attempt to shed light on some of those reliable and fully-acknowledged types of researches prevailing in higher education institutions overseas in the field of creative arts, which, as is the case of all conventional researches, uphold the underlying principles of 'search for truth' and 'contribution to knowledge'. It will critically examine some of the best practices related to creative practice research and its documentation (exegesis) which have acquired unanimity among post-graduate students and scholars alike. It also proposes a way forward for all potential researchers in the creative arts who wish to get involved in a kind of practice-research nexus which could help establish themselves as

researchers in their own rights and enhance their art-forms without stifling their creativity.

Keywords

Research, Creative Arts, Practice-led & Practice-based Research, Exegesis, Reflectivity, and Reflexivity

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REF: ABS1560074

CHALLENGES FACED BY MAURITIAN OLDER PEOPLE SUFFERING FROM DEMENTIA

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Dementia is characterised by a decline in memory, language, performance and problem-solving (Alzheimer's Association, 2017). It affects an individual's ability to perform daily activities. It is believed that dementia causes a high degree of hardship for both older people and their families (Prince et al, 2015 and Boustani et al 2003). Understanding the challenges faced by older people suffering from dementia is significant in this 21st century. Therefore, the main purpose of this paper is to analyse the main challenges older people face in their daily life and provide strategies which may be used to overcome the obstacles.

The scope of this study is limited to examine the challenges faced by Mauritian older people suffering from dementia only.

This study used the qualitative research method to facilitate the generation of the research objectives. Participants were recruited using the snowball sampling technique. Moreover, unstructured interviews were used to collect data from 12 older participants.

Overall, the findings depict that the older people interviewed for this study suffer from identity crisis. Most of the respondents claim that they have problems in managing their

identity. Few participants argue that they are still trying to make sense of dementia, that is, they are still trying to understand dementia and its impact on their lives. 9 out of 12 participants note that they face difficulties in maintaining positive relationship with other people. Besides, almost all the older people note that they are disregarded in society. Members of the public display a negative attitude towards the senior citizens. Three male older adults argue that they are regularly stabilizing their feelings of usefulness and worthlessness, striving to remain someone of great value.

This study contributes to knowledge by providing an in-depth analysis of the subject matter in the Mauritian context. Authorities may use the findings of this study to develop strategies in order to improve the quality of life of older people in Mauritius.

Keywords:

Challenges, Dementia, Older people, Mauritius

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REF: ABS1020094

CONTRIBUTION OF A PERFORMING ARTS EDUCATION MODEL TO CATER FOR A MAURITIAN CREATIVE ECONOMY - THROUGH DEVELOPMENT OF CREATIVITY IN STUDENTS

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Chain production being no longer the focus in Mauritius, in the present twenty-first century, there is a most fundamental need for a Mauritian creative economy - the first and foremost requirement being Innovation & Quality.

A Mauritian multicultural performing arts education model (dance) has been experimented on eighty primary school trainee teachers and nine focus group discussions were held - with Directors of arts/educational institutions, specialists in the field of education/arts/performing arts and, primary school teachers.

The trainee teachers were largely in favor of the components of creativity in the model - which can help students to be less stereotyped and to think out-of-the-box: engagement with quality & standards, a spirit of continuous improvement, originality, elaboration, resistance to closure, risk-taking & imagination.

A gist of the focus group discussions indicates that without such attempts at cultivating creativity, like in this arts/performing arts education model, the Mauritian educational system will:



- continue to, “sort of, manufacture small robots which is not needed anymore in the Mauritian economy”
 - continue inheriting “very good imitators”
 - remain one where “rote-learning stifles creativity”.
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This study contributes a model of Arts/Performing Arts Education, to "art-ify" the academic curriculum which can help towards an expanding and durable 21st century-Mauritius.

Keywords

Performing Arts Education, Creativity, Quality & Standards, Continuous Improvement, Resistance to Closure, Risk-taking, Imagination

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Ref: ABS6490053

CREATIVE ACTIVISM, A POTENTIAL OR A CONTRADICTION? AMBIVALENCES IN THE POSTCOLONIAL CITY OF PORT-LOUIS

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Much literature on the role of artistic producers in the city has tended to place them in a dichotomous position; whereby either they are perceived as part of the 'creative class' supporting creative city policies or as forces opposing the instrumentalisation of arts and culture for economic neoliberalisation of cities. Recently, academics such as Boren and Young (2017, 2013) have been calling for a more nuanced approach to query the nature of creative activism as Citroni (2017) acknowledges that there is an increasing and heterogeneous number of studies recognize that contemporary creative activism is rich both in potential and in contradictions as it spreads.

This paper proposes to investigate whether creative activism constitutes a potential or a contradiction in the context of post colonial cities. Port Louis, capital city of the Republic of Mauritius and field of research for this paper, could be defined as a post-colonial city due to its socio-historic structuration. Cultural producers of two privately-

organised festivals were investigated where more than fifty interviews were conducted with various types of urban stakeholders such as local inhabitants, artists performing during the festivals, festival-goers, town planners and administrators as well as the organisers themselves.

This paper contends that shifting representations of urban stakeholders create ambivalences towards creative activists, especially in postcolonial cities such as Port Louis, Capital City of Mauritius where there is an on-going but "fragmented struggle" for artistic producers to find a space of creative expression in an ethnically segregated urban fabric.

This paper contributes to the discussion initiated by Boren and Young (2017) in order to have a more grounded understanding of the ways in which art and culture may best contribute to the well-being of cities and their inhabitants.

Keywords

Creative Activism, postcolonial cities, Port Louis

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Ref: ABS3490023

EXPECTATIONS AND ATTITUDES TOWARD GENDER-BASED PRICE DISCRIMINATION AT HAIR SALON AND BARBERSHOP IN MAURITIUS

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There is a growing body of literature that indicates that women pay more for personal care services such as haircuts and dry cleanings (OC Ferrell et al, 2016 and Duesterhaus et al, 2011). It is important to note that gender price discrimination is popularized on media as pink tax.

The main purpose of this paper is to explore consumer expectations and attitudes toward gender-based price discrimination at Hair salon and Barbershop in Mauritius. It also seeks to reveal some of the reasons why one gender pays more than the other for an identical service.

The scope of this study is limited to examine consumer expectations and attitudes toward gender-based price discrimination at Hair salon and Barbershop in Mauritius only.

This study used both quantitative and qualitative research methods to facilitate the generation of the research objectives. We conducted semi-structured interviews with members of the public who were selected at random.

Overall, the main finding shows that women pay on an average Rs 200 more than men to have their hair cut. The average price paid by men for a basic haircut is Rs 100 whilst women pay an average of Rs 300. Few

consumers argue that women pay much more than men for their haircuts as they are offered a 'cut and blow dry' compared to men who obtain a 'cut and finish'. When we looked at the type of institutions often visited by the consumers, we found that most of them prefer to visit unisex salons which tend to be more fashionable and stylish. However, it is interesting to note that the price in hair salon is slightly higher than that of a Barbershop.

This study contributes to knowledge by providing a deep insight of the subject matter in the Mauritian context. Authorities may use the findings of this study to develop strategies to overcome gender-based price discrimination in the hairdressing industry. Nevertheless, it is important to note that any decision to ban gender-based pricing may involve a challenging deal between economic growth and concerns for gender equality.

Keywords

Expectations, Attitudes, Consumers, Gender-Based price discrimination, Hairdressing Industry, Mauritius.

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Ref: ABS0320180

EXPLORING INTO SOCIAL DIALOGUE AS A PARAMETER OF DECENT WORK AMONG CLEANERS IN MAURITIUS

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Decent work involves opportunities for work that is productive and delivers a fair income; security in the workplace and social protection for families; better prospects for personal development and social integration; freedom for people to express their concerns, organize and participate in the decisions that affect their lives; and equality of opportunity and treatment for all women and men (Ali, 2013). The promotion of decent work for all is the overarching objective of the International Labour Organisation (ILO). This is why decent work is at the heart of global, national and local strategies for not only economic and social progress but as a means to achieve sustainable development.

While the components of decent work namely, work and employment, rights at work, social dialogue and social protection are important in both the formal and informal economy (ILO 2001c, ILO 2002), people throughout the world face deficits, gaps and exclusions in the various decent work parameters. While this study consisted of investigating decent work among cleaners in Mauritius, this paper probes deeper into how far cleaners in Mauritius are engaged in social dialogue, a key dimension of decent work. According to Kuruvilla (2006), social dialogue includes, all types of negotiation, consultation, or simple exchange of

information between representatives of governments, employers, and workers, on the issues of common interest relating to economic and social policy.

Acknowledging that the target population for the study consisted of individuals with very low level of education, the researchers adopted the qualitative stance of enquiry. Unstructured interviews (Corbin & Strauss 2008) were used to collect data among 68 cleaners identified through purposive sampling. The findings of the study indicated that cleaners have poor knowledge of trade unions with very few having been registered with a union to negotiate their working conditions. Factors influencing same include low level of education breeding ignorance among cleaners, their hectic schedules of working 7 days' a week, not having enough financial flexibility to contribute to trade unions and lack of cooperation among cleaners. The interesting emerging factors were observed to be the issue of contractual employment and gender disparity among cleaners. The cleaning sector being female dominated, the findings thus indicated the presence of few social issues preventing women from joining trade unions. For example, no permission from their husbands, fear of being victimised both at home and at work, more so, since the majority of cleaners are employed on fixed term contracts.

The study thus revealed that social dialogue as a parameter of decent work warrants more attention among cleaners in Mauritius. It is encouraging to note that policy makers have increased the basic salaries of cleaners lately, but an increase in salary only still makes the work of cleaners far from being decent. It is thus recommended that awareness campaigns specifically targeted to cleaners are carried out regarding social dialogue

taking into consideration their low level of education.

Keywords

Decent Work, Social Dialogue, Cleaners, Mauritius

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Ref: ABS0230125

**GAMBLING AS A FORM OF
CULTURE FOR THE POPULATION:
THE CASE OF MAURITIUS**

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Mauritius is known for its tremendous amount of socio-economic development

since its independence in 1968. Nevertheless, it is a fact that quite a large number of the inhabitants are struggling to live decently. It has been observed that Mauritians usually use any means to make some money to satisfy the growing and pressing demands at home. A big majority of the population has become preys of gambling like soccer betting, online poker, playing loto, and casino games, amongst others. Gambling has now become part of the Mauritian culture.

The main objectives of this paper were to take stock of the reasons that pushed the population towards gambling and also to provide an insight on the potential socio-economic impact of such a behavior on the lives of the 'gamblers' and those of their families. The views and opinions of business operators in gambling and community leaders have also been highlighted.

Both primary and secondary data were used in this paper. Research methods used include field observation, informal talks and unstructured interviews with 65 respondents of age varying between 19 and 83. The respondents included 25 women and 40 men. One manager and two supervisors in the gambling businesses were also informally interviewed. Three community leaders and five children from families affected by gambling behavior of their parents also participated in the study.

The principal finding of this research indicates that gambling has become part of the Mauritian culture irrespective of age, ethnicity, social class and/or gender. Quite a large majority of the respondents have developed the belief that they would one day become rich through such an activity and they invest much of their time, effort and money earned through hard work in it. For a

small minority, gambling is a form of long term investment where the returns will be high, although few of them clearly stated they were not aware of the maturity date of such an investment. Very interestingly, the study shows that many elderly people as adepts of betting. Moreover, the results also demonstrate the negative impact that gambling have on the families where children suffer most.

The findings of this paper have much relevance to the Mauritian society which is striving to become a high income economy. Both the public and private authorities have to evaluate the socio-economic consequences of such a culture adopted by a large majority of the population which may increasingly affect the livelihoods and day to day routine of the inhabitants. Some policies need to be devised by the competent authorities to manage and control such a cultural activity with the view of reducing gambling harms in the society.

Keywords

Gambling, gamblers, culture, Mauritius.

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Ref: ABS7430132

**LANGUAGE CHOICE ONLINE: THE
CONSTRUCTION OF YOUTH
IDENTITIES IN MAURITIAN RAGE
COMICS**

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On the 8th of November 2007, reacting to the creation of a fake profile page for the Mauritian Prime Minister, the Information and Communication Technologies Authority imposed a short-lived ban on the social networking site Facebook (Grosset, 2007). Far from being an isolated incident, affordable access to the internet has resulted in over 50% of the teenage population (Statistics Mauritius, 2011) becoming proficient netizens, capable of navigating through the nuances of "netspeak" (Crystal, 2004: 18), a form of e-language which can be considered as one of the by-products of the constant tension between the "universalization of particularism and the particularization of universalism" (Robertson, 1992: 97). This glocalness (Robertson, 1992, 1995) is evidenced in the language choices made by the creators of Mauritian Rage Comics. Consequently, this study uses the pictorial archive of the Facebook group Mauritroll - a local adaptation of the notorious image-based bulletin board, 4chan - as well as other pictorial archives such as Anou Troll, as its empirical backdrop and aims to reveal what Zimmerman (2009: 123) labels as stereotypical "markers of youngspeak". It, thus, provides insights into a) markers

operating at the level of discourse (for instance, the choice of the humorous and polysemic moniker 'Soubash' to refer to the male stock character better known online as 'Derp' or the coinage and subsequent utilisation of novel slang items) and b) markers operating with deviation at the orthographic level (for instance, the use of unusual forms of spelling for the newly-standardised Kreol language and the pragmatic significance of the choices of such graphemes). Hence, following Bauman (1975: 293), this study views such occurrences as being indexical of a reflexive position that youngsters orient themselves to by framing their linguistic output as both a locally-relevant and globally significant performance, "in which communication is carried out, above and beyond its referential content".

Keywords

Rage Comics, Language Choice, Mauritius, Glocalisation

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Ref: ABS1260164

**MIGRATION, BRAIN DRAIN AND
BRAIN WASTE. LEVERAGING THE
MAURITIAN DIASPORA FOR
DEVELOPMENT**

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Out-migration from Mauritius is creating new transnational communities of individuals residing and working away from the country of origin but retaining varying social, financial, and cultural linkages with the homeland. Some 56.2% of recent out-migrants from Mauritius are estimated to be university educated (World Bank, 2006), which indicates a significant brain drain. While the diaspora often sends financial resources back to their families and communities in the form of remittances, investments, philanthropy, and sharing of knowledge, skills, attitudes, and values learned or acquired abroad, it should be kept in mind that the country has borne the cost of raising and educating the migrants and the major benefits of their work are accruing to the receiving countries. In fact, migration often deprives the emitting country of youthful and enterprising talents that could have positively impacted development in the country.

This research aims at reflecting on the effect of migration on Mauritius, while questioning whether the country is capable of effectively leveraging its diaspora for development. It was carried out using mixed methods: in-

depth interviews of 100 Mauritian nationals living overseas and those who have returned after various periods of stay abroad, an online questionnaire which gathered 221 responses from 40 countries, focus group discussions and participant observation in several receiver countries. The major findings are as follows: at least 250 000 Mauritius-born and their children live in the OECD countries alone, that is 19 % of the resident population of Mauritius. Most Mauritians remain attached to their country and make frequent visits while many choose to return after studying and/ or working abroad for a few years. However, when they try to apply the technical, managerial or social skills, experience and knowledge acquired overseas to effect developmental changes they often come across a huge resistance.

This research has highlighted that home country conditions, investment climate, governance and domestic institutions are fundamental to determining the success of diaspora projects and engagement with the country. The major obstacles to leveraging the diaspora have been identified as profound social, economic and political inequalities, resistance by entrenched vested interests, lack of meritocracy, red-tapism, unethical business dealings, and weak institutions. These very reasons are responsible for the brain drain and brain waste as the diaspora returnees and local talents cannot perform to their potential.

Diaspora should be viewed as part of the country, being in many instances, what the country is capable of becoming (Kuznetsov, 2013). Competent individuals who know the country well and care about its future, yet have no stake in local vested interests, could

function as proverbial Archimedean levers to trigger and sustain change.

Keywords

Mauritian diaspora, brain drain, brain gain, brain waste, engagement, Archimedean lever.

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Ref: ABS0420066

**NEGOTIATING RELIGION, NATION
AND ETHNICITY THROUGH
LANGUAGE: A CASE STUDY OF
CHANGES IN THE MAURITIAN
MUSLIM COMMUNITY**

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Mauritius is often cited as an example of successful pluralism where ethnic, religious and linguistic communities thrive and coexist peacefully (Eriksen, 1998). Drawing on work in language and identity, creolisation, and research on the sociolinguistics of Mauritius, the paper investigates the successful integration of the ethnically and theologically heterogeneous Muslim community in Mauritius: a minority religious group in a plurireligious society. It explores how this is negotiated through the potentially problematic tension between the national

language (Kreol) and the ethnoreligious languages (Urdu/Arabic).

Mauritian Muslims (MMs) make up 17% of the national population. Their adaptation to the local setting is reflected in their linguistic practices. Most young Muslims speak Kreol at home instead of their ancestral language (Bhojpuri) or ethnoreligious language (Urdu) (Auleear-Owodally, 2013). Kreol is also gradually replacing Urdu as the language of sermons and is the preferred language of social interactions in mosques. Its increasing use in mosques is seen as problematic by some Muslims (Rajah-Carrim, 2010). This is because Kreol indexes [+Christian] religion, [+Creole/Afro-Mauritian] ethnicity and [+national] identity.

Therefore, the incorporation of Kreol in the linguistic practices of Mauritian Muslims raises a major question: can an Islamic sermon conducted in Kreol be as Islamic as one conducted in Urdu or Arabic? To answer this question, we need to draw in Pandharipande's (2006) and Woods' (2006) theories. If Kreol were to become the "linguistic form" through which "religious content" (Pandharipande, 2006) was transmitted, we would expect it to be embedded with Islamic values. It would then acquire social significance as a religious language for Muslims, specifically in the mosque. However, current data suggests that Kreol is only used as a medium of communication, not a carrier of religious baggage in the Muslim context. In this case, it is not the language of religion but only the "linguistic form" through which "religious content" is transmitted (Pandharipande, 2006). Paradoxically, it could retain a Creole and Christian index in the mosque.

This paper aims to enhance our understanding of the dynamic linguistic practices and ideologies within the MM

community and further our knowledge of how religious groups add social meaning to language. It specifically asks the following questions: (a) what are the language practices and ideologies in force in the MM community? (b) how and why have these evolved? (c) how important is language in the formation of a religious identity for MMs?

It is clear that there is a drive among Muslims - leaders and followers - to use the national and ethnic language Kreol in the religious domain. It seems that the dwindling knowledge of ancestral languages has forced Muslim religious leaders to reconsider their language choices and adopt Kreol. Adaptation to the local sociolinguistic setting is one of the perduring strengths of the Muslim community in plurireligious Mauritius. The question remains whether the situation and position of Kreol can change to such an extent that it acquires meaning as a Muslim language in Mauritius - that is, can Kreol be islamized in the Mauritian context?

Keywords

Kreol, Islam, ethnicity, Mauritius

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Ref: ABS3010145

POSSESSION EXPERIENCES LEAD TO BECOMING A FAITH HEALER

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Possession has been investigated cross-culturally by anthropologists for decades. A variety of beliefs and explanations was noted in the societies where it was observed. Changes in behaviour and identity were reported. An attempt to provide a theoretical framework around possession was made, thus increasing the interest of clinicians in this phenomenon. Malignant possession has been distinguished from non-malignant forms. An example of malignant possession is included in the DSM-IV and the DSM-5 links symptoms of possession to Dissociative Identity Disorder. In general, it is understood by clinicians that the dissociative symptoms involving the experience of possession are interpreted in terms of an expression of psychological conflicts or the effects of

trauma. There are also studies which do not support this observation. However, it has been noted that research on personal experiences of malignant possession is limited in scope and number; how people experience changes in behaviour and identity and interpret their personal experiences, has remained relatively unexplored. This research investigates the explanatory models associated with changes in behaviour and identity. It embraces the IPA, a particularly idiographic approach towards the participants' explanatory models and coping strategies. It demonstrates that explanatory models are influenced by local environment and vice-versa. Help-seeking pathways include religious and cultural coping. Clinicians in the dissociation field could gain more insight in personal experiences of changes in behaviour and identity associated with the belief in possession.

Keywords

Possession, explanatory models, coping strategies, IPA

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Ref: ABS0210025

SERVICE ENCOUNTERS ON FACEBOOK: NETWORKED MULTILINGUALISM?

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There has been a steady increase and a growing popularity in the use of social media in various arenas. The field of marketing is one which has been exploring and exploiting the affordances of social media to improve customer engagement during service encounters with the ultimate aim of increasing sales. Language is at the heart of customer engagement and enhancing customer engagement in online service encounters presents a number of new questions and challenges in multilingual contexts.

In this study, we draw from the literature on the importance of language in service encounters (Holmqvist et al, 2017) and from the concept of "networked multilingualism" (Androutsopoulos, 2015). While the first body of research pays particular attention to the role and use of language(s) in service encounters, the second draws attention to the overlap between multilingualism and computer-mediated communication.

The aim of the present study is to explore the choice and use of language(s) in online

service encounters in multilingual Mauritius, which has experienced an appreciable rise in the status of Kreol as a written language in the past decade. The research questions are: What language(s) do service providers and customers use in online service encounters and why? What is the place of Kreol in these online encounters?

Until fairly recently, service providers in Mauritius have made limited use of social media which explains why local researchers have used data from foreign sites for analysis (Peeroo, Samy and Jones, 2018). However, this is evolving and some service providers are starting to make use of social media to communicate with their customers. Fast food outlets are among those which have started using social media. Among these are the following three multinationals: KFC, Pizza Hut and Mc Donald. Each of these has a local Facebook page which advertises new products and provides a space for online service encounters. Data were collected from their Facebook pages between October and December 2017 to address the above mentioned research questions.

The data reveal that despite the fact that these multinationals make use of multilingual resources in the online advertisements of their products, they tend to use only English and French to communicate with their customers. This choice is made irrespective of (1) the language used by their customers and (2) the fact that both service provider and customers share the same language of communication - Kreol, and (3) the view that there is an increasing use of written Kreol in Mauritian linguistic landscape/mediascape. This study makes use of marketing/service encounters as a lens for a broader discussion of sociolinguistics in a networked age.

Keywords

Service encounters, multilingualism, Kreol as a written language

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Ref: ABS4720178

**SWITCH OFF YOUR FACEBOOK,
SAVE THE PLANET! ACHIEVING
SUSTAINABILITY THROUGH
PSYCHOLOGY IN MAURITIUS**

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Switch off your Facebook, save the planet! Achieving sustainability through psychology in Mauritius with the development of a Pro-Environmental Behaviour (PEB) model based on practice-changes.

Energy consumption across the globe continue to rise exponentially. However, with rising costs and depleting non-renewable sources of energy, the world is

under pressure to save energy. Another dimension correlating strongly with energy use is climate change and global warming. As calls for sustainable development and consumption gain prominence in society, populations continue to behave indifferently. Indeed, behaviour patterns are quite rigid when it comes to daily habits. From switching off the air conditioning system when leaving a room to national initiatives towards greener technologies, the transition is slow. The problem is more acute when it comes to Small Island Developing States (SIDS) like Mauritius which rely extensively on fossil fuels imported from overseas. This has a bearing on the Gross Domestic Product (GDP). Any initiatives to reduce energy consumption will have direct consequences on imports of fuel and will mitigate effects on climate change in the long run. Such change will operate only with a paradigm shift in attitude. Behaviour still remain quite resistant to change and people wrongly believe that their individual actions cannot impact significantly on the overall energy consumption. The challenge, thus, remains in transforming mind sets for effective behaviour change. The present study looks at the different models commonly called Pro-Environmental Behaviour (PEB) developed throughout the years in different countries. The aim is to critically assess the relative merits of each model and their outcomes. The ultimate goal is to propose a conceptual model which incorporates the main elements of the existing models to devise a new framework for Mauritius. The objectives will include assessing current behaviour patterns and strategies to alter attitudes towards sustainability in the country. It is expected that a multi-pronged approach be adopted in which individual behaviour changes will significantly impact on the overall energy consumption in the country.

Keywords

Psychology, Pro-Environmental behaviour, sustainability

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Ref: ABS2060202

**TÉLÉOLOGIE, PROJECTIVITÉ ET
CONTEXTUALITÉ: NÉGOCIER LES
TENSIONS DANS LA RECHERCHE
VISANT À PROPOSER UN
VOCABULAIRE TECHNIQUE
SCIENTIFIQUE EN KREOL MORISIEN**

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Les démarches visant à équiper le créole mauricien (Kreol) d'un vocabulaire technique sont le résultat d'un besoin social, partiellement attribuable au mouvement socio-institutionnel vertical de la langue, notamment depuis son introduction dans le cursus scolaire (Oozeerally, 2014 ; Oozeerally, Nenduradu et Saddul-Hauzaree 2014). Ramener la problématique du vocabulaire aux seules questions techniques sous une « linguistique créoliste » serait toutefois réducteur, car la façon dont les locuteurs s'approprient les langues, notamment lorsqu'il s'agit des registres spécifiques, est fondamentalement complexe et ancrée dans le contexte. Une recherche menée en 2017, autour du concept de « multiliteracies » (que nous conservons dans sa version originale, l'équivalent n'étant

pas nécessairement 'fidèle' à l'idée de départ) démontre par exemple que certains étudiants-stagiaires du deuxième cycle universitaire suivant une formation relative à l'enseignement de la physique présentent une certaine forme d'insécurité en créole, optant pour l'anglais lors de l'explication de certains concepts techniques (Oozerally, Ramma et Bholoa, sous presse). Se pose donc la question téléologique (Le Moigne, 1999; Robillard, 2008), c'est-à-dire, celle qui touche à la finalité. En effet, "l'en vue de..." a une place fondamentale, quoique parfois négligée, dans la délimitation du champ des possibilités (et donc des impossibilités) de la recherche. Les mêmes questions se posent lorsqu'il s'agit de construire une terminologie scientifique pour le Kreol. S'agit-il, par exemple, de proposer une terminologie à l'usage quasi-exclusif des apprenants du Kreol Morisien, langue qui est maintenant enseignée dans le contexte secondaire? Ou s'agit-il de proposer un vocabulaire qui tient compte des pratiques linguistiques hétérogènes et contextualisées des usagers potentiels (y compris les adultes scripteurs), qui dépassent souvent les frontières linguistiques compte tenu du paysage polyglossique de Maurice? Chaque question implique une trajectoire épistémologique, idéologique et méthodologique différente. La première privilégierait une approche centrée sur le Kreol, dans la mesure où les entrées lexicales seraient essentiellement des versions créolisées (« traduites ») des équivalents anglais ou français. Corrélativement, ceci impliquerait une posture idéologique qui se rapprocherait de la distance maximale, occultant ainsi les liens avec l'environnement et les pratiques polyglossiques. La deuxième, au contraire, impliquerait une approche qui accepterait des entrées dans leur forme originale (de l'anglais notamment) en tant qu'emprunts,

compte tenu des pratiques hétérogènes en amont de la codification. Cette communication a donc pour objectif de revenir sur un travail entamé en 2014, visant à proposer un vocabulaire technique scientifique en Kreol. Outre les choix méthodologiques et idéologiques qui sont la résultante de notre posture épistémologique laquelle s'appuie sur l'écologie, nous aborderons les questions techniques à travers un micro-corpus de termes de la physique. Nous discuterons également de la place de la projectivité, qui se situe au-delà de la dichotomie objectivité-subjectivité (Le Moigne, 1999), dans la recherche qui, a priori, n'impliquerait que la mobilisation des ressources techniques et linéaires.

Keywords

terminologie, créole mauricien, projectivité, registres, plurilinguisme

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Ref: ABS1070159

**THE NEWS MEDIA IN MAURITIUS:
REGULATORY, COMMERCIAL AND
IDEOLOGICAL PERSPECTIVES**

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The media are deemed to be important actors in upholding a democracy. Their existence and ability to operate freely are thus regularly assessed by organisations such as Freedom House and Reporters without Borders on the international scene as well as Africa Freedom of Information Centre and Friedrich Ebert Stiftung on the regional scene. These indicators help to determine the level of freedom prevailing within a country based on the idea that the mass media are supposed to enable the free dissemination of information in the public sphere and facilitate informed debates on issues of public interest.

This paper will provide an overview of the current state of the news media in Mauritius through the assessments provided by such international and regional indicators for Mauritius. There will be a particular focus on the key local media houses and the specific contexts in which they operate, including in terms of their ownership and composition. We will also examine the potential flaws of the existing legal and regulatory frameworks for the local media and the failed attempts at reform, in particular with reference to laws which date back to the British colony. Modern issues concerning access to information (ATI) as well as the debates about the introduction of legislation for freedom of information (FOI) will be analysed.

The paper will also go beyond indicators to examine the aspects of media operations which are less visible to the public eye yet play a determining role in the orientations of dominant ideas and debates within the public sphere. These include commercial and ideological pressures which may motivate the pursuit of sensationalism and generate inequalities in the representations of diverse groups and interests in media content. The paper will provide an analysis of the major ethical issues associated with the media's professional practice in the country and how these can be addressed in order to increase transparency and accountability.

Keywords

Mauritius, media, public sphere, access to information, freedom of information, press freedom, media laws, media regulation, ideology.

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Ref: ABS4620030

**TOWARDS THE MATERIALISATION
OF SDG 5 - EMPOWERING MORE
WOMEN TO JOIN THE ICT SECTOR**

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Given the increasing labour and skills mismatch and gender disparity, it is imperative to explore the situation in the Mauritian context and come up with ways to reduce the gender gap in the ICT sector while also ensuring a proper career choice by the skilled girls graduating in this field.

Statistics reveal that ICT is key towards helping drive gender equality. Research indicates that there is presently a 200-million-person shortage of ICT-skilled workers around the world and despite increasing number of women completing tertiary education, this is not filling the gap. Manpower (2015) states that the global "talent shortage" is at 38 per cent, with the top ten hardest jobs to fill in STEM professions. According to The UN Women statement on ICT Day (2017), women are at risk of losing out on tomorrow's best ICT job opportunities.

To bridge the education to employment gap, it is therefore vital to assess the reasons why this is so. This study aims at exploring the engagement of women in ICT related jobs, gauge the current issues they may be facing, address the challenges and works backwards to eventually formulate a framework which

will guide current female students and prospective graduate girls to be better informed of the avenues for job in the ICT sector as well as be prepared for the challenges. The study also aims at addressing potential challenges being faced by women at work, assess the work-life balance and exploring possibilities of the virtual office or working from home as forms of flexibility in the digital era.

This research project is being carried out by the Open University of Mauritius ('OU') and supported by Ceridian Ltd. The collaboration between private and public sector is meant to enrich the research deliverables whereby each institution will bring its inputs and contribution.

Several focus group discussions have been carried to validate the constructs retrieved from literature. From each them and sub theme, a 5-point likert scale questionnaire has been devised to collect primary data from ICT companies in both the private and public sector. The target is 200-500 respondents.

A 2nd questionnaire has been devised to gather data from those who have not chosen a career in the ICT sector.

In-depth interviews will be carried out with the head of personnel; Human Resource Managers of companies to collect data on the current recruitment practices, observations and difficulties encountered for recruiting female employees and also retaining them.

Exploratory factor analysis will be conducted as well as confirmatory factor analysis. Possible causal relationships will also be analysed. Latent class analysis will also be carried out.

Eventually, the project will lead to the formulation of a framework which will guide current female students and prospective graduate girls to be better informed of the avenues for job in the ICT sector as well as be prepared for the challenges.

Keywords

SDG 5 Women ICT Education

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Ref: ABS7680042

**"WHAT WILL YOU DO WITH A
DEGREE IN FRENCH STUDIES?"
ANALYSING THE SELF-
ACTUALISATION OF STUDENTS AND
THEIR ADAPTATION AT WORK**

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"[...] we're seeing a lot of public scepticism about the worth of the humanities in the context of our current social, economic and political lives" (Bosworth, 2016).

The above words of William Adams, Chair of the National Endowment for the Humanities, seem to explain the reduction in enrolment in the humanities. Data collected by Statistics Mauritius (Ministry-of-Finance-

and-Economic-Development, 2017) on undergraduate and postgraduate degrees tends to merge the Social Sciences and the Humanities, and no data by specific field exists. However, those statistics show how only a few social science/humanities graduates go on to study higher degrees. Indeed, this drain in the humanities dates since the 17th century and the main cause given was underemployment and even today, the same uncertainty prevails about the outcome for students with degrees in literature or the humanities (Yachnin, 2016). Most developing countries also seem to prioritise STEM subjects (science, technology, engineering, Maths) over Social Science/Humanities with the danger that literature, as argued by Robert Scholes, "has lost its aura" in the "age of mass media" (English, 2012) and is completely irrelevant in solving social issues (Turin, 2018).

Few studies have been conducted on the motivation of students to enrol in French studies in Mauritius. Therefore, the main objective of this study is to identify and determine the motivations of students in pursuing their studies in the field. Furthermore, despite the critiques on Maslow's Hierarchy of Needs, we will explore the higher-order needs, especially "self-actualisation needs" (Maslow, A Theory of Human Motivation, 1943) and "self-transcendence needs" (Maslow, The Farther Reaches of Human Nature, 1971) on the focus group. This will lead us to advance the hypothesis that since graduates in French studies are intrinsically motivated and have developed some important skills and competences, they can find a career in almost any field. Indeed, Maslow's Hierarchy of needs will be used to develop a list of the competences acquired by graduates/students in French studies, and we will study how



these competences are related to the 21st century skills or the "higher-order skills" (O'Sullivan & Dallas, 2010) needed in the job market.

Keywords

Abraham Maslow, "self-actualisation", "self-transcendence", motivation, French studies, 21st century skills, Mauritius

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Ref: ABS5940142

WOMEN EMPOWERMENT AND POVERTY ALLEVIATION: MICRO EVIDENCE FOR SUB SAHARAN AFRICA

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Feminisation of poverty in Sub Saharan Africa (SSA) has grown significantly. Various factors have attempted to explain this phenomenon namely women spending the majority of their time on unpaid household and care work, they operate mainly in the informal sector and the customs and laws of many SSA countries do not allow women to possess, own and take care of land. Further, the increased inequality of opportunities in access to basic goods and services such as health, infrastructure and education increases the vulnerability of women and undermines social cohesion and further worsens inequality. The main thrust of the study is to analyse the different dimensions of women empowerment in SSA and investigate its causal link with poverty reduction in the region. The methodology adopted rests on the use of micro data from the Demographic and Health Surveys (DHS) for 25 SSA countries from 2010 to 2015. The DHS survey covers women of reproductive age 15-49, the specific regions where they

live that is urban or rural, marital status, the level of education and occupation. Multinomial logistic regression techniques are applied to estimate the causal relationship between women empowerment and poverty across SSA economies. The results will help in formulating better policy options and strategies to improve women empowerment in this part of the globe, by disaggregating the various channels that contribute to women empowerment and poverty reduction.

Keywords

Women Empowerment, Poverty, Multinomial Logistic, Sub Saharan Africa.

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Ref: ABS0490082

PHYSICAL ACTIVITY IN OLDER AGE: THE CASE OF MAURITIUS

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Physical activity normally helps to improve physical, mental, social and emotional functions of human beings (Boulton et al, 2018). It is important to highlight that it can

also reverse some negative impacts of the ageing process and thus keeping older adults healthy, mobile and independent (Paterson et al, 2007). Despite the benefits of physical activity, it has been noticed that a great majority of older people in Mauritius do not engage in the minimum level of physical activity needed to be healthy.

The main purpose of this paper is to investigate why older adults are hesitant to participate in physical activity.

The scope of this study is limited to investigate why Mauritian older people are reluctant to participate in physical activity only.

This study used both the quantitative and qualitative research method to facilitate the generation of the research objectives. Participants were recruited using the convenience sampling technique. Moreover, unstructured interviews were used to collect in-depth information from older participants.

Overall, the main findings of this study indicated that older adults from rural areas participated less in physical activity. Most participants argue that they do not engage in physical activity for fear of injury, lack of social support and lack of energy. It is interesting to note that some respondents doubt that physical activity can strengthen their life. Others do not engage in exercise as they suffer from joint pain and shortness from breath. On the other hand, it has been observed that older people from affluent family participate more in exercise and they claim that they enjoy a healthy weight and lower blood pressure. They further assert that physical activity is just like a medicine which has reduced their chance of developing acute disease and disabilities.

This study contributes to knowledge by providing an insight of the subject matter in the Mauritian context. Authorities may use the findings of the research to develop strategies to increase the participation rate in physical activity among older people. The way forward is to provide older adults with physical activities they find enjoyable and modify their program to prevent boredom.

Keywords

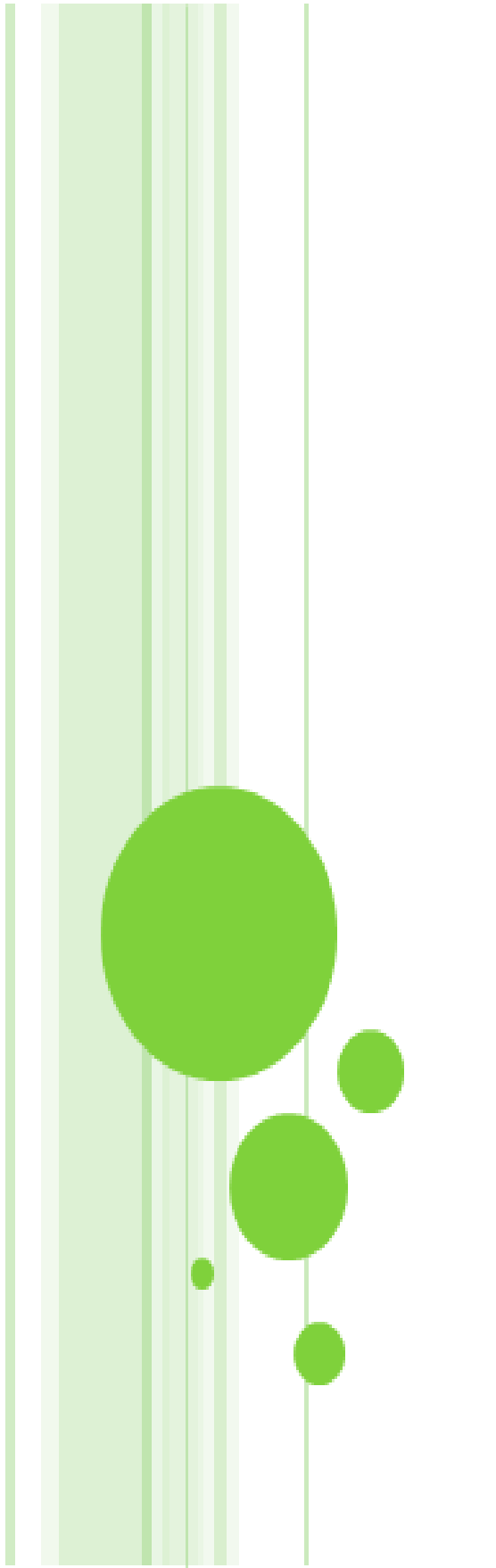
Physical Activity, Older people, Older age, Mauritius

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SCIENCE,
TECHNOLOGY
&
ENGINEERING



ABSTRACT

Ref: ABS3620092

A STUDY OF ENHANCED FEEDBACK PRACTICES IN CLINICAL NURSING EDUCATION

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This study uses a mixed methods approach to evaluate the impact of enhanced feedback practices on the quality of nursing education.

Though the elements in the National Diploma in Nursing curriculum seems to be in 'constructive alignment' (Biggs and Tang, 2011), yet there is anecdotal evidence of a large theory-practice gap. One example is how the modular design of the curriculum culminates in disconnected summative assessments (as end-point judgements of achievement) that neither enhance students' abilities for critical thinking and reflection, nor help to integrate and apply knowledge to promote holistic care. Such assessments do not 'equip students for lifelong learning in an uncertain future' (Boud, 2015) and are not a reliable indication of how much 'deep learning' has occurred. In current nursing education practice, marks are the only indicator of success (or failure). This lacks feedback, or ultimately feed-forward for future benefit.

As compared to mass education in overcrowded classrooms, mentoring a smaller group of students in clinical practice provides adequate scope for the implementation of enhanced feedback

practices. Boud and Molloy (2013) argue about the need to '*rethink the unilateral notion of feedback*' and to consider it as '*a bilateral and multilateral one, which positions students as active learners*'. In this study, feedback was implemented from three perspectives (self, peers and a mentor) in an *Action Learning Set (ALS)* since June 2018 at Flacq Hospital, Mauritius.

All learners involved in the study (n=30) participated in a small-scale survey to evaluate the impact of these three feedback perspectives on their approach to learning and nursing practice. Results show a significant correlation between enhanced feedback practices to enhanced healthcare provision, and deeper approach to learning.

Five participants were selected at random from the same ALS for a semi-structured interview. Respondents admitted that it was initially difficult to self-assess their own work objectively and to accept criticism from peers; but the dynamic learning process gradually helped them develop the required skills to engage actively. Participants found the way the mentor was giving face-to-face feedback very enriching, in line with Hattie (2009) who emphasized the importance of feedback in motivating students and the development of deep approaches. Feedback was spontaneous, clear, tailored to fit the context, actionable and anchored to a subsequent related task. Respondents acknowledged feeling valued when adequately praised for what they were doing right, as well as feeling appreciative when their mistakes were addressed respectfully. Respondents reported that the study facilitated better understanding of feedback processes, including how to seek, generate, make sense of, and use feedback to enhance



their future work. Respondents reported that the feedback practices helped them to recognize their strengths and weaknesses; clarify goals, standards as well as assessment criteria; better meet learning outcomes; adopt a deeper approach to learning; reflect in practice and gain confidence for their final examinations. Respondents also declared that feedback enhanced team spirit, consolidated relationships with the mentor, peers as well as other staff and ultimately helped in developing 'quality-care mindedness'.

Good feedback practices have significant potential to transform learning for student nurses and make a difference in patient care in the future.

Keywords

Constructive Feedback, Nurse Education, Mentoring, Deep Learning, Quality Healthcare.

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Ref: ABS7060133

A STUDY ON AWARENESS REGARDING ANTIBIOTICS AMONG GENERAL PUBLIC ATTENDING THE OUT-PATIENT DEPARTMENT OF JAWAHARLAL NEHRU HOSPITAL

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Antibiotic resistance is a worldwide medical threat (WHO, 2017). Antibiotic misuse is a recognized contributor to antimicrobial resistance (Llor & Bjerrum, 2014). It is reported that good knowledge regarding antibiotics is associated with recommended attitudes and therefore, appropriate antibiotic use (Vallin, et al., 2016). Different studies have been carried out worldwide to assess level of knowledge and attitudes (Gualano, Gill, Scaioli, Bert & Siliquini, 2014) (McCullough, Parekh, Rathbone, Del Mar, & Hoffmann, 2016) but none till date in Mauritius.

The aim of this study was to have an overview of the knowledge and attitudes towards antibiotic use among the general public attending the out-patient department of Jawaharlal Nehru hospital, Rose-Belle, Mauritius.

A prospective, quantitative, cross-sectional survey was carried out. A validated self-administered questionnaire was supplied to 407 participants, without any breach in ethics. The questionnaire collected data on demographics, pattern of antibiotic use,

knowledge and attitudes regarding antibiotics and awareness of campaign on proper antibiotic use. SPSS platform was used to perform descriptive analysis, chi-square test of independence, correlation analysis and simple regression analysis.

The study demonstrated a significant positive impact of knowledge level on attitudes but also, revealed an inappropriate level of knowledge among the respondents. Only 25% exhibited good level of knowledge. Age group ($p= 0.021$), educational level ($p= 0.009$ at 1% confidence level) and employment status ($p= 0.03$) showed significant association with knowledge level. 75.4% knew antibiotics kill bacteria and 81.5% stated that antibiotics can treat viral infection, findings suggestive of misunderstanding about the role of antibiotics. 62.2% were knowledgeable about resistance and less than half of the study population recognized that antibiotics are not indicated for inflammation, fever and pain. The study also revealed a low level of self-medication and that those who did finish a course, had prior knowledge about reduced efficacy of treatment when a course is not completed. Only 25% of the study population were aware about the campaign, showing poor exposure.

Strategies need to be reviewed for health promotion campaigns. Proper dissemination of information about antibiotics to the general public should be carried out. Introduction of health education in school curriculum and creation of non-governmental organizations, with expertise in social and mass media, supporting sensible antibiotic use are welcomed.

Keywords

Antibiotic resistance Knowledge and attitudes towards antibiotic use Antibiotic campaign exposure

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Ref: ABS1870080

AIR QUALITY MONITORING IN MAURITIUS

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The aim of this project is to develop a low cost air quality monitoring system. The proposed system used the Raspberry Pi board, Arduino board, Grove sensors and Microsoft's Azure based cloud service for data storage and analysis. The data was captured from the 10th of May to the 31st of August 2017 in Bonne Terre, Vacoas. It was found that during the data capture period there was one occurrence in May and two occurrences in August where the PM 2.5 and PM 10 were above the 25 ug/m³ and 50 ug/m³ level based on WHO guidelines.

Keywords

Monitoring, Air quality, Temperature sensors, Temperature measurement, Sensor systems, Gas detectors

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Ref: ABS9780199

**AN ADAPTIVE SLIME MOLD
ALGORITHM FOR ROAD NETWORK
DESIGN**

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The performance of a country's socio-economic activities rests heavily upon the efficiency of its transportation system (Mihyeon Jeon, Amekudzi, & Vanegas, 2006). Road networks enable users to travel to points of interest and consume services (Batty et al, 2012). A high traffic flow maximises road usage (Transport Research Centre, 2007) as well as the mobility of consumers towards services (Rodrigue, Comtois, & Slack, 2013). Over the years however, the increase in population and vehicular traffic in both developing and developed countries has led to traffic congestion that has been detrimental to the quality of service provided by transportation systems. Traffic congestion increases travel time and impacts public health through increased gas emissions and stress levels (Khansari, Mostashari, & Mansouri, 2014; Levy, Buonocore, & Von Stackelberg, 2010). Road engineers are hard pressed to devise functional, robust, cost-efficient and sustainable transportation networks. The scenario is a NP-hard Network Design Problem (NDP) whereby the main objective is to minimize travel time and cost, irrespective of the path chosen (Colson, Marcotte, & Savard, 2007). Early research in Road Network Design Problem (RNDP) focused solely on high mobility (Kim, Bae, & Chung, 2012). External impacts were ignored (Sharma and Mathew, 2011).



Sustainable transportation systems are needed so as to meet the current traffic demands while not jeopardising the ability of future generations to do the same (Santos, Behrendt, & Teytelboym, 2010).

This paper proposes an algorithmic framework for the design of effective and efficient road networks. The algorithm derived from the foraging behaviour of the slime mold, *Physarum Polycephalum* (Zhang, Chan, Yang, & Deng, 2017) was chosen to solve the Network Design Problem. The *Physarum Polycephalum* organism was able to model the Tokyo railway system with closely matching topology, cost and robustness (Tero et al, 2010). The organism responds to chemical gradients (Adamatzky, Lees, & Sloat, 2013) and is able to learn and adapt (Boisseau, Vogel, & Dussutour, 2016). By assigning chemo-attractant weights to sustainability indicators and chemo-repellent weights to undesirable factors, the *Physarum* algorithm presented in this paper has been modified to optimize for sustainability. Cellular Automata (CA) models (Gunji, Shirakawa, Niizato, & Haruna, 2008) with excitable states (Adamatzky, 2014) were employed to model three-dimensional terrain and constraints. The novel *Physarum* algorithm responded to these constraints and optimised the road network efficiency and traffic mobility. The algorithm was employed on a problem space consisting of points of interests and obstacles with the aim of striking the optimal balance between travel time, cost and sustainability. The objective was to develop a synergy that promotes economic activities through the efficient transport of consumers, freight and labour. Through simulation experiments, recommendations were formulated for the design of sustainable road networks.

Keywords

Sustainable development, Computational Transportation Intelligence, *Physarum Polycephalum*, Network Design Problem

Ref: ABS3420170

AN ASSESSMENT OF REGCM TO DIFFERENT PHYSICS PARAMETERS OVER THE SOUTH WEST INDIAN OCEAN BASIN

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RegCM, originally developed at the National Center for Atmospheric Research (NCAR), is a limited-area model that simulates climate processes downscaled dynamically from a General Circulation Model (GCM). The current version of the model, RegCM4.7, is capable of producing high resolution climate data over a selected area of study for grid spacing of up to about 10 km (ICTP, 2019). To date, the model has been successfully employed to simulate climate change scenarios, over different regions of the world and for a wide range of studies. These range from process studies to paleoclimate, and future climate simulations (Gao & Giorgi, 2017). However, no study has ever been undertaken to evaluate the model output over the South West Indian Ocean (SWIO) basin. The latter spans from latitudes 5° S to 35° S and longitudes 30° E to 70° E. It encompasses countries like Mauritius, Rodrigues, Madagascar, Mozambique, Comoros, Mayotte, Reunion Island, Tanzania, and the eastern part of South Africa (Boodhoo et al., 2016). The main objective of this research work is to study the sensitivity of the RegCM model to the different combination

of physics parameterization schemes for the SWIO basin. Different ERA-Interim-driven simulations are performed with changes in the model's configurations for the time period 2006 - 2018 and spatial resolution of 40×40 km. The resulting simulated time series data of air temperature and precipitation are compared to satellite and ground measurements at several points over the SWIO region by studying their trends and differences. The Pearson's correlation coefficient (Jammalamadaka & SenGupta, 2001) is used to compute the covariance between the time series and the statistical significance of their differences is calculated with the Student's t-test (Dodge, 2008). The results suggest that the simulation with the MIT-Emanuel convective scheme, and the SUBEX large-scale precipitation scheme, perform better overall compared to the rest of the simulations.

Keywords

Regional Climate Model, Air temperature, Precipitation, Sensitivity Analysis.

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Ref: ABS7250106

ANTIBACTERIAL AND CYTOTOXIC PROPERTIES OF EXOPOLYSACCHARIDES FROM ALCALIGENES AND HALOMONAS SPECIES ISOLATED FROM THE MARINE ENVIRONMENT OF MAURITIUS

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Marine environments hold great potential for exploitation and marine microorganisms, in particular, have attracted attention for their biotechnological and commercial values. Indeed, they have been found to be useful for applications such as production of valuable compounds and among these, microbial Extracellular Polysaccharides or exopolysaccharides (EPS) represent a set of compounds with wide uses in food, cosmetics, textile, pharmaceutical and agriculture (Cojoc et al. 2009; Im et al. 2010). More recently, their biological activity has been gaining attention, with a number of recent studies reporting the immuno-stimulatory, antiviral, anti-oxidative, anti-tumour and antibacterial properties of EPS (Balzaretto et al. 2017; Zhou et al. 2017). In view of the biotechnological potential of these polymers, seawater from the surrounding of Mauritius was screened for EPS-producing bacteria.

For this purpose, seawater samples were collected and from these, microorganisms capable of EPS production, as indicated by their mucoid colonies, were selected. The produced polymers were subsequently tested for their antibacterial effects against 14 disease-causing pathogens from the genera *Streptococcus*, *Enterococcus*, *Salmonella*, *Staphylococcus*, *Bacillus* and *Proteus* using the disc diffusion and broth microdilution methods. Compounds showing inhibitory effects on the growth of the pathogens were then further investigated for their cytotoxicity against A549 and HepG2 cancer cell lines. Following these two sets of screenings, exopolysaccharides exhibiting biological activity were characterised by Thin-layer chromatography and Fourier-Transformed Infrared Spectroscopy (FTIR) while the microorganisms producing them were identified by morphological and biochemical methods as well as 16S rRNA sequences. The results showed that out of 40 isolated EPS-producing bacteria, two, from the genera *Halomonas* and *Alcaligenes*, could produce EPS which could inhibit the growth of at least 8 of the 14 tested pathogens, with effective concentrations varying between 62.5 µg/ml and 500 µg/ml. Interestingly, these compounds also showed inhibitory effects on the antibiotic resistant Methicillin-resistant *Staphylococcus aureus* (MRSA). However, only EPS from the *Alcaligenes* sp. showed cytotoxic effects on the cell lines, with IC₅₀ values of 128 µg/ml for HepG2 and 654 µg/ml for A549. Characterisation of the two polymers revealed the presence of carboxyl, hydroxyl and sulphate as the main functional groups which could contribute to the observed biological activities. Antibacterial as well as cytotoxic effects of EPS from *Halomonas* and *Alcaligenes* species is not widely documented compared to those from other

species. Similarly, their effectiveness against antibiotic-resistant pathogens is even less investigated. The results not only highlights the fact that other species may also produce compounds of pharmaceutical interest but they also suggest that Mauritius seawater can be a source of biotechnologically useful microorganisms producing compounds of potential value.

Keywords

Marine; Mauritius; Bacteria; Exopolysaccharides; Antibacterial; Cytotoxic

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Ref: ABS5100078

**ANTIFOULING ACTIVITY OF
MACROALGAE AND SEAGRASS
SPECIES FROM MAURITIAN
WATERS**

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Marine biofouling is the undesirable growth of organisms on man-made artificial submerged surfaces in the sea (Yebra et al., 2004). Biofouling poses significant problems in the shipping industry. In particular, it increases frictional drag which reduces ship speed resulting in higher fuel consumption to maintain speed (Schultz, 2007), in turn leading to economic losses (Fulekar et al., 2013). Traditional antifouling paints containing heavy metals such as copper and toxic biocides have proved to be efficient in dealing with marine biofouling. However, the accumulation of these compounds in oceans causes environmental concerns (Almeida et al., 2007). Thus, new cost-effective environmentally friendly alternatives are actively warranted. Marine organisms, especially marine floras, have recently emerged as prolific reservoirs of novel active compounds with interesting antifouling properties (Dahms & Dobretsov, 2017). In this vein, this study investigated the in vitro antifouling activity of five macroalgae species (*Ulva lactuca*, *Gracilariaria salicornia*, *Turbinaria ornata*, *Sargassum obovatum*, *Padina Pavonica*) and two seagrass species (*Syringodium*

isoetifolium, *Thalassodendron ciliatum*) collected around Mauritius, with the aim to identifying bioactive molecules with promising potential in the development of novel antifouling paints. Taxonomic identification of collected samples was performed via morphological analyses and DNA barcoding. Macroalgae and seagrass extracts were tested against a panel of ten micro- and macro-fouling species (*Chlorella singularis*, *Chlorella volutes*, *Chlorella sp.*, *Amphora coffeaeformis*, *Nostoc commune*, *Trentepohlia odorata*, *Stichococcus bacillaris*, *Klebsormidium flaccidum*, *Navicula pelliculosa*, *Chlorella emersonii var. globosa*) involved in biofouling of ships in subtropical regions and that are routinely used in biocide testing (Chambers et al., 2011). Results showed that crude ethanolic extracts from *Padina Pavonica* and *Thalassodendron ciliatum* displayed the broadest biocide activity with minimum inhibitory concentration (MIC) ranging from 10 to 100 µg/ml. This is the first report on the antifouling activity of *Padina Pavonica* and *Thalassodendron ciliatum* from Mauritius waters. Overall, these findings suggest that the antifouling properties of the tested samples extracts may provide an environmental friendly alternative to manage biofouling. Current investigations are ongoing to characterise compounds and/or molecules in these tested extracts that may have commercial potential as antifoulants, in particular in the marine paint industry. In line with the national strategy of Mauritius to exploit sustainably its marine resources as one of the future drivers of its economy, this study attempts to valorise the economic importance of macroalgae and seagrass, while addressing a serious global environmental concern.



Keywords

Biofouling, Antifouling paints, Macroalgae; Seagrass, Shipping Industry

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Ref: ABS6920085

APPLICATION OF HYDROCHEMICAL AND ISOTOPE TECHNIQUES TO INVESTIGATE NITROGEN POLLUTION IN MAURITIUS

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River water and groundwater is an important resource, typically used to meet agricultural, industrial and domestic needs (Zhang et al., 2018). Nitrogen pollution is a common problem around the world, because of the application of fertilizers and the release of urban and industrial N-bearing waste waters in rivers and rivulets. Mauritius, is also prone to nitrogen pollution. The knowledge of the factors controlling the regional water quality regime (Matiatos et al., 2018) together with nitrate contamination origins (Re & Sacchi, 2017) are important for planning sustainable use and management of the water resources (Matiatos et al., 2018).

Hydrochemical and isotopic techniques were applied on surface and groundwater samples to assess nitrate pollution in the Bay of Port Louis. The bay of Port Louis receives the discharge from three main rivers (Grand River North West, River Tombeau and Rivulet Terre Rouge), which drain different geographical areas with variable land uses (agriculture, animal rearing and urban settlements). Nitrate (NO₃) is one of the most widely-spread contaminants in water resources (Matiatos, 2016). The determination of $\delta^{15}\text{N}_{\text{NO}_3}$ and $\delta^{18}\text{O}_{\text{NO}_3}$ values in water samples can provide meaningful insight for the identification of nitrate origins

into water resources (Matiatos et al., 2018). Here, hydrochemical tools were applied to characterize water quality and nitrogen isotopes to trace sources of nitrate and their potential transformation from soils, fertilizers, and sewage or manure, both in surface and groundwater.

The preliminary results revealed that the groundwater and surface water were dominated by Na-Cl and Ca-HCO₃ water types in the Rivulet Terre Rouge and Grand River North West catchments respectively, whereas catchment River Tombeau showed mixed Ca-Mg-Cl type for river water and mixed Ca-Na-HCO₃ type for groundwater. Groundwater and surface waters were of meteoric origin and mainly recharged during the summer. The large variations in $\delta^2\text{H}$ and $\delta^{18}\text{O}$ values suggested that water recharge occurred at different altitudes. Microbiological assessment and high nitrate concentrations indicated impact of animal rearing or anthropogenic activities on the water quality. The $\delta^{18}\text{O}_{\text{NO}_3}$ and $\delta^{15}\text{N}_{\text{NO}_3}$ values showed that nitrate contamination probably originates mostly from dissolved organic matter in the soil and manure and septic wastes.

Keywords

Groundwater, River water, Hydrochemistry, Nitrate isotopes, Bay of Port Louis

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Ref: ABS6570033

ASSESSING ORAL HEALTH ATTITUDES, KNOWLEDGE AND UTILIZATION OF DENTAL SERVICES IN MAURITIUS

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Oral health is vital to overall general health and well-being of a person. However, it is generally over-looked by the public leading to high prevalence of oral diseases such as dental caries, halitosis and gingivitis among the population. Despite oral diseases being preventable and easily treated through regular visits to a dentist, the Mauritian public is observed to have a low utilization rate of dental services. There exist numerous studies carried out in other countries assessing oral health attitudes, knowledge and utilization of dental services, however no such study has been done so far in Mauritius. Using a mixed methodology approach, the oral health attitudes, knowledge and

utilization of dental services in the Mauritian population was investigated using a self-rated questionnaire and by conducting semi-structured interviews with oral healthcare professionals. This study revealed that there was a mismatch between Mauritian's perception of their oral health status and their actual oral health needs. Majority of participants in this study (95%) believed that they had a good oral condition but oral health professionals completely disagreed with this statement. They viewed it as being more of a misconception of the population that simply associated "absence of dental pain as equivalent to good oral health".

Overall findings indicated that Mauritians have good attitudes and knowledge regarding oral health. The most common sources of oral health information were from media (19.1%), internet (13.6%) and dentists (11.1%). Majority of respondents reported brushing their teeth twice daily with mean brushing time of 3.75 minutes (88.7 %). However, only 30.4% were using the recommended soft bristle toothbrush and 40% flossed- which could explain reported issues of teeth hypersensitivity, bleeding gums (due to the abrasion caused by hard bristles) and inter-dental plaque. It was also found that Mauritians generally visited their dentists only in cases of dental pain (37.8%). Factors such as lack of time (38.2%), cost of treatment (30.4%) and fear of the dentist/dental treatment were the main reasons for not seeking regular dental treatment/check-ups. With regards to knowledge of health issues, 40.2% of participants were not aware that smoking or drinking alcohol caused oral cancers and 59% were unaware that oral diseases could trigger the onset of other health issues such as cardiovascular diseases. As for utilization of dental services, participants preferred to

visit a private dentist compared to public dentists as they were more satisfied with their quality of service (private dentists 50% vs. public dentists 20%). In line with recommendations from the World Health Organization (WHO), our primary recommendation is for the reorientation of our oral health services towards prevention, education and oral health promotion. Moreover, authorities need to invest more in online oral health awareness campaigns to help boost health literacy levels of Mauritians.

Keywords

Oral health attitudes, knowledge, utilization of dental services, oral health awareness, health literacy

Ref: ABS0460027

**ASSESSING PERCEPTION OF
PATIENT SATISFACTION WITH
CARE PROVIDED IN A PSYCHIATRIC
HOSPITAL: CASE STUDY OF BROWN
SEQUARD MENTAL HEALTHCARE
CENTER**

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Hospital service quality is found to be antecedent of patient satisfaction. Studies have shown that patient satisfaction depends greatly on factors such as staff-patient communication, ward atmosphere and physical environment amongst others. An increase in patient satisfaction levels will consequently lead to an increase in utilization of its services, thus improving the organization's performance. The purpose of this study was to develop a scale to identify

patient satisfaction dimensions in the out-patient department (OPD) at the in Brown Sequad Mental Health Care Center in Mauritius. A conceptual framework was proposed and hypotheses to test the influence of patient satisfaction in relation to service quality and loyalty. Using a mixed method sequential approach, 16 staff were interviewed and a total of 200 questionnaires were randomly distributed to psychiatric patients attending the OPD. From our findings five dimensions namely; healthscape, accessibility, waiting time, communication and behavior of OPD personnel, were identified to be distinct dimensions of patient satisfaction in this psychiatric hospital. The study revealed that behavior of OPD personnel, communication and waiting time had a significant and positive impact on loyalty of OPD patients. An overall mean score of 3.95 was obtained indicating that patients were satisfied with the overall quality of service provided at the hospital. This trend implies that when patient satisfaction level are perceived as high, patients feelings toward OPD service is positive and they will revisit, make recommendations and will also share positive word of mouth with others. This study provided a meaningful insight on patients' perspective towards the healthcare offered at Brown Sequad Mental Health Care Center.

The scarcity of data published on the quality of psychiatric healthcare offered at this institution renders this study unique. Our methodology can be used to generate vital data to help key stakeholders ensure superior quality of its services through regular monitoring and assessment. Recommendations to improve certain managerial aspects have been proposed. Benchmarking satisfaction level with quality

of service is required in order for us to join the developed mental healthcare arena and help boost the public image of this psychiatric hospital.

Keywords

Hospital service quality, patient satisfaction, out-patient department, psychiatric healthcare, Brown Sequad Mental Health Care Center, Mauritius

Ref: ABS9360148

ASSESSING SEDIMENT TRANSPORT PROCESSES, EROSION AND BIODIVERSITY STATUS AT FLIC-EN-FLAC WHILE USING A NOVEL ECOLOGICAL APPROACH TO REHABILITATE THE AREA

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Coastal erosion is one of the greatest challenges facing reef fringed coastlines of Small Island Developing States (SIDS) such as Mauritius. The causes of large-scale coastal erosion that is often complex. In the case of Mauritius, the key factors are expected to be a combination of (a) a changing hydrodynamic climate, (b) reef ecosystem degradation, and 3) coastal land use changes. Together over time, these impacts can reduce sediment production, increase wave energy transmission to coastlines, and reduce the ability of beaches to recover from storms. In this presentation, we will provide an overview of the key components of this project, an update on the research findings as well as an overview of future work that will be conducted as part of this project. This active research project

considers sediment transport processes, erosion and biodiversity status at Flic-en-Flac region. A comprehensive field experiment is currently underway that will quantify the evolution of the waves and currents in the reef lagoon, provide detailed measurements of suspended as well as bed sediment transport, and an assessment of the biodiversity status of the region. These detailed field measurements will be coupled with numerical modelling techniques to reproduce the historical metocean conditions along this section of coastline in order to determine how the hydrodynamic processes have changed over long timescales (~30 years). Using this modelling approach, a decision tool will be developed to determine sites that are likely to maximise the success of ecosystem restoration projects. Finally, a novel coral reef restoration technique will be tested and evaluated to determine if this method can assist in the restoration of the coral reef and thus contribute to the reduction in coastal erosion. Together, these elements will provide an understanding of how physical processes in reef lagoons shape coastlines and affect the success of reef restoration efforts. In addition to the research elements of this project, we will provide an overview of how this project is engaging with the community as part of this reef assessment and restoration effort.

Keywords

Erosion, sediment transport, reef restoration, biodiversity.

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Ref: ABS2930028

**ASSESSING THE AWARENESS OF
UNIVERSITY STUDENTS ON THE
MENTAL HEALTH HAZARDS
LINKED TO ILLICIT DRUGS USE**

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Illicit drug use has become a major public health concern and is creating havoc in Mauritius, especially amongst school children and young adults. The aim of this study was to evaluate the level of awareness and knowledge of university students about the use of illicit drugs and the impact it can have on their health and mental health status. This study also attempted to understand the reasons as to why and how this age group engage in illicit drug use. Data was collected from five main universities across the island via a randomly distributed questionnaire.

Valuable input was also obtained from interviews with experienced officers from the Anti-Drug and Smuggling Unit and the Mauritian Prison Service. Findings of this study showed that out of 382 respondents, 57.6% students mentioned that a drug awareness campaign had been organized in their university, but no information about its impacts on mental health was provided to them. An in-depth assessment of their general knowledge of behavioral, psychological and physical signs and symptoms associated to illicit drug use showed that students had a fair level of knowledge of this topic, where the majority of students obtained their information about illicit drugs from social media platforms (98.7%). Factors related to social integration (58.37%), psychological stress (58.32%) and physical appearance (42.2%) were the main drivers for consumption of illicit drugs. A statistically positive association between drug use, gender and educational level was found.

Despite worldwide studies that indicate high rates of drug and alcohol misuse amongst students, there is a scarcity of data pertaining to the assessment of mental health consequences, personal knowledge and interests for drug use among young Mauritian adults. Although this study showed that the awareness level of university students was fair, level of knowledge on mental health aspects was very basic. In addition to the several recommendations we put forward, our study highlights the imperative need for policy makers to join hands with local and international organizations to train educators and lecturers to help recognize at-risk students, provide psychological support and offer coping strategy advice. Local authorities should also focus investment in online awareness

campaigns to maximize effectiveness of their drug prevention programmes.

Keywords

Illicit drug use, University Students, Mental health, Awareness, Knowledge

Ref: ABS0180055

ASSESSING THE MARKETABILITY OF AN INNOVATIVE LINE OF HEALTHY SNACK BARS DEVELOPED BY THE UNIVERSITY OF MAURITIUS

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Due to an increasingly hectic way of life with a lot of time spent at work, snacking is becoming a common habit globally as well as locally. A problematic eating behaviour noted is frequent snacking on unhealthy food items (e.g. fritters, biscuits and sweet cakes). Alternatively, snack bars are convenient easy-to-eat options which not only supply nutrients to the body but also provide a feeling of satiety and can beat hunger pangs as well. The aim of this study is to assess the marketability of a novel high-protein, low GI and low fat breakfast replacement and/or snack, Slowbite Health Products developed at the University of Mauritius. First, the product concept was tested at the level of a wider range of untrained panelists comprising of University of Mauritius students and national athletes (swimmers). Four different health bars were then designed and developed, namely Slowbite Dates, Slowbite Black choc, Slowbite White choc, and Slowbite Pumpkin. The ingredients for the Slowbite health bars were carefully chosen based on several important

considerations namely nutritional attributes, local and year-round availability, integral role of ingredients in the local diet, consumer acceptance of the product, environmental impact, and scalability of process. Furthermore, a market research was done based on assessment of the 4P's (product, price, place, promotion) whereby a comparative analysis of existing equivalent snack bars against our prototype was carried out. Additionally, a market research survey was carried out in an urban shopping centre to evaluate the knowledge, attitude and practices of Mauritian consumers regarding daily food intake and to test the concept of a Mauritian health bar product made from pulses and cereals. The results of the sensory evaluation showed that 33.3% of panelists liked the taste and appearance of the Slowbite Black choc extremely. As far as the Sports Slowbite health products were concerned, 31.3% and 12.5% of panelists liked the appearance of the Sports Slowbite Black choc and Sports Slowbite Dates very much. For instance, 31.3% of swimmers liked the taste of both the products extremely. At least 21 different comparable products were identified in retail outlets and all of them were found to be shelf-stable at room temperature. However, they all contained additives, including artificial flavourings, colourings and preservatives. On the contrary, Slowbite products had a shorter shelf-life at refrigeration temperature but were free of additives and preservatives. It was also noted that women (59.6%) were mostly the ones who tend to skip meals, especially breakfast, due to lack of time in the morning. As far as the Slowbite health products preferences were concerned, 36.5% of panelists indicated to like all the four different prototypes. 49.5% of consumers expressed their willingness to pay less than Rs 100 for a box of 4 individual bars. 96.6%

of them voted in favour for recommending someone to eat/purchase Slowbite health products. Overall this study points to the commercial feasibility for the production and marketing of a natural, tasty, nutritious, convenient and high-protein pulse-based cereal in a portable ready-to-eat bar.

Keywords

Pulses, snack, health bar, sensory, market research

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Ref: ABS8460101

ASSESSMENT OF THE PHYSICO-CHEMICAL QUALITY AND EXTENT OF ALGAL PROLIFERATION IN WATER FROM AN IMPOUNDING RESERVOIR PRONE TO EUTROPHICATION

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Piton du Milieu (PdM) impounding reservoir is suspected to be eutrophic based on the elevated level of orthophosphate and nitrate. Water supplies from three adjacent rivers are

primarily thought to contribute to the nutrient enrichment of the reservoir. It is also suspected that there is leaching of orthophosphate, nitrate and organic matter into the rivers during rainfall events and also as a result of anthropogenic activities within the catchment area.

The aim of this research was to ascertain the impact of nutrient loading on the water quality of PdM water and on the population of freshwater microalgae in the reservoir.

Water was sampled from the euphotic zone adjacent to the intake tower of PdM and its three feeder rivers over a 12-month period. The enumeration and identification of algae from PdM were performed by differential interference contrast microscopy. Dissolved oxygen (DO) and pH were determined by electrometric methods, whereas nutrient levels, silica and total organic carbon (TOC) were determined by instrumentation techniques.

Annual mean orthophosphate, nitrate and total organic carbon input from the three feeders within the catchment area of PdM reached levels as high as 0.09 milligram per litre, 0.4 milligram per litre and 2.62 parts per million respectively. During the study period, mean TOC concentration in the reservoir was 2.32 parts per million while the mean algal cell count was 4601 cells/millilitre. The dominant algal species identified were *Oscillatoria*, *Cyclotella*, *Navicula* and *Cosmarium*.

This study highlights the trophic state of the reservoir water and clearly points to the need for constant monitoring in order to avoid the occurrence of an impending harmful algal bloom.

Keywords

Algae, Proliferation, Reservoir, Mauritius

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Ref: ABS1840001

**BIOPLASTIC-BASED SCAFFOLDS
FROM NATURAL RESOURCES FOR
BONE REPAIR AND REGENERATION:
IN VITRO AND IN VIVO STUDIES**

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Mauritius and many other countries will be faced with the economic, health and social challenges of an ageing population. Bone tissue engineering aims to overcome the issue of slow healing in ageing adults and attempts to improve bone repair via the use of scaffolds. Bone TE scaffolds should closely mimic the natural bone extracellular matrix (ECM) niche and should satisfy the following criteria: excellent biocompatibility, adequate surface properties and mechanical performance, as well as controlled bioresorbability, osteoconductivity and vascularization [1]. A promising strategy is the use of polymer blends, which combine good mechanical properties and biodegradability e.g. of a polyester on the one hand with advantageous surface properties afforded by natural biopolymers on the other hand. Amongst naturally-derived polymers, polysaccharides such as κ -carrageenan (κ -CG) is interesting since its carbohydrate moieties interact with or are integral components of many cell adhesion molecules and matrix glycoproteins. κ -CG derived from seaweeds offers the possibility of exploiting local seaweeds found along the coasts of Mauritius for high value-added applications.

In this presentation, the fabrication of bone tissue engineering scaffolds consisting of blends of κ -CG with bioplastics as well as an in-depth evaluation of their miscibility characteristics and cellular responses will be discussed. The application of high-value added bioplastics namely polyhydroxybutyrate (PHB) or polyhydroxybutyrate valerate (PHBV) which may be obtained from sugarcane vinasse was extended to the biomedical field. More specifically, novel electrospun scaffolds consisting of κ -CG in combination with either PHB or PHBV led to improved NIH3T3 mouse fibroblast cell proliferation, enhanced in vitro biomineralization potential and human osteosarcoma (SaOS-2) cell differentiation ability [2].

Indeed, in comparison to neat polyester scaffolds, MTT assay indicated a higher density of NIH3T3 cells on the surface of the blend fibers, indicating enhanced bioactivity. In vitro inflammatory studies conducted on murine macrophages showed that the cells maintained a rounded morphology, indicative of no significant inflammation. Furthermore, in contrast to the neat bioplastic fibers, the blend mats led to the formation of much smaller apatite crystals (7 μ m vs 800 nm), which indicates better osteointegrative potential. The degree of crystallinity and hence the hydrolytic degradation rate of the blend fibers could be controlled by variation of κ -CG content.

Foreign body reactions of the scaffolds assessed by subcutaneously implanting the later in Wistar rats for a period of 2 weeks confirmed the biocompatibility of all scaffolds with new blood vessel formation.

Keywords

Bioplastics, polysaccharide, bone repair, tissue engineering, natural resources

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Ref: ABS0810223

BUILDING AN INNOVATIVE CLOUD PLATFORM FOR CLIMATE AND SUGARCANE CROP DATA

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Climate is a key driver of sugarcane production systems and it has major influence on planting strategies, growth phase, ripening phase, resource management such as irrigation scheduling and crop productivity. Voluminous climate and crop data have been accumulated at the Mauritius Sugarcane Industry Research Institute (MSIRI) dating back to the 1960's. An innovative approach was adopted for data management and data analytics through cloud computing. The objective was to build a climate and crop database, to develop data analytics and reporting tools that would provide ubiquitous access to information and

user-friendly dashboards for rapid data mining. Another important innovative aspect of this project reside in the data analytics engine which relied on an associative data model rather than the traditional SQL (Structure Query Language) model.

Climate and sugarcane crop data were acquired from many sources and in different formats. For climate, data were collected from four agro-meteorological stations of MSIRI within three agro-climatic zones of Mauritius. Climate variables recorded on a daily basis included maximum and minimum temperature, solar radiation, relative humidity, wind speed, rainfall, evaporation and soil temperatures. Agrometeorological bulletin in pentads, monthly bulletin of climatological summaries published by the Mauritius Meteorological Services, which cover essential climate variables from many agro-meteorological stations scattered over the island were also used. These data were organised into a relational climate database to facilitate in-depth analysis of crop productivity both spatially and over time.

Sugarcane crop data such as stalk elongation for the period of January to June and cane quality data covering period April to November in the five sectors of the island were available for the past 15 years and are important determinants of cane and sugar yield at harvest.

The project covered the phase of analysis, data capture, design architecture, uploading on cloud, development of interfaces and unit testing. A number of data analytics tools (dashboards) have been developed during the project, 11 for the module on climate and 8 on the crop module. The dashboard on rainfall and evaporation allows the rapid and efficient access to information on the water

status in specific region while the dashboard on crop elongation allows the updating and comparison with the best years.

The dashboards and cloud database give fast access to information anytime, anywhere, efficiently and in a versatile way for decision making by scientists and stakeholders. The potential exploitation exists by allowing access to the database to stakeholders and academics locally and internationally which will help in the sustainability of the cloud system. The new platform will enable analysis of data that would allow a better understanding of the effect of climatic factors affecting the sugarcane crop and the performance of varieties in different environments. It can be further expected that other layers of information could be integrated for a more holistic approach to optimise yield.

Keywords

Climate, database, cloud computing, dashboard, data analytics

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Ref: ABS9100135

**CHARACTERISATION OF
ANTIBACTERIAL MARINE
MICROBIAL NATURAL PRODUCTS
FROM MANGROVE FORESTS OF
MAURITIUS**

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Antibiotic-resistant bacteria are rapidly developing worldwide, reducing the effectiveness of antibiotics. Infectious diseases cause seventeen million deaths each year and 480,000 people develop multi-drug resistant diseases annually [1, 2]. There is therefore an urgent need to develop novel antimicrobial drugs. Mangrove ecosystems are unique and shelter a wide variety of halophilic microorganisms that still remain largely unexplored and potentially represent an excellent source for marine biotechnology exploitation to produce novel bioactive metabolites [3, 4]. The main aim of this study is to characterise the antibacterial metabolites from marine microbial natural products derived from the mangrove forests of Mauritius. The specific aim of this part of the study is to determine the nutrient content of four selected mangrove site around Mauritius. The nutrient content will aid in the optimization of specific growth media for the culture of the halophilic bacteria and archaea present in those selected mangrove forests sediment. Sediment samples were collected from four mangrove sites namely: Site 1 (South east), Site 2 (North), Site 3 (North east) and Site 4 (South east). The nutrients were extracted using different extraction reagents and their determinations

were done through instrumentation and colorimetric methods. The nutrients analysed were Na, K, Mg, Ca, Fe, Cu, Zn, Mn, Co, Ni, B, SO₄-S, PO₄-P, NH₄-N, NO₂-N, and NO₃-N. The salinity of all the four selected sites was found to be 35ppm. The average Na concentration at Site 3 and Site 4 was relatively high as compared to the remaining sites. As the halophilic bacteria and archaea are being targeted for this study, the Na concentration of the mangrove sediment is of utmost importance. The average SO₄-S concentration was relatively low at Site 1 and Site 2. Some of the nutrients levels at all sites were found to be quite low as compared to other tropical mangrove forests [5, 6]. The concentrations of both of the major and trace elements will be useful in understanding the nutrient need of the microbes present in the mangrove sediment. Specific growth media will be designed according to the nutrient concentrations obtained. The microbial inhabitants of mangrove sediment have been assessed through several cultivation approaches. However, metagenomics combined with phylogenetic studies reveals that less than 1 % of bacterial diversity has been successfully cultured to date [7]. So, providing the microorganisms with the proper nutrients will result in a higher yield and this preliminary part will eventually meet the main aim of the project.

Keywords

Antibiotic resistance, Mangroves, Halophilic microorganisms, Nutrients, Culture media

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Ref: ABS5430120

**CLOUD ROBOTIC ARCHITECTURES:
FUTURE RESEARCH DIRECTIONS
FROM A COMPARATIVE ANALYSIS**

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Improvement and development in cloud computing and robotics have led to the existence of cloud robotics where robots can

gain from greater memory, remote processing, and computational power, and massive data storage. Robotics as a Service (RaaS), a service provided by cloud computing, is quickly growing into a multi-billion dollar industry where in the year 2015, global robotics spending was at \$71 billion [1]. It has also been forecasted that by 2019 an increasing accumulated value of US\$ 23 billion will be collected from the sales of service robots [2]. The integration of robotics and cloud computing has always been considered as a compound aspect due to the multiple components involved in such systems. Principally grounded on robotic and cloud technologies, the emergence of cloud robotics allows the amalgamation between infrastructure cloud empowered by machine-to-cloud (M2C) communications and an ad-hoc cloud formed by machine-to-machine (M2M) communications among cooperative robots [3]. In order to address this issue, multiple studies have attempted to create cloud robotic architectures to simplify representation into different blocks or components. The conceptualization of cloud architectures have provided means for automation in large scale production. This process has been assisted by automating robots with sensors and actuators that process data and send to the cloud for process [4]. The use of appropriate architectures in addition to cloud systems have also shown to provide a myriad of benefits [5]. Nevertheless, a restricted amount of study has been done to critically review and compare these architectures. As such, this study investigates and performs a comparative analysis of existing cloud robotic architectures in order to identify key limitations and recommendations on the future of cloud robotic architectures. As part of this study, 7 such architectures have been reviewed and compared and results showed



limited evaluation of existing architectures in favour of security weaknesses [6].

Keywords

Cloud-Robotic Architectures, RaaS, Robotics, Cloud Computing, Comparative Analysis

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Ref: ABS3590218

COMPUTATIONAL MODELLING OF SN2 REACTIONS FOR THE FUTURE

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The bimolecular nucleophilic substitution (SN2) reaction is a chemical reaction which has been widely studied. In the SN2 reaction, a charged or neutral species, referred to as a nucleophile, attacks a positive centre to replace an atom or group of atoms. The resulting product from a frontside attack is structurally like that from a backside attack. However, the products from the two modes of attacks are mirror-like, similar to the right and left hands. The products need to be separated as they undergo different reactions. During an SN2 reaction, both products are formed in different amounts and at different speeds depending upon the reaction conditions. A complete grasp of the factors which lead to the formation of one product in preference to the other is elusive. A series of reactions was studied through computational modelling to shed light on the factors which govern the formation of the frontside and backside products. The effects of nucleophiles, bulk solvation and microsolvation on the model SN2 reactions involving chloromethane and fluoride nucleophiles were studied at the OLYP/6-31++G(d,p) method (Laloo, Rhyman, Ramasami, Bickelhaupt, & de Cózar, 2016; Laloo, Rhyman, Ramasami, Bickelhaupt, &

de Cózar, 2018). It was found that: (i) Small neutral nucleophiles favour the formation of the frontside product. (ii) The solvent or neutral nucleophile, when acting separately on the reaction, retards the formation of both the frontside and backside products. (iii) The presence of solvent and neutral nucleophile favours the formation of the backside product when compared to the gas-phase reactions. The findings were rationalised using the activation strain model of chemical reactivity and the ExcelAutomat tool (Laloo, Laloo, Rhyman, & Ramasami, 2017; Laloo, Savoo, Laloo, Rhyman, & Ramasami, 2018) was developed to facilitate the processing of files. These insights contribute to a better understanding and optimisation of SN₂ reactions.

Keywords

Density functional calculations, computational chemistry, reaction mechanisms, SN₂, automation. Excel VBA

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Ref: ABS6590225

CRISPR/CAS9: A REVOLUTIONARY GENOME EDITING TOOL WITH POTENTIAL APPLICATION TO SUGARCANE IMPROVEMENT

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Sugarcane breeding is a highly resource intensive activity, taking as long as 12-15 years before a new improved variety is released. Thanks to innovative approaches, the Mauritius Sugarcane Industry Research Institute (MSIRI) has continuously improved varieties with resistance to pest and diseases, tolerance to environmental stresses, suitability to mechanization and more importantly, increasing sucrose content and cane yield. Breeding has played a key role in the sustainability of the industry against major challenges.

However, the loss of the preferential market access to the EU in September 2017 together with a substantial fall in sugar prices have compelled the Mauritian sugar industry to continue its re-engineering, and research and development can contribute significantly to its survival. The MSIRI has been constantly investigating innovative approaches to

increase productivity. One example is the implementation of marker assisted breeding to shorten and improve the efficiency of the breeding programme.

A potentially novel sugarcane breeding approach through the application of CRISPR/Cas9 technology involves the editing of the sugarcane genome by switching off or knocking out some of the genes, which confer undesirable traits. For example, the knocking out of genes in the sugarcane flowering pathway in an existing profuse flowering commercial variety is likely to produce a new variety with reduced flowering and with increased cane yield and sucrose content.

The aim of this project was to optimize the CRISPR/Cas9 system for gene editing in the model plant *Arabidopsis thaliana* with the ultimate objective of transferring the technology to sugarcane. In *A. thaliana*, mutations in the BRASSINOSTEROID INSENSITIVE 1 (BRI1) gene, leads to morphological variations in leaf architecture in dosage dependent manner visible in the first generation. This makes it an ideal candidate for the testing of CRISPR/Cas9 technology efficiency in *Arabidopsis* and optimizing the Cas9 vector module. The following means of editing the BRI1 gene in *A. thaliana* using CRISPR/Cas9 were investigated;

- a) Testing the ease of deletions by CRISPR/Cas9 between pairs of target sites within the BRI1 gene
- b) Verifying whether the target sites ending with base sequence TTCT could improve the efficiency gene editing as it is suspected that the commonly used TTTT sequence could act as a stop codon

- c) Testing for the EC 1.1 promoter as an alternative to currently used Ubiquitin promoter in CRISPR/Cas9 modules
- d) Comparing the nuclease activity of *Staphylococcus pyrogenes* Cas9 to *S.aureus* Cas9

The final vector modules were constructed and transferred in *Agrobacterium tumefaciens*, which were used for the transformation of *Arabidopsis* by the floral dip method. Seeds were collected from treated plants and transformants carrying the mCherry reporter were selected by visualization under the microscope. Transformed seeds were individually sown and the phenotype was scored four weeks after germination. The BRI1 gene was successfully knocked out in all treatments with a frequency of 10-64% Cas9 expression. The disruption of the edited BRI1 is currently being investigated by gene sequencing. The technology is also being optimized for sugarcane so as to attain the objective of knocking out the gene(s) responsible for flowering.

Keywords

New breeding techniques, transformation, Knock-out

Ref: ABS3010143

CYTOGLOBIN EXPRESSION RESTORED DURING DIFFERENTIATION OF HUMAN LIPOSARCOMA CELLS

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Cytoglobin (Cygb) is a protein belonging to the globin family generally known for their

respiratory activities. Cygb has gained an increased attention in its involvement in carcinogenesis, with a marked low expression in cancer cells. Recently, it has been shown that in non-cancer cells, the expression of this protein increases during adipogenesis.

To explore the modulation of Cygb during the adipogenic differentiation of liposarcoma cells, SW872 and investigate its respiratory activity.

The expression of Cygb was determined by western blotting on D0, D1, D2, D3 and D6 during adipogenic differentiation of SW872. Adipogenic differentiation was confirmed using differentiation markers namely, FASN, FABP4, PPAR γ . The accumulation of lipid was determined by Oil Red O (ORO) staining. Cell number was evaluated by the Trypan Blue exclusion assay. Mitochondrial activity and mitochondrial mass of the cells were determined by MTT assay and mitotracker staining respectively.

SW872 cell line was observed to have a low expression of Cygb, a common feature of cancer cells. However, these cells were able to restore expression of Cygb during differentiation, together with the increase in protein expression of adipogenic markers. The ORO staining also increases in the SW872 showing differentiation of the pre-adipocytes to the lipid-laden morphology of adipocytes. In same line, SW872 proliferation is inhibited in the presence of Cygb where, an increase in mitochondrial activity was also observed.

The results show that Cygb, similar to the other globin proteins, is associated to the respiratory activity of the cells. Moreover, the increased expression of Cygb during

adipogenic differentiation of liposarcoma, SW872, inhibits its proliferation. These findings are indicative of the anti-cancer property of Cygb.

Keywords

cytoglobin, adipogenesis, differentiation, carcinogenesis

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Ref: ABS0310064

DEALING WITH SCHIZOPHRENIA: A FAMILY CENTERED PERSPECTIVE

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Schizophrenia is a severe mental illness impacting not only on the lives of patients but also their family. With deinstitutionalization family caregivers have increasingly assumed greater responsibility for the care of their mentally ill relatives with schizophrenia. Caregivers experienced disruption and limitations in their daily lives, (such as reduced personal freedom and leisure time, missing work, and experiencing stigmatisation, shame, guilt and worry), poor

physical, emotional and social health. Several studies have been carried out on quality of life and caregiver burden focused on different types of illness like Alzheimer's, stroke or cancer, but no studies have been conducted on family caregivers of patients with schizophrenia in Mauritius. The purpose of this study is to explore the family members' perspective in a Mauritian family for a relative with schizophrenia. The study was conducted at Brown Sequard Mental Health Care Centre with one hundred and forty-four (144) family caregivers. A mixed-method was applied. For the quantitative method, the family caregivers were asked to complete a well-validated questionnaire. The qualitative exploratory phase of the study was conducted via a face-to-face interview with twenty (20) family caregivers and a focus group discussion with ten (10) family caregivers. Data were analysed using the Statistical Package for Social Sciences, Windows Version 23. Mean and standard error of the mean were calculated for continuous variables, and frequencies and percentages for categorical variables. 65.3% were female and 34.7% were male. Most were above 55 years (28.5%) and were married (73.6%), 46.5% studied up to secondary level and 45.1% received a salary Rs 10000- 20000. 89% did not have any informal training about how to care for their ill relatives and 60% family did not even know the name of the illness. 65% female and 35% male spent more than 40 hours caring for their ill relatives. The caregivers' emotion, physical and social health was positively correlated with age. The p-value ranged from 0.009, 0.014, 0.00 and 0.021 which are <0.05 . Knowledge was correlated with family caregivers' worry where the p-value was 0.046 and Pearson Correlation was 0.167*. A strong correlation was found between caregiving and emotional, physical,

social health and financial situation showing an increase in care-giving role resulted in poor emotional well-being, poor physical and social health and an increase in financial worry. Families of patients with schizophrenia are ill-equipped to deal with their ill relatives hence providing education and support to family caregivers can decrease the burden. The data collected in this study may help health professionals and support groups to plan and develop better programs for improving quality of life of family caregivers and empowering them.

Keywords

Schizophrenia, family caregiver, emotional wellbeing, physical health, social health, financial worry, knowledge.

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Ref: ABS6590081

**DECISION-MAKING SUPPORT OF
DIABETIC RETINOPATHY IN
MAURITIUS THROUGH DEEP
LEARNING**

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Mauritius has a high incidence of diabetes which in turn leads to a number of complications, one of which is Diabetic Retinopathy (DR). Among individuals with diabetes, the prevalence of DR is approximately 28.5% in the United States (Zhang et al., 2010) and 18% in India (Raman et al., 2009). Some research on DR has also been carried out for Mauritius (Dowse et al., 1998; Tapp et al., 2003) although no updated figures are presently available. These figures and research confirm the importance of diagnosing DR as early as possible and Retinography or Ophthalmoscopy is currently the most common diagnostic tool.

In this work, we are proposing an image analysis tool using deep learning to assist doctors with the diagnostic decision. Recent years have seen an emergence of the use of Artificial Intelligence and Machine Learning in all imaginable fields. Deep learning (DL), a subset of machine learning, has been found to be extremely performant in the diagnosis of DR (Gulshan et al., 2016; Trivino, Despraz, Sotelo, & Pena, 2018) although it cannot replace a comprehensive eye examination. Deep learning, inspired by the structure and function of the brain, is a family of computational methods that allow an algorithm to program itself by learning

from a large set of examples that demonstrate the desired behaviour.

Using DL, the DR severity will be computed from the intensities of the pixels in a fundus image. To create or "train" this DL function, images from publicly available datasets for which the diabetic retinopathy severity is already known will be used. Our preliminary investigation indicate that images from either the EyePACS-1 dataset (9963 images from 4997 patients) or the Messidor-2 (Decencière et al., 2014) dataset (1748 images from 874 patients) can be used. During the training process, the parameters of the neural network will be initially set to random values. Then, for each image, the severity grade given by the function will be compared with the known grade from the training set, and parameters of the function will be adjusted to decrease the error on that image. This process will be repeated for every image in the training set allowing the function to "learn" how to accurately compute the diabetic retinopathy severity. The result will be a function which will be able to compute the diabetic retinopathy severity of new images and to predict whether the patient suffers from DR or not.

Figures from the WHO indicate that in 2016, 1.6 million deaths were directly caused by diabetes (World Health Organization, 2018). These results support the fact that diabetes and its associated diseases need to be studied and different kinds of solutions should be looked into. Healthy populations are cheaper for governments. Healthcare expenditures on diabetes accounted for 11.6% of the total healthcare expenditure in the world in 2010 (Candeias, 2016). Hence studies aiming to reduce diabetes and its associated complications are of utmost importance to

the advancement of the country's economy and the well-being of the population.

Keywords

Machine Learning, Deep Learning, Diabetic Retinopathy, Mauritius

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Ref: ABS9030014

DEVELOPING AN AR(1) TYPE SPATIAL INTEGER-VALUED MODEL WITH A GENERAL LATTICE STRUCTURE: APPLICATION TO THE AGRICULTURAL SECTOR

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Spatial models of non-negative integer values are of interest in sectors such as agriculture, epidemiology, geography, environmental studies, image processing among many others. In the literature, the first non-Gaussian spatial auto-regressive integer-valued model of order 1 (AR(1)) (Ghodsai et al., 2012) considered only the relation between the measured variable at the specified position in a two-dimensional

space with corresponding variables at the lower left positions via the binomial thinning operator and with a random error term. However, in the Gaussian set-up, Bustos et al. (2009) proposed a generalized Gaussian type spatial models of AR(1) type structure that associate the measured variable of interest in a two-dimensional space with all the neighboring related points or lattices. Such AR(1) type spatial models have not yet been considered for the integer-valued cases. This paper therefore proposes a generalized AR(1) non-Gaussian type spatial model based on binomial thinning where the innovation term is assumed to be Poisson distributed at first instance. In view of setting a parsimonious type spatial model, it is quite rationale to assume only two thinning coefficients of lag 1 and lag 2 respectively. Based on this model specification, we derive the moment scores and build the auto-covariance structure. A Quasi-likelihood estimation approach is proposed to estimate the model parameters. A Monte Carlo experiment is conducted to explore the consistency of the estimators and the new model is applied to the Yeast cell counts data that is spread over 400 small regions.

Keywords

Spatial, Modelling, Quasi-Likelihood, Estimation, Poisson, Lattice

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Ref: ABS2340077

EFFECT OF CLIMATE CHANGE AND CLIMATE VARIABILITY ON THE PREVALENCE AND DISTRIBUTION OF VIBRIO SPECIES IN SEAFOOD

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Mauritius currently boasts of a seafood sector that contributes 1.3% to its gross domestic product and an expanding seafood industry making up 11% of the economy's agricultural share (EDBM, 2019). Coastal fishing, which includes lagoon and off-lagoon catches, amounted to 800 tonnes in wet weight equivalent last year (Statistics Mauritius, 2018). With a per capita consumption of fish, molluscs, and their products of nearly 29.36 kg/year (Statistics Mauritius, 2018), it is increasingly important to ensure seafood safety from the sea to the consumers' plate. Seafood-borne infections are mainly associated with the consumption of contaminated raw or undercooked seafood (Lopatek *et al.*, 2018). The most common bacterial causative agent of these infections are the endogenous marine *Vibrio* species, namely, *V. parahaemolyticus*, *V. cholerae*, and *V. vulnificus* (WHO/FAO, 2011). Seawater temperature is known to greatly affect *Vibrio* levels and an expanding body of research is supporting the link between climate change and *Vibrio* seafood contamination (Vezzulli *et al.*, 2015). Given that Mauritius' tropical climate provides ideal conditions for the proliferation of vibrios,

climate change could potentially exacerbate their prevalence in our seas. The main aim of this project was therefore to investigate the occurrence, relative population densities, and species diversity of pathogenic *Vibrio* in wild and farmed seafood at different sites along the shoreline of Mauritius for the period of 2017-2018. In total, 181 wild finfish samples, 16 farmed fish samples, and ~96 pooled oyster samples were screened for the presence of *Vibrio*. For the finfish, duplicate samples of parrotfish (*Scarus ghobban*), emperor fish (*Lethrinus nebulosus*), shoemaker-spinefoot fish (*Siganus sutor*), and grouper (*Epinephelus fasciatus*) were collected monthly at 7 different sea-locations around Mauritius. The two species of farmed fish included red drums (*Sciaenops ocellatus*) and sea bass (*Centropristis striata*) collected from Pointe aux Feuilles. Oysters (*Crassostera gigas*) were obtained from a local supplier operating at Grand Gaube. Following the U.S. Food and Drug Administration's Bacteriological Analytical Manual, the Most Probable Number method was used for isolating *Vibrio* species from seafood. Alkaline peptone water was used as the recommended enrichment broth, thiosulfate-citrate-bile salts-sucrose agar as the selective media, and HiCrome *Vibrio* agar for chromogenic differentiation of presumptive *Vibrio* colonies. On average, the wild fish, farmed fish, and oyster samples harboured means of 3.04 ± 0.07 , 2.70 ± 0.23 , and 2.95 ± 0.26 Log MPN/g, respectively. Seasonal variation explained 25% of the increase in seafood *Vibrio* counts ($p < 0.001$), with summer favouring higher population densities by 0.49 Log MPN/g ($p < 0.001$) as compared to winter. Suspect purple (*V. cholerae* and *V. vulnificus*) and bluish-green (*V. parahaemolyticus*) colonies were subjected to molecular analyses. So far,

Vibrio genus-specific markers have yielded 93% positive PCR results and trials with *Vibrio* species-specific markers are underway. Primers targeting virulence genes (*tdh*, *trh*, *tlh*) will ultimately be used nearing the end of the project. Taken together, this study highlights the presence of different pathogenic *Vibrio* species at varying levels in seafood widely consumed in Mauritius and underscores the need for concerted efforts to ensure our seafood's safety.

Keywords

Vibrio, Fish, Oyster, Climate Change, Climate Variability

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Ref: ABS7650152

EVALUATION OF OCCUPATIONAL STRESS AMONG MENTAL HEALTH NURSES

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Psychiatric nurses encounter a variety of demanding and stressful events, dealing with psychotic patients, suicidal cases and poor prognosis of mental disorders. Job stress among nurses is one of the core concerns in the field of psychiatric nursing; stress brought harmful impacts on both nurses' health and their ability to cope with job demands. This study purposed to evaluate occupational stress among psychiatric nurses working at the Brown Sequard Mental Health Care Centre (BHMHCC). Mixed methods were used for the study, both quantitative by distributing questionnaire and qualitative by face to face interviewing. Data was collected from 109 participants and SPSS Version 23.0 software was used for statistical analysis. Moreover, descriptive statistics such as means, standard deviation, frequencies and percentage were used. Cronbach's Alpha, to test the internal consistency and reliability of the questionnaire. T-Sample Test (p-value) to assess the statistical significance and hypothesis testing - Pearson correlation coefficient tests were used. The Cronbach's Alpha was 0.709, the number of respondents were 105 with a percentage of 96.3%, 54.3% females and 45.7% males, 48.6% were between 36-45 years, 75.2% were married,

43.8% hold diploma in general nursing and only 36.2% hold diploma in psychiatric nursing. 52.4% with nursing experiences between 10-19 years and 85.7% working >40 h/w. Overall, results of the study data supports that psychiatric nurses encounter several occupational stresses related to patient's care, dealing with psychotic, suicidal patients was most stressful. Lack of adequate staffing was the main stressor, nurses work > 40 h/w. They have poor concentration, sleep disturbance, feel under strain, they have low job satisfaction but they do not lose confidence. Stressor in relation to patient's care with (p-value 0.000) is statistically highly significant. General health of nurses with (p-value 0.00) is statistically highly significant. Impact of stress about the job with t (p-value 0.000) is statistically highly significant. Impact on nurses due to shortage of staff with (p-value-0.000) is statistically highly significant. Finally, relationship between home and work conflict of nurses showed that they do not have home/work conflicts because they have very good family supports, social relationship and exhibiting different coping strategies, with (p-value 0.000) which is statistically highly significant. The findings were consistent with notion of burnout in response to job-related stressors. Continuous workshop will help to increase the stress bearing capacity among nurses working in psychiatric settings. Policy makers should urge to implement training in psychiatric and community psychiatric nursing to bridge the gap of acute shortage of nurses at BSMHCC. Implement special training how to handle aggressive and violent patients.

Keywords

Psychiatric nurses, Occupational stress, Coping and Home/work conflict



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Ref: ABS2780172

EVALUATION OF ORGANIZATIONAL READINESS FOR ADOPTION OF INDUSTRY 4.0 VISION, THROUGH MULTI – CRITERIA DECISION TECHNIQUES.

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In past few decades the technology has evolved at an accelerated pace thereby transforming ways of doing businesses, social dynamics, cultural exchange, individual lifestyles, consumerism patterns and economic trends. As a result, the emergence of Social Media, Big Data Analytics, Internet of things, Artificial Intelligence, Cyber Physical System, Machine Learning, Blockchain and cryptocurrency, deeply transformed the lives of people in all sectors including

manufacturing. Responding to such transformation, we must urgently engage in research, and development of innovative production processes which will interact man, machine and technology. This means we must converge the industry 3.0 with the intelligent digital world, where product will interact with machines and machines among themselves through software and networks, to solve the problems and emerge as self-reliant and sustaining system. This transformative wave of Industry 4.0 wave started in Germany, and now engulfed the whole world. Its impact can be felt in many aspects.

This research paper will focus on the enablers and barriers an organization may come across while adopting the changes to embrace, Industry 4.0 vision. The researchers will study the organizational readiness to Industry 4.0 through an analytical model. The three-stage analytical model will help the decision makers to select appropriate alternative to meet the desired objectives. First stage will comprise of selection of alternatives, criteria by qualified personnel in the company. The decision maker will identify important criteria for study, from the capability and capacity of the organization. He must be fully familiar with the Key performance indicator (KPI) and Key result area (KRA) of the company. In the second stage the weights (degree of importance) given by qualified personnel will be further validated by Analytic Hierarchy Process (AHP), Weighted Sum Method and Weighted Product Method (WSM & WPM). The third stage will categorically evaluate the readiness of the organization by applying TOPSIS method (Technique for Order Preference by Similarity to Ideal Solution).

The study is be carried out on a company producing garments in Mauritius.

Keywords

Industry 4.0, WSM & WPM, AHP, TOPSIS, KPI, KRA, Alternative, Criteria

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Ref: ABS2130194

GIANT CLAM DISTRIBUTION AND THEIR RESILIENCE TO CLIMATE CHANGE

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Giant clams, commonly known as Tridacnids and belonging to the family Cardiidae (sub-family Tridacninae), are the largest sessile molluscs that contributes to coral reef functioning. However, unlike other marine molluscs which filter feed on plankton from the seawater column, giant clams depends mainly on the dinoflagellate algae (Symbiodinium) that live in their mantles tissues. They provide shelter to the Symbiodinium by protecting them from predators and allowing them to photosynthesise during the day by opening their shell for exposure to sunlight. The distribution of the different species of giant clams has been reported in the South Pacific and Indian Oceans. Although most of the Tridacnid species are protected under Appendix II of the CITES, they are very much threaten due to their over exploitation and to the ocean warming-induced mass mortalities. However, little is known about giant clams' stress physiology and the impact of ocean warming on their distribution and survival. This study aimed at investigating the population density of *Tridacna maxima* and *Tridacna squamosa* at two sites around Mauritius over three years and to determine their resilience to thermal stress.

Surveys were conducted from 2016 to 2018 on the reef in of Belle Mare and Flic en Flac. Triplicate (n=3) belt transects of 50m x 5m

were surveyed at each zone. The individuals of *T. maxima* and *T. squamosa* were morphologically identified in-situ. The survey showed a lower density of *T. squamosa* as compared to *T. maxima* at both sites. A decrease in the population density over time for both giant clam species were also noted where *T. squamosa* having a much higher significant decrease ($P < 0.01$). To determine their tolerance to ocean warming, triplicate samples of each species were collected from each site and exposed to thermal stress at 28°C and 32°C and at a constant light level (22 $\mu\text{mol quanta m}^{-2} \text{s}^{-1}$) for 72 hrs (3d)(n=3). To estimate the stress susceptibility, the maximum quantum yield of photosystem II (Fv/Fm), relative electron transport rate (rETR) and non-photochemical quenching (NPQ) of the in hospite Symbiodinium of both giant clam species were recorded at 15, 24, 40 and 72hrs intervals using a diving Pulse-Amplitude-Modulated fluorometer (D-PAM). The 28°C treated specimens acted as control and, at this temperature, the chlorophyll a fluorescence parameters, Fv/Fm, rETR and NPQ, did not vary significantly. However, at 32°C differential responses between the two tested species, both at the photo-physiological and survivorship levels were observed. After 15 hrs of exposure at 32°C, *T. squamosa* specimens showed significant decline in Fv/Fm, rETR and NPQ and exhibited signs of disintegration, indicative of mortality. *T. maxima* started to be affected after 40 hrs of exposure. These results indicate that *T. squamosa* was less tolerant to heat-stress as compared to *T. maxima*, which may partially explain the low density of *T. squamosa* as compared to *T. maxima* recorded during the surveys of 2016 to 2018. Further studies on zooxanthellae genetic type may also provide some insight regarding the role that symbionts play in stress tolerance.

Keywords

Giant clams, distribution, thermal stress, D-PAM, climate change

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Ref: ABS2590105

**IMPACT ASSESSMENT FOR
HARMONICS POLLUTION OF THE
ELECTRICITY DISTRIBUTION
NETWORK IN THE PRESENCE OF
SMALL SCALE DISTRIBUTION
GENERATIONS**

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With the deliberate deregulation of the power generation sector in Mauritius, Small Scale Distributed Generation (SSDG) are increasingly being connected onto the distribution network. These SSDG are renewable energy sources collecting power from the sun or the wind. To the naked eyes, there are vivid benefits attributed to such "green" installations but there are also underlying issues which can arise from such installations. One such issue is Power Quality, more precisely Harmonics, which is the focus of this study. Anurangi, Rodrigo and Jayatunga (2017) have demonstrated that photovoltaic (PV) systems do indeed introduce harmonics into the network. Likewise, Nasr (2015) showed that wind turbines are sources of harmonics to the

network. Modern technologies adopted by these electrical energy sources employ power electronic converters for the control and regulation (Bollen & Yang, 2013) which inherently produce and export harmonics in the network at the point of common coupling. Harmonic contents cause voltage and current distortion and when these distortions rise beyond acceptable levels, various technical issues arise for the other customers connected on the same network. Bradt et al. (2011) have shown that wind powered generators produce harmonic resonance and voltage flicker. The resonance affects the equipment connected on the grid while flicker affects people directly.

In this study, an actual low voltage residential network was modelled using DIGSILENT Power Factory®. Data captured from PV and wind turbines in Mauritius were fed to the model to assess the amount and type of harmonics being generated from these SSDG units which are polluting the distribution network. Various case studies were analysed including the assessment of harmonics generated with increasing penetration levels of these SSDG. These were benchmarked against the limits defined in IEEE Standard 519. The findings shall enable the determination of the maximum hosting capacity for the typical low voltage distribution network with respect to harmonics and can be readily applied by the local electricity utility to control and limit the penetration levels of SSDG in the low voltage distribution network. The results can also be valuable to any other utility having similar residential area, load pattern and SSDG arrangements.

Keywords

Small Scale Distributed Generation, SSDG, Harmonics, Power Quality, Maximum Penetration Level

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Ref: ABS5930090

INCIDENCE AND OUTCOME OF TEENAGE PREGNANCY IN TWO MAJOR OBSTETRIC UNITS IN MAURITIUS

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Teenage pregnancy is defined as girls between the ages of 13 to 19 years, becoming pregnant (UNICEF, 2008). Decades ago, young childbearing was common with an early age of marriage. With empowerment and urbanisation, high risk behaviors among youngsters became the new fashion; unprotected premarital sex being one. The brunt of which led to an upsurge in

teen pregnancies. Out of the total annual live births in Mauritius, those from adolescent mothers rose from 9% in 2002 to 11% in 2011 (Fokeerbux, 2013). Pregnancy during adolescence is accompanied by difficulties attributed to biological and physiological immaturity which predisposes the young mothers as well as their neonates to increased obstetrical risks (Brosens et al, 2017), without forgetting the psychological impact on their life. Therefore, there is an urgent need to assess whether pregnancy in adolescence results in a favourable outcome or not and the complications it entails.

The objectives of the study are to: estimate the incidence of teenage pregnancy reported at Dr. Jeetoo and Victoria hospital for the year 2018, determine social background and high risk behaviors among pregnant teenagers, record the maternal and obstetric outcomes of teenage pregnancy and analyse characteristics of neonates upon a live birth.

A prospective cohort study was designed. All pregnant women between the ages of 13 and 19 years attending Jeetoo and Victoria hospital between the 1st January to 31st December 2018 were invited to participate in the study. A questionnaire was used to collect data from patients regarding socio-economic status while all other information with regards to complications during pregnancy and delivery were retrieved from the medical notes. Ethical clearance was obtained from the Ministry of Health & Quality of life. All data will be analysed using statistical computer software.

Interim analysis of 84 revealed that the mean age of teen mums was found to be 16.81± 1.30 years. Out of these 27% were married, 31% unmarried and 42% were living in cohabitation. Concerning their high risk

behaviours 27% claimed to be smokers while 7.1% consumed alcohol regularly and 14% occasionally. Only 2 patients revealed the use of contraception. Most women delivered at term, out of which 8.3% were by emergency caesarean sections. There were 2 stillbirths and 2 neonates had congenital anomalies.

Contribution to the field: Findings from the study will provide an insight on the status of teenage pregnancy and the risks associated with early pregnancy in Mauritius. Teenage pregnancy remains an important public health issue. Hence, more epidemiological and observational data can provide guidance for policy makers as well as health care professionals to be better prepared for high risk pregnant age group. By end of the research, we hope to present important sociodemographic risk factors for teenage pregnancy, which can be useful in the design of campaigns and programmes against teenage pregnancy.

Keywords

Teenage pregnancy, Incidence, Outcome, Obstetric, Maternal, Neonatal, caesarean section,

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Ref: ABS5640171

INDUSTRY 4.0 VISION, STUDY OF ENABLERS AND BARRIERS

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Industry 4.0 has attracted the attention of all the business and walks of life. There is no doubt, we have done a significant progress in our approach to manufacture and consume any product or service. As a result, we are in the midst of significant transformation regarding the way we produce products, services and market them to consumers. Thanks to the current trend of automation and data exchange through technologies. Even though this has not reached to everywhere, but the transition is so compelling, that we will not be able to avoid it for long. Yes, smart ways and means are approaching faster to change the world of manufacturing, being called Industry 4.0. Industry 4.0 is no more just a marketing buzzword, but it is changing the world that deserves our attention.

First industrial revolution was led by the mechanization through water and steam power. Thanks to James Watt. Then came the second industrial revolution which was

known for the mass production and assembly lines using electricity. After this came the third industrial revolution, which atomized the industries through extensive usage of computer's powers. The fourth industrial revolution is unique in many ways. It started in the third with the adoption of computers and automation and enhance it with smart and autonomous systems fueled by data and machine learning.

In times to come the combination of Internet of things, Cyber physical system, Big data analysis, machine learning, Artificial intelligence is giving rise to smart factory, where machines will become more efficient and productive and less wasteful and smarter, as they get access to more data without human involvement. This research paper will explore the vision of Industry 4.0, through an extensive literature review and focused group discussion. Researcher will also examine the opportunity for manufacturers through adoption of Industry 4.0 vision, to optimize their operations quickly and efficiently by knowing what needs attention. This research paper will help all those companies, who are aspiring to adopt Industry 4.0 vision, but are grappling in darkness because of lack of systematic knowledge. The research paper will highlight the role of key element like IoT, AI, ANN, SCM, Automation, Cyber security, 3D printing, Data analytics and machine learning to make Industry 4.0 a success.

Keywords

Industrial revolution, Industry 4.0 vision, automation, systematic knowledge, machine learning

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**INFLUENCES OF PESTICIDE
RESIDUE ON ATTAINING FOOD
SECURITY IN MAURITIUS**

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With global population projected to increase above 9 billion by 2050, food security - the availability of food and one's access to it - is increasingly important. Mauritius is almost a net importing country spending Rs 3487 Million on the importation of fruits and vegetables for the year 2017. Carrot being an important food crop is grown all over the island occupying 317 hectares of land. Pesticides are widely used in food

production to increase food security despite the fact that they can have negative health effects on consumers.

Following a survey conducted among 300 carrot growers, it was observed that 44 % exceeded the dosage of pesticides unknowingly by not utilizing calibrated measuring equipment to measure the amount of pesticides. In relation to this, an experimental trial was set up in two different agro climatic regions (Sub Humid and Super Humid) in Mauritius in order to observe the subsequent effect this can result in terms of pesticides residue on carrots. 7 treatments were chosen being; T1: control (soil only), T2: compost + no pesticide added, T3: compost + recommended rate of pesticide, T4: compost + 3 fold recommended rate of pesticide, T5: chemical fertilizer and manure only, T6: chemical fertilizer + manure + recommended rate of pesticide, T7: chemical fertilizer + manure + 3 fold recommended rate of pesticide.

A rapid, low cost and easy sample preparation approach known as the QuEChERS method was used and for sample measurement the GC MS (gas and liquid chromatography coupled with mass spectrophotometer) method was used.

Results demonstrated that where 3 fold pesticides were sprayed the residue limits were 2 times higher and 3 times higher for Cypermethrin and Deltamethrin respectively as compared to the Maximum Residue Limits. These results revealed the presence of harmful pesticide residue in food which can cause great concern among consumers. An investigation into continuous monitoring and tighter regulation of pesticide residues in food crops is recommended. Also, the use of new and innovative techniques such as Artificial Intelligence should be encouraged

as a monitoring device to detect higher limit of pesticide in random sampling on selected food crops.

Keywords

Pesticides, Pyrethroids, Mauritius, Crop production, Food Security, Artificial Intelligence

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Ref: ABS4070179

INSIGHTS INTO THE EFFECTS OF COUNTERCATIONS, SOLVENT AND NUCLEOPHILICITY OF ION-PAIR S_N2 REACTIONS

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Bimolecular nucleophilic substitution (S_N2) reactions involve the partial replacement of a molecule by an electron-rich species. S_N2 reactions have a vital role in synthetic routes. S_N2 reactions can take place through backside (S_N2-b) and frontside (S_N2-f) pathways. The position of attack of the nucleophile leads to retention of configuration for the S_N2-f pathway while for the S_N2-b pathway, there is inversion of configuration.

The aim of this research work was to provide insights into how nucleophilicity and solvent affect S_N2 reactions in the presence of counteractions. The M_nNH₂⁽ⁿ⁻¹⁾ + CH₃Cl and M_nCH₃⁽ⁿ⁻¹⁾ + CH₃Cl (M⁺ = Li⁺, Na⁺, K⁺, MgCl⁺; n = 0, 1) reactions were studied with the OLYP/6-31++G(d,p) method in gas phase and in tetrahydrofuran. These investigations are in continuation with previous studies [1,2]. On the basis of the results obtained [3,4], we conclude that (i) while the presence of the counteraction favours the S_N2-f pathway in the gas phase, S_N2-b pathway is favoured in tetrahydrofuran, (ii) to enhance the kinetics of S_N2 reactions, a balance is required between nucleophilicity and bulkiness of the nucleophile and (iii) to tune a solvated S_N2 reaction towards the S_N2-f pathway, the anion must be very polarisable and its counteraction highly polarising. These

deductions may prevent trial and error and wastage of resources when designing synthetic routes given the complexities of mechanisms, and may motivate further studies into the effect of the counteraction.

Keywords

Bimolecular nucleophilic substitution, ion pair

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Ref: ABS5980137

INVESTIGATING SURVIVORSHIP OF SACCOSTREA CUCULLATA IN A BARACHOIS-BASED OYSTER FARM IN MAURITIUS: IMPLICATIONS FOR A POTENTIAL SUSTAINABLE OYSTER CULTURE INDUSTRY

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The oyster culture industry is gradually developing in Mauritius with the support of the local government. Nevertheless, scientific information pertaining to the conditions for survival of oysters is scarce. Since micro-phytoplankton function as food source for oysters, its occurrence and density considerably impact oyster survivorship. Varying sea surface temperatures (SST) are likely to affect the mortality rate of oysters in an era of climate change. To ensure a successful and sustainable oyster culture industry, the aforementioned factors are essential in evaluating the potential yield prior to investing in and developing an oyster culture farm. This study investigates micro-phytoplankton density and chlorophyll a concentration in a barachois-based oyster culture farm at Poudre d'Or, north-east coast of Mauritius, in an attempt to determine the optimum survival conditions for oysters. This study was conducted at three stations (S1 - oyster culture zone within barachois; S2 - water exchange with adjacent sea area; S3 - water circulating within barachois). 41, 63 and 40 juvenile oysters *Saccostrea cucullata* were placed at stations S1, S2 and S3, respectively, in September 2018 and monitored over four months (at an interval of

4 weeks) from September to December 2018 in terms of *S. cucullata* percentage survivorship, SST and nutrient levels (nitrate, phosphate and silicate). In December 2018, micro-phytoplankton density and chlorophyll a concentration were evaluated for each station using spectrophotometric methods. At the end of the four months, *S. cucullata* survivorship order from highest to lowest was S2 (90.5%) > S1 (87.8%) > S3 (85.0%). During all the four months, highest SSTs were consistently recorded at S3 and lowest at S2. In November 2018, all stations experienced a peak in SST in the order of S3 (34oC) > S1 (32oC) > S2 (31oC). Consequently, the mortality rates were in the order of S3 (15.0%) > S1 (10.0%) > S2 (3.4%) from November to December 2018. Highest nitrate level was recorded at S2, highest phosphate level at S1 and highest silicate level at S3. Micro-phytoplankton densities varied as $2.72 \pm 0.07 \times 10^5$ cellsL⁻¹ at S1, $1.25 \pm 0.12 \times 10^5$ cellsL⁻¹ at S2 and $1.89 \pm 0.12 \times 10^5$ cellsL⁻¹ at S3. Chlorophyll a concentrations were positively correlated with micro-phytoplankton densities. Nutrient availability was not a limiting factor in controlling micro-phytoplankton densities. The results indicate that not all stations in a barachois may provide the optimal conditions for oyster survival. Micro-phytoplankton density of $1.25 \pm 0.12 \times 10^5$ cellsL⁻¹ is adequate enough to sustain oyster survivorship, while SST of more than 32°C may significantly and adversely impact survivorship. Thus, while demarcating potential barachois-based oyster culture sites, it is crucial to consider an area which has a good amount of flushing, which helps in maintaining an optimum SST for oyster survivorship. A combination of the aforesaid factors is required to attain a high level of survivorship. The outcome of this study may

assist oyster culturists to opt for the most favourable barachois-based culture conditions in order to optimize the yield. Moreover, the findings may support further demarcation of most suitable barachois-based oyster culture sites around Mauritius.

Keywords

Barachois, chlorophyll a, micro-phytoplankton, oysters, *Saccostrea cucullata*

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Ref: ABS1580155

INVESTIGATING THE THERMAL PERFORMANCE OF COMMERCIALY AVAILABLE COOL ROOF MATERIALS FOR A TROPICAL CLIMATE - A CASE STUDY FOR MAURITIUS

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The peak and average electricity consumption for Mauritius is continuously increasing, due to the infrastructural and economic development of the island. More buildings are being constructed and many people can now afford air-conditioners. The peak electricity demand occurs in summer, mainly due to the excessive space cooling

requirements. It is a known fact that the roof of houses gets heated significantly during the day, leading to uncomfortable conditions inside them. Moreover, hot concrete roofs take a lot of time to cool down at night, and this leads to a warm air temperature inside the house. These two factors contribute in increasing the electricity consumption of domestic premises through the use of air-conditioning equipment. A cool roof is one which is designed to reflect most of the incident thermal energy from the sun and which has the ability to emit most of its stored heat energy. Such a roof is known to reduce the energy consumption of a house having air conditioning (Xu, Sathaye, Akbari, Garg, & Tetali, 2012). Moreover, cool coatings when applied on several dwellings, reduce the urban heat island effect (Li & Norford, 2016), (Yang, et al., 2018). Furthermore, given that the temperature of the roof is decreased in extreme summer conditions, the roof lifetime is extended. Some companies in Mauritius propose different cool roof materials with different thermal properties due to their constituents and colours. However, their performances have not been quantified in the prevailing weather conditions. For instance, it is not known if such an investment is worthwhile. Moreover, it is not known if the thermal comfort of occupants will be affected in the winter season due to cool roofs. Therefore, in this study, we investigate the thermal behaviours of five different commercially available white cool roof coatings in Mauritius through experiments and simulations. Special research grade equipment have been acquired for this project to perform in-field measurements of surface temperature, heat flux, solar reflectance and thermal emissivity, and weather parameters. After preliminary experiments, the solar reflectance of the

considered coatings were found to vary in the range 0.580 - 0.674 and their thermal emissivity varied in the range 0.87-0.89. The mathematical models for the coatings are currently under development and, once validated, will help to forecast the performance of the cool roofs in different localized weather conditions around the island. The concrete cells to emulate the behavior of a typical room will soon be constructed at two locations having different weather patterns and then data will be collected for analysis. It is expected that the cool roof brings about significant savings by offsetting air-conditioning energy consumption of houses. The savings will be quantified for a typical Mauritian house through extensive simulations in a building energy modelling software, in order to determine the payback period for investments in cool roofs. Eventually, the long term performance of the cool roof materials will be investigated. The outputs of this research will convince stakeholders in taking informed decision about improving the energy efficiency of existing buildings in Mauritius.

Keywords

Cool roof, tropical climate, thermal performance

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Ref: ABS9020096

INVESTIGATION OF CORROSION & SURFACE INTEGRITY ASPECTS OF LSP ON 7075 ALUMINIUM ALLOY

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Laser Shock Peening (LSP) is a cold working process that is slowly growing in popularity. This is because the LSP uses the principle of confined ablation of metal surfaces so as to induce shock waves, leaving compressive residual stresses into the material thereby increasing its fatigue life. The big majority of the works that are being carried out on LSP are especially in the Aeronautical and Power Generation fields as both sectors strongly believe in the prospects of bringing the technology to commercial scale. The aim of this paper is to bring new information regarding corrosion resistance properties on Aluminium 7075 alloy for the aeronautical application. It is also a means of bringing forward the different advantages that are associated to the processing. The LSP processing was carried out at different parameters variations. The experimental work has been carried out at the University of Mauritius, University of the Witwatersrand, Johannesburg, and the Council for Scientific and Industrial Research (CSIR) National Laser Centre,

Pretoria, South Africa with a 1064 nm Nd:YAG laser.

The paper is to present some of the findings of an experimental work related to the effect of process parameters on the corrosion resistance and surface integrity aspects of the aluminium 7075 peened surface. To that effect results of the corrosion resistance tests using the potentiostat would be presented. Furthermore in order to understand the impact of LSP on the aluminium 7075 alloy, surface roughness measurements using the Talysurf form 2 series, cross sectional microhardness measurements using the Knoop indenter and microstructure analysis would be presented.

The interrelationships between the different measured quantities will also be analysed as the aim is to be able to predict the effect of the process parameters on the mechanical and electrochemical properties of aluminium 7075 alloy.

It is believed that the findings of this current work will help the laser community in Africa in better understand the resulting properties of LSP process on aluminium 7075 alloy. This would be helpful in optimizing the LSP process such that ultimately this technology can be brought to the commercial stage at the lowest possible cost.

Keywords

Laser Shock Peening, Corrosion, Metallurgy, Surface Integrity

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Ref: ABS4150068

**INVESTIGATION OF THE EFFECT OF
ALKALI TREATMENT ON THE
TENSILE STRENGTH OF PANDANUS
UTILIS FIBRE REINFORCED
COMPOSITE**

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In today's era, the global market depends a lot on polymer based products which have shown to be a versatile spectrum of materials across the different engineering fields. From the construction industry to the simple daily domestic product, the use of synthetic reinforced materials such as E-glass fibre, carbon fibre, kevlar have become an essential based element to reinforce polymer matrices. However, these composite have shown a negative impact on the environment such as their high carbon footprint as well as the inability to degrade over a long period of time. Thus landfill sites are being overloaded with plastic products.

An alternative to this problem is the use of natural fibre as a reinforcing material. Different researches have been done in this field and the use of bio-composite is gradually increasing in the different commercial sectors. Well-known companies like Mercedes-Benz are using bio-composites as a non-structural material in the interior panels of their different luxurious cars. Therefore, as Mauritius is blessed with a wide variety of plants as well as agro-wastes and fibres, the production of local fibres and bio based-composites can lead to the creation of a micro-industry. Based on research carried out at the University of Mauritius, it has been shown that alkaline

treated Pandanus utilis has an improved mechanical strength. However, there seems to be a lack of proper adhesion of the fibre to the polymer matrix, which results in a lower tensile strength of the composite. Therefore, the aim of this project is to investigate the effect of the alkali treatment of the fibre on the adhesion strength of the fibre to the based matrix in order to increase the tensile strength of the resulting bio based-composite. The approach used was to understand the relationship between the tensile strength and the hydrophobicity of Pandanus utilis. Based on the results of other research studies, the optimum treatment (0.5% wt NaOH for 14h) for maximum tensile strength (168MPa \pm 12MPa) and a second treatment of 2.5% wt NaOH for 2h which give a tensile strength (117MPa \pm 12MPa) were used. The contact angle for both experiments will be presented, and bio based composites with chopped Pandanus utilis fibres (of different lengths) will be manufactured by using compression molding method. The tensile strength of the different bio based-composites will be presented and compared with that of glass reinforced composites.

Keywords

Pandanus utilis Wettability Tensile strength Bio-composite

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Ref: ABS5460035

**LONGITUDINAL COUNT DATA
ANALYSIS WITH POISSON-LINDLEY
INNOVATIONS: APPLICATION TO
MEDICAL SCIENCE**

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Often, in health studies, repeated measures are collected for different patients over a finite period of time. The purpose is obviously to monitor the growth or decay of some infected cells while at the same time guiding the medical practitioner on the drugs to be prescribed. In this process, several other variables that may be termed as exogenous time-variant are collected such as the age, base-line treatment, gender, cholesterol level and among others. Thus, it is of primary importance to deduce the effect of these factors on the evolution of the diseases. Since the data are mostly collected in a longitudinal fashion and the risk of over-dispersion is relatively high along the different time points, it is suitable to consider some discrete longitudinal models to analyze these data.

In the recent statistical literature, it is noticed that the one-parameter Poisson-Lindley (PL) model encompasses some interesting features such as over-dispersion, skewness

and kurtosis that make the PL model easily adapted to real-life instances as compared to other established models such as Poisson mixture models (Ghitany & Al Mutairi, 2010; Mohammadpour, Bakouch, & Shirozhan, 2016; Livio et al, 2018) . However, the PL model has only been exploited in simple univariate time series settings. In this paper, the objective is to extend the integer-valued autoregressive model (INAR(1)) with PL innovations to the longitudinal INAR(1) case.

In this context, the marginal distribution of the counting variable of interest may be unknown and hence the Generalized Quasi-likelihood (GQL) method of estimation seems more plausible for estimating the vector of regression coefficients and the serial parameters. In the application areas, the proposed longitudinal INAR(1) model is applied to analyze the treatment and other effects on two medical datasets: The epileptic seizures (Thall & Vail, 1993) and the Polyposis Data (Crouchley & Davies, 1999).

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Ref: ABS9700072

**MEDICAL ADHERENCE AMONG
CHRONIC KIDNEY DISEASE
PATIENTS ON DIALYSIS: A PILOT
STUDY AT SSRNH**

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Chronic kidney disease is becoming a global burden worldwide with economic implications both to the families and healthcare system. Adherence to treatment is a measure of the efficiency of the health care system and represents an essential though simple means of maintaining if not improving the quality of life of patients suffering from chronic kidney disease by ensuring that patients are compliant to daily medication and dietary recommendation. A pilot study was carried out at SSRN Hospital to evaluate the level of medical adherence among patients on dialysis, patient awareness of possible factors responsible for their non-adherence to treatment and whether patients were informed enough to be able to self-manage their disease pertaining to their fluid and dietary recommendation. 196 respondents were targeted both from the SDI dialysis center and Auram; patients meeting the inclusion criteria were given a pre-tested questionnaire to fill during their dialysis treatment after having been ethically cleared by the relevant ministry. A sub-section represented the Morisky Medication

Adherence Scale (MMAS), primarily used to assess adherence in chronic kidney disease patients.

This study showed that most patients on hemodialysis were from lower socio-economic status (SES), implying that the higher social strata would potentially resort to private medical institutions for similar treatments. Marital status as a component of SES appeared to be instrumental in mediating medical adherence, the latter which was higher among married patients or those living with partners. Forgetfulness and lack of self-efficacy are the most common cause for non-adherence to medication, however, when looking into pill burden, there was no association with non-adherence to medication plausibly because of the importance of medication to delay disease progression. A critical component identified was the lack of informed knowledge on dietary recommendation and self-managing fluid restriction among patients which could be a precipitating factor towards a shift to non-adherence in the long-term of treatment. This study depicted the major pitfalls which may plague the treatment for chronic kidney disease patients such as the need to improve communication from healthcare providers in view of empowering patients in self-managing their own disease.

Keywords

CKD, pill burden, dialysis, adherence, therapeutic restriction

Ref: ABS9560124

**MOLECULAR DOCKING: A
PREVAILING TOOL FOR THE
DESIGN OF COMPOUNDS WITH
PHARMACEUTICAL PROPERTIES**

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Molecular docking consists of computational strategies which are used to model the interactions between small molecules with crystal structures of macromolecules and has emerged as an important component for the identification of lead molecules in the design of new compounds with pharmaceutical properties (Meng et al., 2011). Molecular docking simulations enable to characterize the behavior of molecules in the binding site of target macromolecules (DNA, protein, etc) and support the elucidation of fundamental biochemical processes. Molecular docking can demonstrate the possibility of the interaction of a compound with a biomacromolecule at molecular level and hence can be used to understand the mode of action of a particular drug. It can be used as a starting point in drug discovery, whereby a large database of compound structures can be evaluated as potent drug candidate in silico hence aiding in the selection of the most potential compounds from an array of options to be used in pharmaceutical formulations (Dar and Mir, 2017).

In the present work, molecular docking has been employed as useful tool to predict the possible mode of action of amino acid derivatives. The interactions of three proline derivatives of varying chain lengths (C8, C10 and C12) with crystal structure of

bovine serum albumin (BSA) was investigated to gain a fundamental insight into their protein binding ability. The theoretical data obtained with molecular docking was compared with those obtained with experimental techniques, namely fluorescence spectroscopy. Molecular docking studies performed on the three proline derivatives with BSA revealed that the compounds were able to bind in the vicinity of both tryptophan residues (Trp-213 and Trp-134) with an increase in the free energy of binding while increasing the chain length from C8 to C12 which was in line to what was observed in the fluorescence study.

Keywords

Molecular docking, macromolecules, drug, proline derivatives, bovine serum albumin

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Ref: ABS5480017

**MULTI-OBJECTIVE OPTIMISATION
OF DISTRIBUTED GENERATION
UNITS AND CUSTOM POWER
DEVICES WITH SIMULTANEOUS
DISTRIBUTION NETWORK
CONFIGURATION**

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Due to the growing energy demand and the increased concern about the environment,

distributed generation (DG) units have gained much interest nowadays. However, the uncertainties in the loads and the renewable energy sources lead to bottlenecks and congestion in the distribution system. Although this problem can be mitigated by expanding the network, more economical alternatives include the distribution network reconfiguration (DNR) and the insertion of custom power devices (CPD) (Ziaee & Choobineh, 2016). The impacts of these two solutions along with the integration of the DG units are two-sided depending on the network structures, DG parameters and CPD parameters. Therefore, new planning and design strategies must be developed to meet the challenges of these changes (Syahputra et al., 2012). This research deals with the simultaneous DNR and the identification of the optimal size and location of the DG unit and the CPD in an unbalanced distribution system.

The simulation was performed on the IEEE 123 Node Test Feeder System using a wind system and a unified power quality conditioner (UPQC) as DG unit and CPD respectively. DNR was performed by controlling the status of the switches. After the load flow analysis in OpenDSS, the results were sent to MATLAB through the Component Object Model (COM) interface for optimisation studies (Anwar & Pota, 2012). Two elitist multi-objective evolutionary algorithm namely Non-dominated Sorting Genetic Algorithm (NSGA-II) and Strength Pareto Evolutionary Algorithm (SPEA2) were used to minimise the active power loss, voltage deviation and total cost. Each solution was modeled as a five-component vector representing the DG size, DG location, CPD size, CPD location and network configuration respectively. Due to the imprecise nature of the decision

maker, the best compromise solution was chosen from the set of pareto optimal solutions by fuzzy means.

It can be concluded that the optimal sizing and location of the DG unit and the CPD with simultaneous distribution network configuration produced results with acceptable trade-offs among the objective functions. Although both algorithms generated pareto fronts with comparable spread and diversity, NSGA-II outperformed SPEA2 in terms of computation time. Also, the fuzzy decision making technique proved to be effective in analyzing the merit of the pareto optimal solutions with respect to the requirements of the utility. This research produces useful data so that distribution system operators (DSO) and policy makers can propose new incentives and regulatory measures to enhance the performance of the system (Georgilakis & Hatziargyriou, 2013).

Keywords

Multi-objective optimisation, distributed generation units, custom power devices, distribution network configuration

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Ref: ABS6970150

**MUTUALISTIC RELATIONSHIP
BETWEEN SOFT CORALS AND
ZOOXANTHELLAE COLLECTED
OFFSHORE OF MAURITIUS**

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Soft corals-dinoflagellate symbioses have been depicted to form a mutualistic relationship where both contribute to immense ecological importance. This interaction plays a vital role in the growth and survival of reef corals in nutrient-poor tropical waters, indicating most soft corals cannot survive without their symbiont. Even though nine divergent lineages have been identified in the symbiotic dinoflagellate genus *Symbiodinium* (family Symbiodiniaceae, order Suessiales, class Dinophyceae), studies showed corals being chiefly associated with clade C (Stat et al., 2008). The *Symbiodinium* niche is associated with external parameters such as temperature, light intensity and turgidity which changes with depth. The identification of both the soft corals as well as its zooxanthellae at molecular level is vital to be able to draw the correlation between the symbionts and their hosts. Soft corals were collected from the offshores at different

depth (ranging from 3 m to about 25 m) and were preserved in 95% ethanol prior to DNA extraction. The non-coding COI-COII intergenic spacer from the mitochondrial genome of soft corals was amplified using the primers COII8068F and COI8325R (McFadden et al., 2004). Furthermore, ribosomal subunit RNA (ssRNA) genes were amplified from total nucleic acid of symbiotic (non-cultured) algae using the 'zooxanthella-specific' PCR primers. Sequencing of the latter will provide robust information for identification of the specific clades which reside in the specimens collected and whether the habitat of the soft corals has any effect on the different zooxanthellae. This study will focus on the correlation existing between the soft corals collected around Mauritius at different depth and the specific clade of zooxanthellae that reside in those specific Cnidarian.

Keywords

Soft corals, zooxanthellae, clades, ribosomal subunit RNA

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Ref: ABS3790052

**NEW MECHANISMS OF INCRETINS
IN DIABETES AND BARIATRIC
SURGERY**

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In health, blood glucose levels are regulated by the joint actions of insulin and glucagon secreted from the pancreatic beta- and alpha-cells, respectively. Thus, hyperglycaemia does not arise due to insulin deficiency alone. Dysregulation of glucagon secretion occurs in all forms of diabetes and elevated glucagon levels can aggravate hyperglycaemia. Bariatric surgery is described as a miracle cure for type 2 diabetes (T2D) and is being offered as a treatment option for the disease. This phenomenon occurs independently of weight loss via a combination of factors, including changes in incretins. However, the impact of the surgery on islet function has not been explored in depth. Incretins also play a crucial role in glucose homeostasis but the role of gut peptides such as GLP-1 and PYY on glucose-mediated glucagon release remains uncharacterised. The aim of this study was to elucidate the physiological relevance of GLP-1 and PYY on glucagon secretion in bariatric surgery and in health and in diabetes.

Donor human islets obtained with ethical consent from the Oxford Islet Isolation and Transplantation Centre and isolated mouse islets were used for secretion studies. Secreted hormones were analysed by means of radio-immunoassays.

GLP-1 potently inhibited glucagon secretion in isolated mouse and donor human islets. In parallel, we have also shown that peptide tyrosine tyrosine (PYY) is capable of suppressing glucagon release although PYY receptors are restricted to beta-cells. Using a T2D rat model, we show that bariatric surgery leads to marked beneficial metabolic effects and reversal of T2D within just 10 days post operation. The restoration of deranged islet secretory function upon RYGB was linked to marked elevations in PYY and persisted in the presence of GLP-1R inhibition. Moreover, chronic treatment of diabetic rat and human islets with exogenous PYY improved insulin and glucagon release. These findings suggest that PYY is the humoral factor which mediates the anti-diabetic effects of RYGB and restoration of dysregulated insulin and glucagon secretion in diabetes.

Since impairment of glucagon regulation constitutes a major fifty percent of the pathogenesis of diabetes, addressing both the insulin and glucagon defects would effectively 'cure' the disease. To date, very few anti-diabetic drug therapies target both hormonal impairments. This is well illustrated by the remarkable success rate of GLP-1-based therapies. However, the unpleasant side-effects associated with these treatments have hampered their suitability for many patients. Thus, the fact that PYY is also capable of restoring both defective insulin and glucagon release, is of significant clinical relevance. This lecture will first, explore the regulation of pancreatic hormone release by GLP-1 and PYY, and subsequently discuss their roles in glucose homeostasis, diabetes and bariatric surgery.

Keywords

Pancreas Islet Insulin Glucagon bariatric surgery incretins

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Ref: ABS1960222

OCCURRENCE OF ENDEMIC AND RARE CORAL AND REEF FISH SPECIES IN MAURITIUS IN A CHALLENGING ENVIRONMENT

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Coral reefs of Mauritius are highly exposed to the growing coastal development, fishing and tourist industry and are continuously threatened by the unprecedented consequences of climate change, frequent and severe coral bleaching events, crown of thorns predation and coral disease infestation. Subsequently, this study aims at evaluating the coral species richness and reef diversity with particular focus on further studying the occurrence of endemic and rare coral and reef fishes around Mauritius. Due to a lack of prior assessments on the endemic and rare reef fish and coral species, we evaluated the literature to identify rare and endemics. From this review, 7 species each were identified and 24 study sites around Mauritius were surveyed from July to December 2018, for their species richness and for their occurrence and distribution. The survey involved two to three hours of snorkelling per sites inside the lagoon and 45 minutes to one hour for diving sites. The observational data on the coral type and reef fishes were collected using underwater photography and fish visual census, respectively. Sites were then categorised as per site sensitivity regarding diversity and structural complexity for further in-depth periodic reef vulnerability data collection. The result revealed that the endemic reef

fishes, *Stegastes pelicierii*, *Pomacentrus pikei*, *Amphiprion latifasciatus*, *Amphiprion crysogaster* were recorded at 10 different sites in the lagoon, contrary to *Abudoduf margariteus*, *Zebrosoma gemmatum*. Among the corals, *Acropora branchi*, *Pocillopora indiania*, and *Seriatopora hystrix* were recorded at 8 sites as compared to *Seriatopora caliendrum*, *Stylophora pistillata* and *Horastrea indica*. The same rare and endemics were assessed at various dive sites outside the lagoon and most of the targeted species were occasionally observed with the exception of *Amphiprion Crysogaster*, The Mauritian Clownfish, *Stegastes pelicierii*, the Mauritian Gregory and *Pomacentrus pikei*, the Blacktip damsel which were also common inside the lagoon. Based on their reef structural complexity and diversity, Flat Island, Coin de Mir, Palmar, Eau Bleu, Pointe d'Esny, Blue Bay Marine Park, Le Bouchon, Riviere des Galets, St Felix-Le Morne, La Prairie and Balaclava Marine Park might be considered as ecologically critical areas. Besides the coral and reef fish diversity, these sites also harbour the rare and endemics under the study. The findings therefore, suggest that only the Mauritian clown fish, Mauritian Gregory and Blacktip damsel were commonly found, with these exceptions, the rest rare and endemics were occasionally observed and subsequently, threatened by extirpation. As such, this study mandates an extended island-wide survey in collaboration with volunteer divers from dive centres and more thorough inside-lagoon assessment to better understand the status of the rare and endemic coral and reef fish species in Mauritius.

Keywords

Coral reefs, endemic species, rare species, species richness, structural complexities

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Ref: ABS7090118

OPPORTUNITY OF USING THE MASCARENE ENDEMIC PANDANUS FIBRE AS REPLACEMENT OF E-GLASS FIBRE IN COMPOSITE FOR INDUSTRIAL APPLICATIONS.

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composite materials. Then, Glass Fibres Reinforced Composite materials have become one of the essential materials in engineering because of the high mechanical performance. However, E-glass fibre is non-biodegradable, expensive and health hazardous. Hence, the trend is to replace it with natural fibres. Pandanus is a genus of tropical plants rich in fibre belonging to the family Pandanaceae which includes more than six hundred species worldwide; with twenty-one species in Mauritius. In this context, the physical, chemical and mechanical properties of the Mascarenes Pandanus leaf fibres were studied to determine if it could be considered as a replacement of E-glass fibre in industrial applications. An investigation of the effect of several physiological properties related to the plant on the leaf fibre tensile strength showed that the strongest fibre comes from young leaves from a younger tree exposed to direct sunlight. A selection of the best species among the 21 existing in Mauritius has been performed and the results showed that tensile strength of the untreated Pandanus fibre could reach 275 MPa. Then, an alkaline treatment optimization to improve the fibre properties has also been carried out, the tensile strength of the resulting fibre increased by up to 23%. Finally, the results of the treated fibre tensile strength with the study of existing industrial applications have shown that Pandanus fibre could be used as replacement of E-glass fibre in semi-structural and some structural (moderate load) industrial applications.

Keywords

Mascarenes *Pandanus*, reinforced composite, fibre treatment, E-glass, natural fibre.

Since the 1960's, research and engineering interest has been shifting from monolithic to

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Ref: ABS6010061

OPTIMISING THE HEALTHCARE SYSTEM WITH BLOCKCHAIN

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Healthcare complexity and costs are accumulating continuously stretching the aperture between healthcare and efficiency.

According to the World Health Organisation, the total expenditure concerning healthcare amounts to \$6.5 Trillion (Who.int, 2019). Implementing blockchain based technologies throughout the health sector brings about more security, trust and transparency; it also allows transaction to operate faster. Blockchain refers to the record-keeping technology which is literally just a chain of blocks - containing digital pieces of information - interconnected with a unique digital signature (Hash Function) (Investopedia, 2019). For this paper the focus is rather on the use of blockchain in managing and sharing electronic health and medical records to allow patients, hospitals, clinics and other medical stakeholders to share data amongst themselves, and increase interoperability. For more efficient and reliable business-to-customer transactions, a blockchain based real time interface is being built and the desired platform applied is debatable between Microsoft Visual Basic (VB.NET) and Python. The latter is arguably the best programming platform but Microsoft Visual Basic (VB.NET) has user friendly features that satisfy usability principles. Both platforms have the required features but only one platform can be used to implement the interface, therefore the idea is to use both platforms as one. The core of the Blockchain engine is built in Python since it already has Blockchain libraries. The whole interface is built in Microsoft Visual Basic due to its readily available features. To port the Blockchain engine from Python to Microsoft Visual Basic the "Call Function" technique is used to bridge the link between the two platforms. For now the prototype only has a limited amount of members but furthermore external members will be introduced. Implementing this concept in health sector will bring about a drastic improvement in both record-keeping and patient satisfaction.



Blockchain is considered to be the driving force of the next fundamental revolution in information technology.

Keywords

Blockchain. Hash Function. Python. Microsoft Visual Basic. Call Function Technique

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Ref: ABS2350185

POLLUTION, SKIN AND HAIR

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The impact of pollution on human health is a significant concern worldwide. In addition to the effect of air pollution on the respiratory system, air pollution has a significant impact on the skin. UVR together with pollution are considered as the most common cause of extrinsic skin aging arising from oxidative stress and leading to lipid and protein oxidation. To evaluate the effect of pollution on the skin, we have developed a unique Controlled Pollution Exposure System (CPES) which allows the quantified administration of pollutants on the skin and analysis of their direct impact. We show that

pollution is capable of inducing an oxidative stress leading to upregulation of pro-inflammatory cytokines and skin collagenases such as MMP-1. This results in the destruction of the elastic and collagen fibers and thus to the premature ageing of the skin. In addition to the analysis of the effect of pollution on the skin, the CPES system can be adapted to monitor the effect of pollution on the hair. We have observed that the air pollution has detrimental effects on the cuticle morphology of the hair as well as on the hydrophobicity and tensile strength of the hair.

Keywords

Pollution, skin, hair, ageing, novel

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Ref: ABS4720117

**POMEGRANATE MESOCARP'S
ANTIOXIDANT AND
ANTI-INFLAMMATORY POTENCY
IMPROVES INSULIN ACTIVITY**

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Insulin resistance is a major cause of type II diabetes. Oxidative stress and inflammation, which arise as a consequence of the former, are important factors involved in insulin resistance (Tangvarasittichai, 2015; Rehman et al., 2016). Our research aimed at investigating the potential protective role of pomegranate mesocarp extract (PME) against insulin resistance induced by oxidative stress in differentiating preadipocytes.

Preadipocytes were induced to differentiate in the presence or absence of PME and/or H₂O₂. The expressions of biomarkers of adipocyte differentiation, antioxidant enzymes and inflammation were investigated. Accumulation of lipids in differentiating cells as a consequence of inhibition of insulin resistance was also evaluated.

H₂O₂, which is a marker of oxidative stress, inhibited the differentiation of preadipocytes by suppressing expression of PPAR γ , an important marker involved in glucose and lipid homeostasis. PME induced differentiation of these cells by inducing expression of PPAR γ . In the differentiating cells exposed to H₂O₂, PME alleviated the oxidative stress and inflammatory states by over-expressing antioxidant enzymes and by

suppressing levels of pro-inflammatory mediators, respectively.

PME improves insulin-mediated lipid accumulation in adipocytes exposed to oxidative stress and exerts antioxidant and anti-inflammatory activities. These findings suggest that PME exerts beneficial effects against obesity-related insulin resistance.

Keywords

Pomegranate Mesocarp Extract, Oxidative Stress, Insulin Resistance, Inflammation

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Ref: ABS4170163

PRECISION AGRICULTURE: A SMART APPROACH TO AGRICULTURE

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Multiple IoT agricultural systems have been developed to facilitate precision agriculture [1]. This has promoted yield by 1.75%, energy costs dropped by an average of \$10 per acre, and water use for irrigation fell by 8% [2]. However, currently farmers are still taking decisions based on raw data received from sensors due to the limited knowledge-based layer on most IoT agricultural systems

[3]. There is thus an urgent need to exploit techniques and algorithms for automated decision making to better shape the future of agriculture. The domain of computational intelligence (CI) has the potential to fill this missing knowledge-based layer [4]. The objectives of this research is to 1) identify challenges and perform a research gap analysis on existing IoT agricultural systems, 2) conduct a survey of existing IoT agricultural systems, 3) categorise CI algorithms with respect to their purpose, 4) compare different CI techniques for precision agriculture, and 5) assess the usage of CI techniques in IoT agricultural systems for precision agriculture. In this research, a research agenda for using computational intelligence for precision agriculture will be derived.

Keywords

Internet of Things (IoT), Computational Intelligence, Precision Agriculture, Knowledge-base

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Ref: ABS8920190

**REAL-TIME MONITORING OF
DIABETES PATIENTS: RECENT
ADVANCES ON CONTINUOUS
MONITORING SYSTEMS**

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Diabetes Mellitus (DM) is a global health concern that highly influences human, social and economic costs. Despite the availability of free health services, diabetes prevalence is exacerbating in Mauritius (22.3%) whereby around 250,000 people suffer from diabetes while some 200,000 persons are prediabetic (GIS, 2017; IDF, 2018). Patients complain that self-monitoring of blood glucose (SMBG) is painful and cumbersome. Consequently, they fail to monitor their blood glucose (BG) levels with sufficient frequency. Thus, there is a high need for real-time continuous glucose monitoring systems (CGMs) that can be provided ubiquitously to address this alarming situation. This research work aims at investigating the recent advances on CGMs and three leading CGMs will be compared on important categories such as their features, sensor lifetime, calibration requirements, ease of use and data analysis. A comprehensive discussion is then conducted on key factors such as accuracy, cost, and adoption rate. Potential opportunities and challenges for the further development of CGMs are discussed.

CGMs use approved glucose sensors placed into the human body to detect the BG levels in the interstitial fluid. CGMs' benefits are beyond argument and have proven to be very effective in providing instantaneous and real-time BG readings to patients. These information and trends are very helpful to both patients and healthcare professionals to perform retrospective analysis, detection and prediction of hypo/hyperglycemia (Chen et al., 2017). Moreover, CGMs empower patients and give them insights to manage their diabetes 24/7 proactively by notifying, educating, encouraging, and alerting them (Rodbard, 2016).

Some leading CGMs on the market that is widely used in clinical practice are 1) DexCom G5 from DexCom Inc., 2) MiniMed 670G from Medtronic Inc. and 3) FreeStyle Libre Flash from Abbott Diabetes Care. Sensor technologies used in CGMs and their accuracy have been improving with new technological advancements and time (Christiansen et al., 2017). The results highlighted that the three CGMs have their benefits and limitations in terms of their features, sensor lifetime, calibration requirements, ease of use and data analysis. Moreover, DexCom G5 have reported higher accuracy. The selection of the best CGMs is quite subjective and the cost factor plays a major role in the choice of their adoption. Consequently, the overall cost of acquisition, operation and maintenance demotivate patients to adopt such strategies.

CGMs have shown impressive advances and high potential to manage diabetes. The use of CGMs is bound to rise in the near future since the prevalence of diabetes is increasing very rapidly. Although most Mauritian diabetic patients use SMBG rather than CGMs, the latter has the ability to assist

them in better managing and monitoring their diabetes. Consequently, CGMs can greatly contribute to alleviating the economic burden in Mauritius. Despite numerous advantages of CGMs, their future acceptance and adoption will rely highly not only on hardware technology in terms of longer lifetime, non-invasiveness, unobtrusiveness, better user interface, higher degree of reliability and accuracy, optimized calibration process, cost-effectiveness and patients' safety but also by integrating intelligent algorithms to process the vital signs of the diabetics.

Keywords

Continuous Glucose Monitoring systems, CGMs, Real-time diabetes monitoring, Mauritius

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Ref: ABS3960071

RISK FACTORS AND PREVALENCE OF RELAPSE LINKED TO SUBSTANCE USE DISORDER IN MAURITIAN MALE ADDICTS

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Substance Use Disorder (SUD) places a heavy burden on the public health systems with an increasing worldwide mortality and morbidity rates including Mauritius. SUD consists of abusing illicit drugs which interfere with the natural functioning of the brain reward system, i.e. the dopaminergic pathway producing an intense sense of pleasure acting as a positive reinforcement and generating a state of dependency or simply put as addiction. This study focused on identifying the risk factors leading to SUD among Mauritian male addicts as well as determining the root cause precipitating relapse among that particular strata. The cross-sectional study was conducted in the psychiatric and addictology department of Dr A.G. Jeetoo Hospital over a period of six months. 180 participants meeting the inclusion criteria were given a pre-tested questionnaire following ethical clearance from the Ministry of Health and Quality of Life. Demographics revealed that most of the

participants were from a low socioeconomic status, implying they had low academic achievement, low monthly income and performed unskilled jobs. Majority of the male addicts originated from nuclear or single parents' family and currently had inadequate social supports as they were single or divorced. 57.5% of the addicts had a positive family history of SUD while 45.9% stated that drug abuse was a coping mechanism to deal with life stresses. The most commonly used illicit drug was cannabis and 76.2% were initiated to drugs due to curiosity. Alarming, 59% of the drug addicts relapsed within the first year of abstinence. The results obtained aligned with the Gateway Drug Theory as most of the participants primarily consumed nicotine, cannabis or alcohol first before indulging in consumption of harder drugs to compensate for the development of resistance and further stimulate the release of dopamine given the desensitization of the system after consistent abuse; as determined by the positive relationship between smoking and illicit drug abuse ($X^2(2) = 19.355, p$

Keywords

Relapse, risk factors, SUD, drugs, gateway theory

Ref: ABS8060139

SCREENING OF PLANTS FROM FABACEAE FAMILY FOR THEIR BIOACTIVE POTENTIAL

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The discovery of new antimicrobial agents for the treatment of infections is of

increasing interest due to the intense growing resistance of antibiotics to pathogenic bacteria. Multi drug-resistance bacterial infections is a clinical and public health challenge due to numerous factors such as uncontrolled use of antibiotics which lead to increase mortality, longer length of stays in hospitals and higher cost of treatment and care. In order to alleviate the problem of antimicrobial resistance, compounds from potential plants should be explored since drugs derived from plants are less toxic, cost effective and possess minimal side effects. The Fabaceae family consists of over 650 genera and 18 000 species, is the third largest family of flowering plants (angiosperms), behind orchids (Orchidaceae) and the sunflower family (Asteraceae).

The objectives of the study are to screen the different vegetative parts (mature leaves, flowers, fruit pulp, seeds) of the crude extracts of the two plants from the Fabaceae family namely *Cassia fistula* and *Senna siamea* for the presence of phytochemicals and to investigate their antimicrobial and antifungal potential.

The different plant materials of *Senna siamea* and *Cassia fistula* were extracted by the maceration technique with methanol, petroleum ether and dichloromethane. Qualitative and quantitative screening of the phytochemicals were carried out by standard methods. The antimicrobial potential of the plants' crude extracts were evaluated by the micro-dilution methods against four gram-positive bacteria, four gram-negative bacteria and one fungus.

The phytochemical screening of the crude extracts reveal the presence of different phytochemicals. The total phenolic content was relatively much higher in all the

vegetative parts as compared to the total flavonoids content in both plants. The different crude extracts of both plants displayed both antibacterial and antifungal activities except the crude petroleum ether extracts of the seeds of *Cassia fistula*, while the petroleum ether crude extracts of *Senna siamea* exhibited only antifungal properties. Both the methanolic and dichloromethane crude extracts of *Cassia fistula* pulp exhibited the highest activity against *Listeria innocua* (ATCC 33090) with MIC value of 0.78 mg/ml. For *Senna siamea*, the crude methanolic and dichloromethane of the flowers and pulp displayed the best antibacterial activity with the lowest MIC value of 3.125 mg/ml against the fungus *Candida albicans* (ATCC 10231) and Gram(-ve) bacteria *Proteus mirabilis* respectively. The different seeds petroleum ether crude extracts were found to be inactive against all the bacterial strains; however the seeds of *Senna siamea* exhibited antifungal activities against *Candida albicans* (ATCC 10231) at a concentration of 100 mg/ml.

The findings of this study suggest that the antibacterial and antifungal properties of the tested plants' extracts could be of interest to the pharmaceutical industry for the production of new drugs to cure infectious diseases as an alternative to synthetic antibiotics.

Keywords

Cassia spp, *Senna* spp., antimicrobial, antifungal, phenolics, Fabaceae

Ref: ABS4760007

STRIVING FOR SUSTAINABLE AGRICULTURE THROUGH A BETTER UNDERSTANDING OF FARMER'S PERCEPTION, ATTITUDE AND VALUES

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Meeting the challenges of a sustainable food security has always been the prime concern of every developing country. Agriculture being a major contributor to climate change with a net emission exceeding 17% of greenhouse gases (FAO, 2011), the scientific community urges a paradigm shift in the sector to reduce these emissions. Farmers in Mauritius have their own cultural practices and mode of adaptation to various challenges (including climate challenges) based on their own perception, views, and experience. However this has not been sufficiently studied in depth, and it is not well understood how farmers' beliefs, attitudes and values towards climate challenges are shaping their farming practices, and consequently affecting the country's vegetable production and food security. This paper seeks to investigate the impact of farmer perceptions and practices towards the impacts of climate change, their adaptive responses to these impacts and their resulting farm productivity. A bottom-up approach was used on a representative sample of around 115 small scale farmers throughout Mauritius- in the North, South, East, West and Centre. Face-to-face interviews were held, and the data was subjected to Structural Equation Modeling. The model showed that farmers are already being impacted through

the shift in rainfall patterns, quantum of precipitation, and increase in pests and diseases, all of which have a direct impact on their usual cultural practices. Increasing fertilizer, watering frequency and pesticide has been the only advice normally given by extension services to farmers to bolster their productivity. Farmers in many cases adopt only those advices, of which they are confident to obtain better crop yield and discard all those which challenge their years of experience or they deem as risky. To ensure a sustainable agriculture in Mauritius it is imperative to bridge farmer's experience with new scientifically proven techniques, which begins by acknowledging farmers first.

Keywords

Climate change, adaptation, agriculture, farmer's perspective, structural equation modelling

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Ref: ABS0630122

STYLOPHORA CORALS FROM MAURITIUS AND THEIR THERMAL PHOTO-PHYSIOLOGICAL RESPONSES

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We present the first detailed study of the reef-building coral genus *Stylophora* from the waters of the Republic of Mauritius. Our main objectives were 1) to characterize morphologically the *Stylophora* coral colonies recently discovered in Mauritius; 2) to characterize genetically the coral animal and their symbionts; and 3) to test the thermal photo-physiological responses of the different morphs observed in the field. Surveys were conducted around the islands of Mauritius and Rodrigues in 2017 and 2018, during which *Stylophora* colonies were found only at Ilot Longue and Plateau Ile aux Bernaches adjacent to Amber Island, as well as at Flat Island in the north of Mauritius [1]. Though few in numbers, *Stylophora* colonies dominated the scleractinian coral community at Ilot Longue, where most of the other corals were dead. The other surviving corals at Ilot Longue and Plateau Ile aux Bernaches included massive *Porites*, *Favia*, *Favites* and *Fungia* species along with some soft corals. Colony morphology and scanning electron microscopy (SEM) analyses revealed multiple morphs, while genetic characterisation of the mitochondrial open-reading frame (ORF), the mitochondrial control region (CR) and the nuclear internal

transcribed spacer 2 (ITS2) revealed a perfect match for ITS2 and near-perfect matches for ORF and CR with published sequences of *Stylophora madagascarensis* from Toliara in Madagascar, the type locality of this species [2]. Genetic characterisation of the symbionts was carried out by amplification and sequencing of the 28S large ribosomal subunit (LSU_RNA) gene, and those results were partly confirmed via PCR-RFLP of the 18S small ribosomal subunit (SSU_RNA) using zooxanthellae-specific PCR primers [3]. The results indicate the presence of a single species of *Durusdinium* sp., (this genus was formerly referred to as Clade D). The photo-physiological responses of the different *Stylophora* morphs were determined by exposing coral nubbins to 28, 30 and 32°C for a 12-hr duration then using a Diving Pulse-Amplitude-Modulated (D-PAM) fluorometer to measure changes in chlorophyll a fluorescence. Variable photo-physiological responses to thermal stress were observed among the *Stylophora* colonies harbouring both species of symbionts. The different morphologies may partially explain the differential responses to thermal stress. Identification of thermally vulnerable morphs is imperative in a globally warming ocean for appropriate adaptive management strategies so as to better conserve and manage rare and thermally vulnerable reef-building coral species.

Keywords

Cladocopium, *Durusdinium*, Mauritius, *Stylophora madagascarensis*, Thermal stress

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Ref: ABS0480173

THEORETICAL INSIGHT INTO THE SUSPECTED NOVICHOK AGENT A234 USED IN THE MARCH 2018 ATTACK IN SALISBURY, UK

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Nerve agents are among the most toxic chemical warfare known to mankind. A novel class of nerve agent, namely novichoks, came into the limelight following the March 2018 assassination attempt on former Russian spy, Sergei Skripal and his daughter Yulia in Salisbury, United Kingdom. Information on novichoks is still guarded as "top secret" and reliable data is missing in literature. In this context, a theoretical study was conducted on a novichok agent A234 (Bhakhoa, Rhyman, & Ramasami, 2019). The molecular, spectroscopic, electronic, and toxicity properties as well as the potential thermal

and hydrolysis degradation pathways of A234 were studied. Its poisoning action and antidote based on model systems were also investigated. Some of these parameters were compared to three common nerve agents, namely sarin, VR and VX. These research findings should be useful towards efficient detection, development of antidotes and destruction of A234.

Keywords

Nerve agent, chemical warfare, novichok, theoretical study

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Ref: ABS8920189

TRENDS IN CANCER INCIDENCE IN MAURITIUS, 1991-2015

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Small states (with a population of less than 1.5 million) make up 40% of the world's countries and face a unique set of healthcare challenges, and yet there remains a dearth of literature relating to their cancer control challenges and solutions (Logeman et al., 2017; Tervonen, Foliaki, Bray, & Roder, 2017). This lack of qualitative information on cancer registration is more obvious in regions with low or medium Human Development Index, most notably in sub-Saharan Africa and South Asia (Bray et al.,

2014). The Mauritius National Cancer Registry (MNCR) is among the few sub-Saharan African countries where cancer registration is of population based and nationwide basis. We reported trends in cancer incidence (distribution of cancer by gender, the age standardised rates of different cancer sites by sex in five year intervals as well as the average annual percentage changes) in for the period 1991-2015.

Data was collected on an annual basis retrospectively and semi-actively. Our analysis included all cancer patients registered in the Republic of Mauritius from January 1, 1991 to December 31, 2015. The rates of cancer incidence were calculated by sex and by 5 year age group for five year periods: 1991-1995, 1996-2000, 2001-2005, 2006-2010 and 2011-2015. Age standardised incidence rates (ASRs) were thus determined using the world standard population (Doll & Smith, 1982). The average annual percentage change (AAPC) and 95% confidence interval (95% CI) over the 25 year period were calculated for each sex and cancer sites using *Joinpoint Regression Programme, Version 4.5.0.1*.

Over the 25 year study period, a total of 36,901 cases (57.5% females) were observed with an overall increase in the risk of cancer in both sexes. In males, the most common cancer sites (in terms of ASRs per 100,000) were those of the colon-rectum (17.0) followed by prostate (16.5), trachea-bronchus-lung (13.0), stomach (8.4) and lip-oral cavity-pharynx (7.7). An annual increase of 3.9%, 4.2% and 0.5% were noted in first three sites and a decrease of -0.1% and -1.3% in the last two. In females, the most frequent sites were breast (53.7), colon-rectum (13.2), cervix uteri (11.2), corpus

uteri (7.7) and ovary (5.7). The average annual percentage change was 3.4%, 4.4%, -2%, 5.2% and -0.1% respectively.

This study is the first report about cancer incidence in a small state country of Africa. Moreover, the MNCR is among the few cancer registries in Sub Saharan African countries providing accurate and complete data on a national basis over a 25 year period. During this period, there has been a significant change in the socio economic status of the country as well as a change in the lifestyle of the population (Statistics Mauritius, 2016). Cancer associated to 'westernisation' of lifestyle were superior to those associated with infection and poverty in Mauritius. Our findings contrast with other Sub-Saharan Africa countries where HIV and other infection related cancers are most predominant (Sitas et al., 2008). In Mauritius, many cancers could be prevented by stronger public health action: tobacco and alcohol control, immunisation and better nutrition and weight control.

Keywords

Mauritius, Cancer, Registry, Incidence, Africa

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Ref: ABS6030060

**VALUE ADDITION OF MARINE
MACROALGAE AS HEALTH-
PROMOTING POULTRY FEED
SUPPLEMENT**

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The poultry industry is the most important and established food industry in Mauritius. A major challenge for this industry is the occurrence of known and emerging poultry pathogens. Traditionally, the industry had resorted to the use of antibiotics as a prophylactic or metaphylactic. However, a concomitant of the use of antibiotics is the emergence of antibiotic-resistant strains of pathogens (Verraes et al., 2013). Macroalgae, commonly known as seaweeds, are known to harbor natural antimicrobial

compounds that can be potentially exploited by the poultry sector as an alternative to antibiotics (Corato, Salimbeni, Pretis, Avella & Patruno 2017). Mauritius is enriched with a diverse floral terrestrial and marine biodiversity which still remains to be exploited. The objective of this research is to formulate a novel seaweed based feed with antimicrobial and prebiotic properties. The first stage of this research will focus on the phytochemical profiling of selected seaweed extracts. The antimicrobial potential of the extracts against poultry-related pathogenic bacteria and fungi and their growth promoting effect on beneficial gut bacteria will then be studied. Three seaweed species namely *Ulva*, *Sargassum* and *Gracilaria* will be collected around the lagoons of Mauritius and will be evaluated for their polyphenolic content using standard phytochemical screening methods. Antimicrobial screening of the seaweeds extracts will be performed against common poultry pathogens including *Salmonella* spp. and *Escherichia coli*, as well as mycotoxin-producing fungi *Aspergillus*, *Fusarium* and *Penicillium*. The prebiotic effects of the extracts will also be tested on the beneficial gut bacteria *Lactobacillus plantarum* and *Bifidobacterium* using microdilution assays. Eventually a seaweed-based feed will be formulated and tested on live broilers. Preliminary work has confirmed the presence of various bioactive phytochemicals such as saponins, tannins and terpenoids in the selected seaweeds. In addition, *Sargassum* was found to contain quinones, phenols and alkaloids while *Ulva* was found to be rich in flavonoids and leucoanthocyanins. Flavonoids were also present in *Gracilaria* in addition to quinones and phenols.

It is expected that seaweed would exhibit variable antimicrobial activity against the

different test organisms in both pure extract form as well as when incorporated into poultry feed. The novel seaweed based feed is also expected to have a prebiotic effect on the gut health of poultry hence developing their resistance against common pathogens. Findings of this study will benefit the poultry industry greatly in assisting them in their efforts to protect broilers against infections without having recourse to antibiotics.

Keywords

Macroalgae, phytochemicals, antimicrobial, prebiotic, novel feed, health, poultry.

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Ref: ABS4200129

**VENTILATED WALLS - AN
ATTRACTIVE PASSIVE DESIGN
TECHNIQUE FOR REDUCING THE
CARBON FOOTPRINT AND IMPROVE
THERMAL COMFORT OF OUR
BUILDINGS**

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Buildings have received considerable attention as part of the endeavor to adopt sustainability practices and the emergence of green building design and certification frameworks such as LEED [1], BREEAM [2] and Green Star [4] to guide in the sustainable design, construction and operation of buildings. Buildings are estimated to consume as much as half of an economy's energy and lead to 40% of carbon emissions, which are valid reasons why so much attention is being given to green buildings as part of a green economy. In a green building rating system, the energy aspects of a building project usually get allocated the greatest weightage, with the most number of criteria, in what is typically called credits. For a hot and humid island like Mauritius, the largest consumer in air-conditioned buildings is HVAC, which can represent as much as 60% of total energy consumption in buildings [4].

The recent high temperatures in Mauritius has led to a concomitant upsurge in electrical power demand, threatening to extend the power production capability of the CEB beyond its limits and the vicious cycle of increasing summer temperatures caused by global warming and climate change,

threatening to further increase the use of active cooling and ventilation systems complicates the matter further. It is clear that Mauritius needs to come up with practical and simple, yet effective solutions that our local construction industry can adopt to provide thermally comfortable interior spaces at reduced, if not zero energy use.

This project researched into the efficacy of using ventilated facades as a passive design measure to limit heat gains into interior spaces by using light block to create a façade which allows air movement inside the wall cavity as opposed to constrained air pockets resulting from the use of conventional (normal) concrete blocks. A ventilated façade is a double envelope consisting of two coverings and a ventilated air space located between them. The purpose of the façade is not only to provide insulation and control temperature but also to protect buildings against the combined action of rain and wind by counterbalancing the effects of water beating on walls and keeping the building dry [5, 6].

Experimental data have been generated for comparing the performance of a building prototype made from normal block with one made from light blocks, where air can move through the wall cavity. The experimental findings show definite benefits in having a ventilated wall, with 2-3 °C drop in interior wall temperature recorded on average and up to 6°C drop in internal wall surface temperature recorded with the light block construction, in conjunction with a useful reduction in the peak cooling load in the afternoon due to a quicker rate of cooling. Simulation results have also been generated through dynamic building simulations for assessing summertime overheating performance and building energy modelling for determining air-conditioning energy use

for the normal block and light block constructions. These simulation results validate the experimental results and support the benefits ventilated facades would bring to our buildings.

Keywords

Ventilated Wall, Passive building design, climate change, thermal comfort, building simulations

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Ref: ABS3610138

THE PREVALENCE OF DEPRESSION IN PATIENTS WITH DIABETES MELLITUS IN A REGIONAL HOSPITAL OF MAURITIUS

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Diabetes Mellitus was ranked sixth among the leading causes of mortality in 2015 as per the WHO (World Health Organization) with

1.6 million deaths attributed to diabetes only (WHO, 2017). Depression is defined by the World Health Organization as a common mental disorder, with persistent sadness and a loss of interest in activities that one normally takes pleasure in, accompanied by an inability to carry out daily activities, for at least two weeks (WHO, 2017).

Several studies have shown that diabetes is strongly linked with depression. This only serves to deteriorate the living conditions of patients presenting with both conditions as well as impinge more forcefully on the burden of economies.

Zagarins et al (2012) emphasize on the importance of diabetes-related distress in patients with type 2 diabetes. They venture to say that such distress might actually be of greater significance than depression itself and adequate management of distress was in fact linked to better glycemic control. Pibernik-Okanovic et al (2011) found that clinical depression occurs twice as much in patients with diabetes as compared to those without. These two combined achieve more nefarious results than if they were to occur singly due to poorer compliance with drug therapies and lifestyle adaptations.

The main aim of this study was to find out if there exists an interrelationship between diabetes mellitus and depression in patients following treatment for diabetes in Mauritius. The objectives revolved around identifying links between this phenomenon and glycemic control and associated complications.

A cross-sectional survey was carried out among 400 patients undergoing treatment for diabetes in Jawaharlal Nehru Hospital and two affiliated local area health centers. Data was collected during face-to-face interviews using a questionnaire which consisted of two parts: 1. The first part was made up of the Hamilton Rating Scale for Depression

(Hamilton, 1960). 2. The second part comprised of a series of questions pertaining to demographic details of each patient, namely the gender and age of the patient, duration of diabetes, results of recent blood glucose levels, any associated complication or comorbidity. The SPSS program was used to generate data analyses.

Of the 400 participants in the study, 203 or 50.7% were found to have depressive symptomatology of varying severity. 43.6% of the males exhibited depressive signs as compared to 56.1% of the female patients. Concomitant depression was associated with worse glycemic control (mean HbA1C 8.3%, standard deviation 1.8 in depressed patients against mean HbA1C 7.9% and standard deviation 1.4 in patients without depression). There was also a greater prevalence of complications in those with depression than those without.

Depression increases the burden of disease in patients with diabetes. Health care practitioners should be on the lookout for underlying coexistent depression in patients with diabetes and the latter should be routinely screened for depression to allow early detection and treatment of the mood disturbance in order to decrease the risks of disabilities and increased mortality.

Keywords

Diabetes Mellitus, comorbid depression, glycemic care.

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Ref: ABS5680103

TYPE II - DIABETES IN MAURITIUS: A QUALITATIVE INVESTIGATION INTO WOMEN PATIENTS AND FAMILY SUPPORT

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The global burden of non-communicable diseases (NCD's) is escalating, principally due to a sharp rise in developing countries experiences of rapid economic transitions from subsistence and agricultural based economies to more technology based economies that are characteristic of sedentary based employment. Lifestyle changes in Mauritius too, with a population of barely 1.3 million inhabitants, have resulted in dramatic increases in the incidence of Type II diabetes. The epidemic is chiefly type II diabetes which along with genetic susceptibility, particularly in certain ethnic groups such as Asians, is brought on by environmental and behavioural factors.

Through material improvements in the economic situation and concomitant improvements in the standard of living among Mauritians, an increasing prevalence of obesity is beginning to emerge among adults and children. In addition, critical factors such as altered diets based on highly processed and chemical cum hormone treated food, together with diminishing physical activity, are contributing to the acceleration of the disease. This pattern is often accompanied by the increased consumption of tobacco and alcohol which also impacts upon pregnant women in Mauritius. This qualitative study looks into the experiences of type II diabetic Mauritian women and the forms of family support and care they may obtain from relatives. Method: 40 face-to-face in-depth interviews were conducted which included pregnant women who were around six to eight months pregnant and the data was analysed thematically. Results: Findings show that women with Type II diabetes experience multiple simultaneous and concurrent transitions during pregnancy and motherhood. These include dimensions of stress, anxiety, depression and instability. Another key finding is the unexpected nature of women's responses to pregnancy despite the amount of care, preparation and knowledge. The participants commented that their feelings, symptoms or experiences were not like they read in books nor classes they had taken. Social support from family, peers, spouse and parents especially from mothers remained an important facilitator in high-risk pregnancies. This research sheds light about the family dynamics in Mauritius. Together with Botswana, Mauritius has been labelled as the most economically prosperous and politically stable in the continent of Africa. A crucial question here is: "Can Mauritius maintain this status if its population edges

increasingly towards Non Communicable Diseases that are life threatening? In addition this study helps in understanding how households in Mauritius contribute towards patient care. It reveals to us the weaknesses and strengths of the household as an institution of support and domesticated social security.

Keywords

Gestational Diabetes Melitus, pregnant women, support, family, diet

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REF: ABS2180200

PLANNING ENFORCEMENT IN MAURITIUS USING PORT LOUIS AS A CASE STUDY

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Illegal constructions or development are a major concern in the society and in Mauritius. The Government of Mauritius has recently come up with a new legislation - the Local Government (Amendment) Act 2018, which is yet to be proclaimed, to fight illegal constructions and development in the island. Any development which requires a planning permission as per the planning laws and is done without the planning permission, is regarded as unauthorised development. The instrument for regulating the use of land and building is through the issue of 'planning permission'. In Mauritius, the way to regulating the use of land and building is through the issue of Building and Land Use Permit (BLP). A BLP is obtained through an application made to the Land Use and Planning Department (LUPD) at relevant local authority for the proposed development. However same should be in conformity with the development plan. Enforcement of planning control is the responsibility of the Planning Department of the local authority.

This research is based on the practices of planning enforcement in Mauritius using the City of Port Louis as a case study. The procedures for Building and Land Use Permit (BLP) have been analysed together with the existing legislations and policies governing constructions of buildings in Mauritius. Causes and impacts of illegal constructions have been examined. The ways in which illegal building constructions are detected and dealt with by the authorities have also been assessed.

Existing research on planning enforcement worldwide has been reviewed. The practice and legislations pertaining to planning enforcement in Mauritius has been compared to other countries. A detailed survey has been done at the City Council of Port Louis to determine the amount of illegal building constructions in the area and the actions that have been taken. The resources available to the council to deal with illegal constructions have also been looked into. The current enforcement system at the council has been critically assessed and recommendations have been proposed in order to increase efficiency.

It has been observed that in order to ensure that the Mauritian planning system works properly, there is an urgent need to promote a culture of enforcement. Lack of enforcement in the planning system has negative impacts on the environment, the communities and the natural and built heritage. This can also lead to a loss of public confidence and support which may lead to the spread of substandard development and construction. It is therefore necessary to apply the available enforcement provisions appropriately for the proper functioning of the whole planning system. It has also been noted that in order to have a

good planning enforcement system, there needs to be adequate resources to deal with unauthorised development. Immediate action should be taken by planning authorities regarding illegal development. There should be transparency in the actions taken by the local authority. The planning system should be reviewed regularly and the local authorities should encourage feedback from the public to improve the system.

Keywords

Urban planning, illegal construction, enforcement, planning regulations

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AWARD CEREMONY



Participants receiving their awards



AN MGI PRACTICE-BASED RESEARCH PRESENTATION

“MELODIOUS COEXISTENCE: A CREATIVE EXPLORATION”

Research Note

The thinking behind creative practice research, as a new type of research different from conventional research, started a couple of years back at the Mahatma Gandhi Institute. However, TEC’s invitation to present a musical item this morning on the occasion of the Opening Ceremony of the National Research Week 2019 gave a new impetus to the ongoing debate, and triggered concrete actions on the part of some ebullient artists and creative researchers to solve a ‘meta-research’ question (Ioannidis, 2018). As is the case for conventional research, studies are carried out to plug an identified knowledge gap for enhancing existing knowledge, in general, or of a particular discipline; similarly, the presentation of this morning’s music recital is the immediate outcome of a collaborative creative research project involving artists and academics to fill a gap in our understanding of the apparently abstruse nexus between creativity and research in a multicultural environment and its expression in concrete artistic form and presentation to an audience. As a result, we could unearth two outcomes, the present musical recital and this Research Note which “...contextualizes the work and the new understanding which stems from the work” (Frayling et al. 1997); hence, satisfying the requirements of a practice-based research project, namely; an artefact and an exegesis, as outcomes (Candy, 2006, Arnold, 2012, Jillian & Luke, 2009).

Notwithstanding that the present artefact has emerged in the Indian Music and Dance traditions, it was very much responsive and sensitive to the elements of Contemporary and Western Music, thus creating and fostering a kind of harmonization of not only sounds, melodies, styles, and melodic and rhythmic patterns, but also thoughts and actions of the practitioners, to reach a point of equilibrium where there was neither too much nor too little of contrast and sameness.

As regards the methods and strategies used, the team of artists and academics mulled over such key issues and concepts as, *inter alia*, creativity, research, artefact, exegesis, innovation, improvisation, cultural confluence, cultural dialogue, transcultural awareness and understanding, and fusion, hybrid and experimental music to build a conceptual and theoretical framework, and analyze the main precedents in the field of Indian music and dance and their forte and shortcomings. The results of this far-reaching review of extant literature together with past music and dance performances were not only enriching, but also an eye-opener for guiding their present and future actions. In addition, several brainstorming sessions and animated focus-group discussions were held, and these were followed by the preparation of a blueprint on the creative process and the plausible shape of its final outcomes. Past practices and outcomes were compared and contrasted with one another, and the present practice. The end-results of this exercise paved the way for imparting originality and distinctive features to the current practice and artefact. Not modelling the creation into a ‘collage’ of different pieces of music or a multi-cultural, composite product, on the one hand, and, on the other hand, laying more emphasis on ex-tempore

improvisation, as an element of pure creativity, and expressing the main ideas oozing out of the recital through hand gestures and facial expressions are some of its attributes which differentiate it from its precedents. To ensure quality of the outcomes and validity of the methodological process, the end-products were subject to two peer-reviews which proved to be salutary on all counts.

The actual creative process which culminated into the current artefact comprised the identification of an appropriate melodic matrix (Saxena, 2009), technically termed as ‘raga’, the selection of which was agreed upon by all musicians involved. The chosen matrix in this case was Raga Bairagi. Given its notes, salient features and emotive content, this morning raga has the capacity to evoke and stimulate a state of serenity, tranquility and peace. A Theme based on this raga was then created to act as refrain from and around which, time and again, the musicians would indulge in on-the-spot improvisations while frolicking with the principles of tension and resolution, as aesthetic input. Several hours and days of practice of the pre-composed parts were put in at individual and group levels for synchronization and quality rendering. The innumerable iterations and reviews would then facilitate integration and assimilation of ex-tempore improvisation within the set melodic and rhythmic framework to make the final product one coherent whole, underlying the interconnectedness of aesthetic quality, research and professional viability of the outcomes.

Coexistence among contrasts and differences buttressed by creativity, a much desirable nationwide value worth promoting and sustaining in this world of trials and tribulations, is projected and highlighted throughout the recital and its content in an artistic and aesthetic manner.

Key Terms

Creativity, Research, Music, Innovation, Improvisation, Coexistence



Dance artist from MGI

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Violin: Shaveen Beedasy

Tabla: Neriya Veerlapin

Mridangam: Khughen Cunden
Saxophone: Ludovic Matombé
Keyboard: Yashi Sanmukhiya
Drum pad: Manish Sacrapanee
Dancers: Trishtee Touree and Satyavani Baloonuck Mattabaddul

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Dance artists from MGI