Abstracts of Published Papers 2016, Vol.11
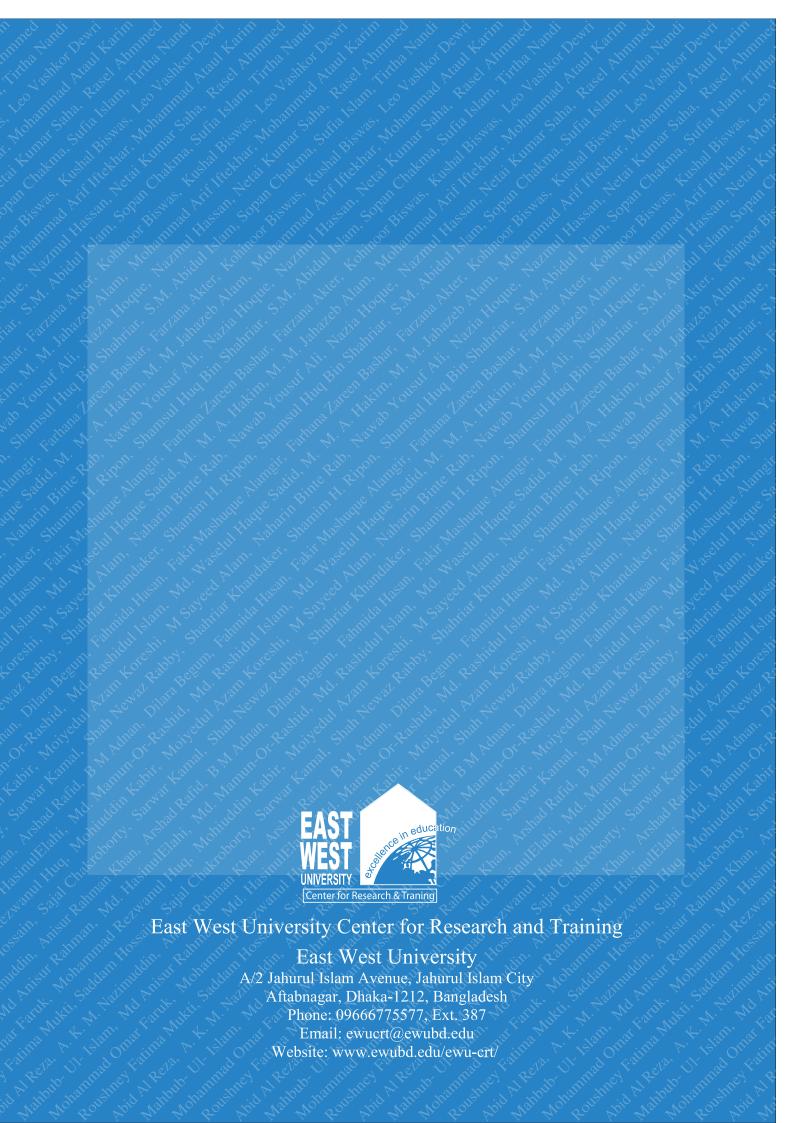
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PREFACE

It is my pleasure to write this introductory note for the eleventh volume of the *Abstracts of Published Papers 2016.* The *Abstracts of Published Papers* is an annual production of East West University Center for Research and Training (EWUCRT) with an objective to keep an official log of academic publications of the faculty members of East West University. It includes the abstract of published research articles, book chapters, books, and conference papers of our colleagues.

It is indeed a matter of great satisfaction for East West University Center for Research and Training (EWUCRT) to publish the eleventh volume of the *Abstracts of Published Papers,* which contains abstracts of the academic publication published in 2016. This publication is a collective effort of the faculty members of the university. Our scholars have enthusiastically and immensely contributed in areas of business, economics, social sciences, engineering, telecommunications, liberal arts and literature, population health, computer science, pharmacy, and technology. This volume contains abstracts of 65 research articles. Among them, 39 articles were published in international and three in national journals, two book chapters were published abroad, as well as 17 papers were published in international and four in national conference proceedings. Considering their academic achievements, we sincerely congratulate all the research scholars.

The Center expresses its sincere thanks to Dr. Rafiqul Huda Chaudhury, Chairperson of EWUCRT and Member, Board of Trustees, and all the members of the Research Committee (RC) for their support and encouragement. Furthermore, thanks are also due to all the personnel of EWUCRT involved in this publication. The publication of eleventh volume of the *Abstracts of Published Papers* is partially funded by UGC under HEQEP Sub-project: Knowledge Transfer and Capacity Development of Academic Staff.

Professor Muhammed Shahriar Haque, PhD
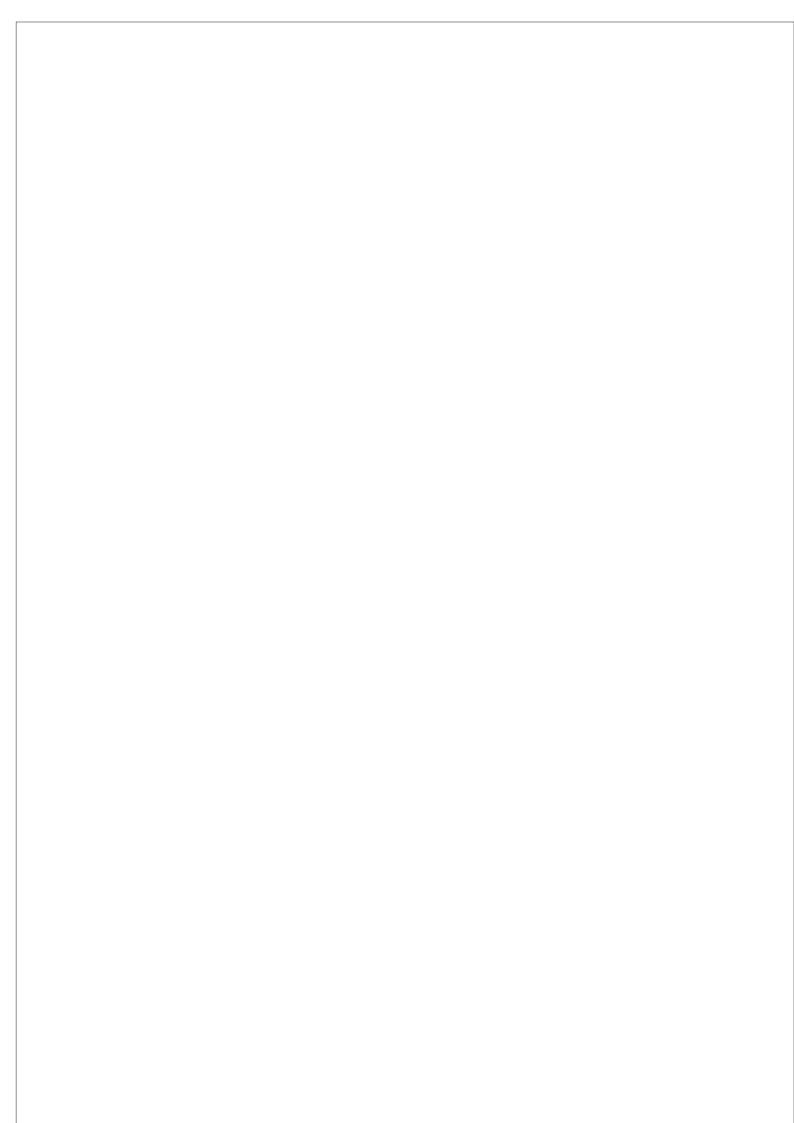Executive Director
EWUCRT, 2017

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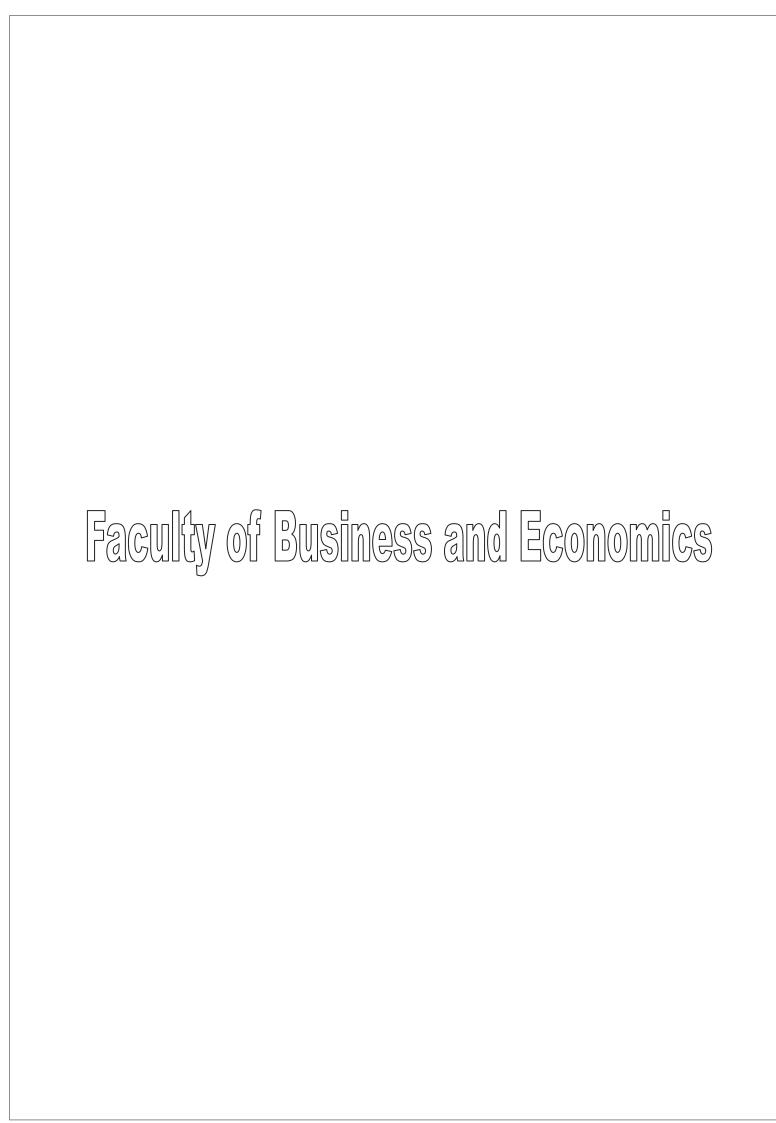**Faculty of Business and Economics**

Book /Book Chapter

International Journal

International Conference

Faculty of Sciences and Engineering

International Journal

National Journal

International Conference

National Conference

Faculty of Liberal Arts and Social Sciences

International Journal

International Conference

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Faculty of Business and Economics

Understanding Television Viewing Pattern: Young Bangladeshi Viewers' Perspective

Kohinoor Biswas* and **Moiyedul Azam Koreshi ****

ABSTRACT

Television viewing pattern is defined in terms of behavior and attitude of the viewers. Then behavior is again broken down in to viewing levels and program preference while attitude is further split in to affinity and realism. The four-item affinity index measures the perceived importance of television in the lives of the viewers. The three-item realism index measures how - realistic the viewers perceived television portrayals. The authors install questionnaire survey among 232 university students chosen conveniently from four different universities. The cluster, university students, from the age range from 18 to 25 is chosen for this study. This study reveals affinity and realism both index to be moderately high among the youth viewers. The top five programs or channels are non-Bangladeshi. Significant gender differences exist in viewing pattern. While male respondents show preference towards sport and news; female respondents are rather fond of Indian Hindi entertainment channels.

Key words : Viewing Pattern, Behavior, Attitude, Affinity and Realism

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email : kohinoor_sb@yahoo.com

**Graduate Student, Department of Economics, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email : mazam3109@gmail.com

Impact of Capital Structure on Profitability: A Study Based on Non- Bank Financial Institutions in Bangladesh

Farzana Akter* and **Naharin Binte Rab****

ABSTRACT

Capital structure is one of the key determinants to understand organization's profitability, stability, growth and overall performance. Academicians, researchers and corporate analysts of Bangladesh have undertaken many studies on different sectors to recognize the impact of capital structure on organizational profitability. Despite significant contribution in the financial sector of the country, a very few studies are conducted on NBFI (Non-Bank Financial Institution) sector in Bangladesh. Therefore, in our research we have aimed to find out whether there is any impact of capital structure on the profitability of NBFI sector and if so, whether the nature and the degree of impacts vary or remain similar depending on the profitability of different companies. Descriptive statistics, Pearson's Correlation Matrix and Multiple Regression Technique are used as analytical tools. To conduct the regression, ROE (Return on Equity) and ROA (Return on Asset) ratios are considered as dependent variables and Short-term debt ratio, Long-term debt ratio and Debt to Equity ratio are considered as the independent variables. 15 listed Bangladeshi NBFIs out of 22 were studied for the period of 2010 to 2014. This study reveals whole NBFI sectors ROE has negative relationships with short term debt ratio and debt to equity ratio and positive relationship with long term debt ratio. High profitable NBFIs have insignificant positive relationship between capital structure and profitability because of their relatively cheap retail deposit. However, because of the dependency on bank borrowing, the relationship between capital structure and profitability is significant but negative for low and medium profitable NBFIs.

Key Words: Capital Structure, Debt to Equity, NBFI, Profitability.

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: farzana.east.west@gmail.com

**Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: naharin.ewu@gmail.com

Working Environment for Women Entrepreneurs in Developing Countries: An Empirical Study of Bangladesh

Abdus Sattar*, **Leo Vashkor Dewri **** and **Sharmin Akhter Ananna*****

ABSTRACT

Women entrepreneurship is a very thorny task in Bangladesh like other developing nations. Generally, women entrepreneurs are facing number of hindrances during start-up to operating their enterprises though they have enormous contribution to the national economic growth and employment generation. The aim of this research study is to scrutinize the working environment for women entrepreneurs in Bangladesh. To conduct the study 752 sample has been considered and examined to get research outcome. The research results reveal that Bangladeshi women entrepreneurs generally have very limited financial capabilities to initiate their business as well as inadequate of collateral facilities leads to discourage the financial institutions to offer credit facilities to them. Also women entrepreneurs face other social constrains to operate and manage their business those can be connected with gender discrimination, undermining as economic means, legal constrains and imperfect view by financial institutions that women are unable to manage their business.

*Department of Applied Statistics, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email:

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: lvd@ewubd.edu

*Student, Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh.

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Performance of Public Mutual Funds (PMFs) in Emerging Economies: A Case of Bangladesh

Md. Rashidul Islam* and **Leo Vashkor Dewri****

ABSTRACT

Public Mutual fund (PMF) is an instrument for pooling the funds by issuing units to the investors and investing funds in the capital market to achieve their objectives. To invest in mutual funds is a complicated trade for investors as individual assets are belongs to verity of risks and they are dubious on return on investment. There are only 43 Mutual Funds are available to choose from where the investors can invest. To take the investment decision, the investors need to know which funds are performing better than others, gives more return, which fund is more risky etc. In this study the performance evaluation of public mutual funds carried out by considering fund age, fund size, fund return, fund dividend payout, fund price earnings ratio and fund net asset value (NAV). There are only eight PMFs are available in Bangladesh. For analysis purposes the study investigates 1999 to 2015 operations of PMF. Therefore, this study analyzes 128 a firm years, for measuring PMFs performance. The study reveals that fund size, fund return, fund dividend payout and P/E ratio has significant relation on fund performance. Whereas, fund age and fund NAV has insignificant relation on fund performance.

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mrdi@ewubd.edu

**Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: lvd@ewubd.edu

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Behavioral Analysis of Credit Card Users in a Developing Country: A Case of Bangladesh

Leo Vashkor Dewri*, Md. Rashidul Isla** and Netai Kumar Saha***

ABSTRACT

Economic structure plays a vital role to drive consumer spending attitudes in different countries. Bangladesh is considering as a lower middle income country that indicates citizen of Bangladesh doesn't have significant ability to increase their spending habits. Bangladeshis' are experiencing credit card not more than two decades. Also accepting credit card by wider merchants in lieu of payment is also comparatively new practice in Bangladesh. In this regard, the financial institutions / credit card issuers and retailers are experiencing new spending behaviors of credit card holders. Primarily, the research attempts to investigate behavioural usage patterns of credit card users in the emerging economics. Secondly, how the external factors are influencing the credit card users to use credit cards in their day-to-day life. To conduct the research 500 credit card holders are approached of which 393 credit card holders responded and been analyzed. The research concludes that there is significant relationship among – earnings and using full credit limit; different age group has diverse tendency to use credit card and repayment attitudes; profession and usage behavior of credit card; e-repayment attitudes to pay bill by different age groups. This study also reveals that there is no-significant relationships among gender differences is not an concern for using credit card; single credit card features are truly not motivating credit card users to use credit card frequently; interestingly external factors (like: discount offers or other card facilities) are not only driving force to encourage credit card holders to use their credit cards frequently. The study recommends fragmenting the credit card market in Bangladesh based on consumer demographics and attitudes towards using short/midterm debt.

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: lvd@ewubd.edu

**Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mrdi@ewubd.edu

***Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: netai@ewubd.edu

Factors Affecting Customers' Satisfaction of Mobile Phone Subscribers: An Empirical Study on Mobile Telecommunication Industry in Bangladesh

Netai Kumar Saha*, Md. Rashidul Islam** and Asif Ul Hoque

ABSTRACT

In today's complex business environment, identification of factors affecting customer satisfaction is one of the paramount concerns for the marketing scholars and marketers. This study seeks to explore customer satisfaction and its influencing factors on the mobile telecommunication industry in Bangladesh. As per BTRC, the numbers of mobile phone subscribers are more than 134 million at the end of December, 2015 in Bangladesh. Due to the stiff competition, companies are trying to capture the maximum market share by introducing different new packages, promotional offers and value added services to satisfy the customer's needs, wants and demands. The existing literature suggests factors such as, price, network quality, product diversity and facilities for the subscribers influence customers' satisfaction on mobile telecommunication industry. The results of this study signify that all of the identifying factors are significantly and positively correlated with overall customer satisfaction level of Bangladeshi mobile telecom industry. The findings of this study suggest that mobile operators should develop appropriate strategies by taking into consideration of their strengths in satisfying their subscribers as well as by overcoming of their weaknesses by learning from each other services.

Keywords: customer satisfaction, mobile operators, mobile phone subscriber

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: netaish006@gmail.com

**Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mrdi@ewubd.edu

Factors Influencing the Development of Social Business Entrepreneurship in a Developing Country

Nazmul Hassan*, Mohammad Omar Faruk** and Dr. Nazrul Islam***

ABSTRACT

Social business entrepreneurship (SBE) is a contemporary phenomenon for the socioeconomic development of a country like Bangladesh. It refers to the creation of solutions to social problems by creating innovative ideas, increasing social value, and consistently pursuing new opportunities for the benefits of the society rather than private wealth creation. The main motives of social business entrepreneurship are social welfare and value creation through the display of innovativeness, leadership, and risk management. The aim of this paper is to identify the factors affecting the development of social business entrepreneurship in Bangladesh. It illustrates the context-specific nature of the phenomenon and derives implications for fostering the social business entrepreneurship as a positive force for the socioeconomic development of Bangladesh. Several important factors that contribute to the development of the social business entrepreneurship are social welfare and value, non-profit motives, knowledge, skills and experiences, innovative ideas, ethics, social network, leadership, local and governmental policies, institutional support, etc. This paper suggests that the government and large business houses should come forward for the development of SBE in Bangladesh.

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: nh_ssumon@yahoo.com

**Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: farukprofessional@gmail.com

***Department of Business Administration, Uttara University, Bangladesh, Email: farukprofessional@gmail.com

A successful informal entrepreneur, who harvests benefit out of marketing: A case study

M Sayeed Alam*, Shamsul Huq Bin Shahriar** and **Shah Newaz Rabby*****

ABSTRACT

This paper offers a single case study on a successful brand of Bangladesh, named Mama Halim that exists in the street market per se the informal market where the owner Deen Mohammad is indeed a micro-entrepreneur. Halim is a popular snack item in Bangladesh for around last two decades. Deen Mohammad, a 60 something, owns two subsidiaries of this brand, earns daily no less than Tk. 50,000 that translates into some Tk. 1.5 million a month. Halim (Haleem) or Daleem is a popular form of stew in some Middle Eastern countries, Indian subcontinent and Central Asian counties, it is also a known and preferred snack in Bangladesh. We consider 'Mama Halim' as a "cases of something" or "well chosen" or "crucial" on the ground of significant economic success; which is far above the average turnover of 'others' in the same cluster per se the street vendors. Also that 20 employee work for the street vendor is significant. With the help of deductive reasoning this paper would attempt to correlate the empirical findings with the template of marketing. The "Four Ps" in general, are better suited to the small and micro enterprises, due to their administrative flexibility and the proximity of sales with marketing. This argument is in line with the case of Mama Halim where the micro-entrepreneur enjoyed the status of 'one man show'. Therefore, he could craft marketing strategies capitalizing on his flexibility. Since the micro-entrepreneur was inseparable from the customers that also worked in the formulation and continuous tailoring of 4 P strategies. Mama Halim satisfies the litmus test of a brand; i.e. differentiation from the crowd. Authors find that the literature of brand matches with the reality of Mama Halim. The strength of the brand stands on "insight" and "intuition" of the "actor" per se the micro-entrepreneur is true for Mama Halim.

Keywords: Mama Halim, Street Market, Dhaka, Brand

*Department of Business Administration East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: sayeed@ewubd.edu

**Student, Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: shahriarhuq002@gmail.com

*** Student, Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: newazrabby@gmail.com

Vision with Passion Creates a Brand of Restaurant: A Case from Dhaka Bangladesh

M Sayeed Alam*, Kohinoor Biswas** and **S.M. Abidul Islam*****

ABSTRACT

A start-up restaurant turned out a brand in about a year. Mezbaan Bari, a partnership venture of four friends, shoots off on October 28, 2014 at Bashundhara, in Dhaka city. Bashundhara, itself is a satellite sub-city, with two top private universities, a couple of renowned schools, one top private hospital, a mega super mall with amusement park, a handful of corporate houses and so on. The owners run the business venture with a philosophy, as described in their phrase, 'vision with passion'. To them the restaurant serves dual mission - value with values; a secondary source of earning plus a hang-out place.   At the initial round, they circumvented the challenge of capital shortage by keeping it small and simple as they invested less in interior decoration. Local customers per se university students were among the first targets whom they primarily attracted through POP display and then through follow up ads by face book page. The core strength is product quality which connotes consistency and authenticity in reference to culture. The menu serves dishes that are culturally identified with Chittagong, a south-eastern district of Bangladesh. Owners, having rooted in Chittagong, own the cultural knowledge which is at the very root of their passion. They remain vigilant at the point of source with chefs and at the point of destination with customers; in order to cross-check any deviation and validate their claim of authenticity and consistency per se quality. Key to success is: a capital base of dedication by the owners geared towards employee satisfaction first, and customer satisfaction as the second.

Key words : Brand, Mezbaan Bari, culture, vision, passion.

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: sayeed@ewubd.edu

**Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: kohinoor_sb@yahoo.com

***Student, Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh.

Ups and Downs of a Brand 'Spicy Chicken' a Restaurant with her First-door Neighbor, East West University: a Case from Dhaka, Bangladesh

Kohinoor Biswas*, Shamsul Huq Bin Shahriar** and Mahbub- Ul- Islam***

ABSTRACT

A university, named 'East West University' and a restaurant named 'Spicy Chicken' share a common boundary. The university had already an established brand for well over a decade, she only relocated to a new campus on the other side of the city, yet un-established named 'Aftab Nagar'. 'Aftab Nagar' is yet to get an urban look; unlike the rest of Dhaka city. Then, for a student crowd of ten thousand, also a few other hundreds of faculty members and university staffs the neighborhood of 'Aftab Nagar' was not ready to cater the day-meal. A large gap existed between the demand of East West University and the supply offered by Spicy Chicken. In 2012, the restaurant came into operation, keeping the university in eye as the prime target. Having the first mover's advantage Spicy Chicken, by and large, enjoyed the status of 'choice' to the East West University community. Within a brief period of time other restaurants entered the market. Increased competition, customers were snatched. Spicy Chicken faces challenge- how to protect the brand. This case study looks for the answer. In-depth interviews were taken on both sides; i.e.: the service provider on one side and the recipient on the other. Further, on the provider's side, owner cum manager and service personnel were interviewed in order to trace the probable lapses on broader or specific issues of branding. On the recipients' side few key informants were selected through pre-testing. The major finding of this study is: Spicy Chicken lost few deals with the prime customer per se East West University owing to 'service failure'.

Key words : Brand, service failure, Spicy Chicken, East West University

*Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: kohinoor_sb@yahoo.com

**Student, Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: shahriar002@gmail.com

***Student, Department of Business Administration, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mbidhk@gmail.com

Faculty of Sciences and Engineering

Performance evaluation comparison for detecting DNA structural break through big data analysis

Md. Sarwar Kamal*, Sonia Farhana Nimmy** and Sazia Parvin***

ABSTRACT

Deoxyribonucleic acid (DNA) damages plays critical role in human diseases. Damages or DNA breaks identification is one of most significant steps in diseases investigations and drug design. Damages define the mutations or changes in DNA sequences. DNA sequencing is a critical execution for mutations detections. Previously Markov Chain, Statistical Cumulative Sum along with Maximum Likelihood Estimation and Chapman Kolmogorov equations are used to predict the damages or breaks of the DNA sequences. However, these predictions were made by serial data process and consume excessive time to complete whole training datasets. To overcome the difficulties in serial processing, a map centric approach, QuickMapwER (Quick Map with Evidential Reasoning) is proposed here which creates an integrated environment with mapping and reductions. Bayesian reasoning is imposed to check the damages probability. After applying Bayesian reasoning, Quick short is used to map large DNA dataset which assures proper groups of training dataset. Next Apriori algorithm is used to find out the frequent damages regions from training dataset. Finally, Evidential Reasoning is used to reduce the noises and irregularities of the proposed approach. Adequate experimental analysis is done for comparing QuickMapwER and serial data processing approaches.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: skamal@ewubd.edu, sarwar.saubdcoxbazar@gmail.com

**Department of Computer Science and Engineering, Notre Dame University Bangladesh, E-mail: snimmy.1984@gmail.com

***University of New South Wales, Department of Computer Science and Engineering ADFA, Australia, E-mail: s.parvin@adfa.edu.au

Impact analysis of facebook in family bonding

Md. Sarwar Kamal* and Mohammad Shamsul Arefin**

ABSTRACT

Nowadays, Facebook is a very popular social communication media. People utilize Facebook to express their thoughts, ideas, poems, and sorrows on Facebook. In the age of information superhighway, majority of the teenagers are not sharing their difficulties, problems, inconsistency, inability and failure with their parents in Bangladesh. However, they share with their friends on Facebook. Subsequently, their friends are making comments, providing shelters and affections to them. Due to lack of education and experiences on technology, guardians in Bangladesh are not aware about the communications and addictions on social Medias. Therefore, there are generating gaps between the guardians and their children. In this paper, a survey-based and Apriori algorithm analyzes the behaviors of teenagers' by collecting information from their Facebook pages. Parents and teachers opinions are also considered about the activities of students on home and institutes. Here, age limits of targeted teen agers are between 16 and 18. From this analysis, vulnerable relationship between parents and their teenage children have been noticed. The pivotal problem was that teens are spending more time on Facebook and parents want them to the table during study time and school time.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: skamal@ewubd.edu, sarwar.saubdcoxbazar@gmail.com

**Department of Computer Science and Engineering, Chittagong University of Engineering and Technology Chittagong Bangladesh

Evolutionary framework for coding area selection from cancer data

Shamim H. Ripon*, Nawab Yousuf Ali*, Sarwar Kamal*, Nilanjan Dey**,
Sonia Farhana Nimmy***, Amira S. Ashour****, Wahiba Ben Abdessalem Karaa*****,
Gia Nhu Nguyen****** and Fuqian Shi*******

ABSTRACT

Cancer data analysis is significant to detect thecodes that are responsible for cancer diseases. It is significant to find out the coding regions from diseases infectedbiological data. The infected data will be helpful to designproper drugs and will be supportable in laboratory assessments. Codes bear specific meaning on various features aswell as symptoms of diseases. Coding of biological data isa key area to get exact information on animals to discoverthe desired medicine. In the current work, four differentmachine learning approaches such as support vectormachine (SVM), principal component analysis (PCA)technique, neural mapping skyline filtering (NMSF) andFisher's discriminant analysis (FDA) were applied for datareduction and coding area selection. The experimentalanalysis established that the SVM outperforms PCA andFDA. However, due to the mapping facility, NMSF outperforms SVM. Thus, the NMSF achieved the preeminentresults among the four techniques. Matthews's correlationcoefficient was used to evaluate the accuracy, specificity,sensitivity,F-measures and error rate of the four methodsthat are used to determine the coding area. Detailedexperimental analysis included comparison study amongthe four classifiers for the deoxyribonucleic acid dataset.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dshr@ewubd.edu, nawab@ewubd.edu, skamal@ewubd.edu

**Techno India Institute of Technology, Kolkata, India

***Notre Dame University, Dhaka, Bangladesh

****Department of Electronics and Electrical Engineering, Faculty of Engineering, Tanta University, Tanta, Egypt

*****Department of Computer Science, Taif University, Taif, Kingdom of Saudi Arabia

******Duy Tan UniversityDanang, Vietnam

*******College of Information and Engineering, Wenzhou Medical University Wenzhou, People's Republic of China

A MapReduce approach to diminish imbalanceparameters for big deoxyribonucleic acid dataset

Sarwar Kamal*, Shamim H Ripon*, Nilanjan Dey**, Amira S. Ashour*** and

V. Santhi****

ABSTRACT

In the age of information superhighway, big data play a significant role in information processing, extractions, retrieving and management. In computational biology, the continuous challenge is to manage the biological data. Data mining techniques are sometimes imperfect for new space and time requirements. Thus, it is critical to process massive amounts of data to retrieve knowledge. The existing software and automated tools to handle big data sets are not sufficient. As a result, an expandable mining technique that enfolds the large storage and processing capability of distributed or parallel processing platforms is essential. In this analysis, a contemporary distributed clustering methodology for imbalance data reduction using k-nearest neighbor (K-NN) classification approach has been introduced. The pivotal objective of this work is to illustrate real training data sets with reduced amount of elements or instances. These reduced amounts of data sets will ensure faster data classification and standard storage management with less sensitivity. However, general data reduction methods cannot manage very big data sets. To minimize these difficulties, a MapReduce-oriented framework is designed using various clusters of automated contents, comprising multiple algorithmic approaches. To test the proposed approach, a real DNA (deoxyribonucleic acid) dataset that consists of 90 million pairs has been used. The proposed model reduces the imbalance data sets from large-scale data sets without loss of its accuracy.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Email: skamal@ewubd.edu, dshr@ewubd.edu

**Notre Dame University, Dhaka, Bangladesh

***Department of Electronics and Electrical Engineering, Faculty of Engineering, Tanta University, Tanta, Egypt

****School of Computing Science and Engineering, VIT University, Vellore, Tamil Nadu, India

Verification of SPL Feature Model by using Bayesian Network

Shamim Ripon*, MusfiqurRahman, JavedulFerdous** and Md. Delwar Hossain**

ABSTRACT

Feature Tree represents all the features along with their relationship of a Software Product Line. Any defect in feature model can diminish the benefits of product line approach. Hence, the analysis of feature model plays a key role towards the success of any Software Product Line. This paper presents various analysis rules for cardinality-based feature model of both dead and false optional features. These rules are then verified by using Bayesian Network Based inference mechanism. Such verification not only confirms the analysis rules of the feature trees but also ensures the applicability of probabilistic information into the feature trees.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh.   Email: dshr@ewubd.edu

**Department of Computer Science and Software Engineering, Concordia University, Montreal, Canada

Theoretical Analysis of Different Classifiers under Reduction Rough Data Set: A Brief Proposal

Shamim H. Ripon*, Sarwar Kamal**, Saddam Hossain*** and Nilanjan Dey****

ABSTRACT

Rough set plays vital role to overcome the complexities, vagueness, uncertainty, imprecision, and incomplete data during features analysis. Classification is tested on certain dataset that maintain an exact class and review process where key attributes decide the class positions. To assess efficient and automated learning, algorithms are used over training datasets. Generally, classification is supervised learning whereas clustering is unsupervised. Classifications under mathematical models deal with mining rules and machine learning. The Objective of this work is to establish a strong theoretical and manual analysis among three popular classifier namely K-nearest neighbor (K-NN), Naive Bayes and Apriori algorithm. Hybridization with rough sets among these three classifiers enables enable to address larger datasets. Performances of three classifiers have tested in absence and presence of rough sets. This work is in the phase of implementation for DNA (Deoxyribonucleic Acid) datasets and it will design automated system to assess classifier under machine learning environment.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dshr@ewubd.edu

**Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: skamal@ewubd.edu

***Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: saddam.cse@ewubd.edu

****Techno India College of Technology, Kalkata, India

Discrete-Event Systems-Based Power Admission Control of Thermal Appliances in Smart Buildings

Md. Waselul Haque Sadid*, Saad A. Abobakr** and Guchuan Zhu**

ABSTRACT

This paper addresses the admission control of thermal appliances in the context of smart buildings. The scheduling of thermal devices operation is formulated in the framework of discrete-event systems, which allows for the modeling and design of admission control to be carried out in a systematicmanner and ensuring the existence of the feasible scheduling prior to exploring control solutions. Two algorithms are developed for the purpose of peak demand reduction. While the first algorithm validates the schedulability for the control of thermal appliances, the second algorithm may achieve a more efficient use of available capacity by exploring the concept of max–min fairness. Simulation studies are carried out in MATLAB/Simulink platform and the results show a noticeable improvement on peak power reduction.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: sadid.wh@ewubd.edu , md-waselul-haque.sadid@polymtl.ca

**Department of Electrical Engineering, Ecole Polytechnique de Montreal, Email: saad.abobakr@polymtl.ca, guchuan.zhu@polymtl.ca

Drain Current Multiplication In Thin Pillar Vertical MOSFETS Due to Depletion Isolation And Charge Coupling

M. M. A. Hakim*, C. H. de Groot**, Peter Ashburn** and S. Hall***

ABSTRACT

Drain current multiplication in vertical MOSFETs due to body isolation by the drain depletion region and gate-gate charge coupling are investigated at pillar thicknesses in the range 200-10 nm. For pillar thickness > 120 nm depletion isolation does not occur and hence the body contact is found to be completely effective with no multiplication in drain current, whereas for pillar thicknesses < 60 nm depletion isolation occurs for all drain biases and hence the body contact is ineffective. For intermediate pillar thicknesses of 60-120 nm, even though depletion isolation is apparent, the body contact is still effective in improving floating body effects and breakdown. At these intermediate pillar thicknesses, a kink is also observed in the output characteristics due to partial depletion isolation. The charging kink and the breakdown behaviour are characterized as a function of pillar thickness and a transition in the transistor behavior is seen at a pillar thickness of 60 nm. For pillar thickness greater than 60 nm, the voltage at which body charging occurs decreases (and the normalized breakdown current increases) with decreasing pillar thickness, whereas for pillar thickness less than 60 nm, the opposite trend is seen. The relative contributions to the drain current of depletion isolation and the inherent gate-gate charge coupling are quantified. For pillar thickness between 120 and 80 nm, the rise in the drain current is found to be mainly due to depletion isolation., whereas for pillar thicknesses < 60 nm, the increase in the drain current is found to be governed by the inherent gate-gate charge coupling.

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dmmah@ewubd.edu

**Nano Research Group, University of Southampton, Highfield, Southampton SO17 1BJ, UK

***Department of Electrical Engineering & Electronics, University of Liverpool, Brownlow Hill, Liverpool L69 3GJ, UK

A Chronicle of Analyzing Stochasticity in Multi Period Transportation Problems for Uncertainty

Sajal Chakroborty* and M. Babul Hasan**

ABSTRACT

Objective of this paper is to develop a new technique for solving Transportation Problems (TP) by considering uncertainty in deterministic case for multi periods. There are many obtainable techniques for solving TP for deterministic cases. But these techniques are not applicable to solve multi period TP when uncertainty arises. In this paper, a technique has proposed to handle this uncertainty for different scenarios. To develop the technique, idea of decomposition based pricing (DBP) method has used. A real life oriented problem has developed by collecting data from a business organization of Bangladesh and has analyzed by the proposed technique.

*Department of Electronic and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: scb@ewubd.edu

 **Department of Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: mbabulhasan@yahoo.com

A Parametric Approach to Solve Bounded-Variable LFP by Converting into LP

Sajal Chakroborty* and M. Babul Hasan**

ABSTRACT

In this paper, we have developed a new technique for solving bounded-variable linear fractional programming problems by converting into linear programming problems. In this technique, we have proposed to convert fractional objective function into linear objective function by making a relationship between the numerator and denominator with a parameter. A number of numerical examples are illustrated to demonstrate our technique. We have also developed a computer code by using a mathematical programming language AMPL and then present a comparison of our method with existing relevant methods.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: scb@ewubd.edu

**Department of Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: mbabulhasan@yahoo.com

A Proposed Technique for Solving Scenario Based Multi-Period Stochastic Optimization Problems with Computer Application

Sajal Chakroborty* and M. Babul Hasan**

ABSTRACT

In this paper, we have presented a new technique for solving scenario based multi-period stochastic programming problems and presented a case study for the business policy of a super shop market in Bangladesh. We have developed our technique based on decomposition based pricing method which is the latest and faster decomposition technique in use. To our knowledge, this is the first work in the field of stochastic programming for solving multi-period stochastic optimization problems by using decomposition based pricing method. We have also developed a model by collecting data of a year from a super shop market of Bangladesh and analyzed their profit by dividing the whole year into four periods for different scenarios of an uncertainty. We have developed a computer code by using mathematical programming language AMPL and analyzed the model by using our developed technique.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: scb@ewubd.edu

**Department of Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: mbabulhasan@yahoo.com

Analyzing on the Decomposition based Pricing Procedure for Solving Two Person Zero Sum Game Problems through Computer Algebra

Sajal Chakroborty* and H. K. Das**

ABSTRACT

Objective of this paper is to analyze on the decomposition based pricing (DBP) method for solving two person zero sum game problems. Decomposition based algorithms have been developed which is able to solve two person zero sum game problems with single payoff elements using the linear programming (LP). To develop this procedure, idea of DBP method have used. Its computer oriented program has also introduced by using a mathematical programming language (AMPL). A real life oriented problem has introduced to show the efficiency of our algorithm and its program. The ability of our program has shown in saving labor and time for solving game problems by analyzing a number of numerical examples.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: scb@ewubd.edu

**Department of Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: mbabulhasan@yahoo.com

Connections with Symplectic Structures

A. K. M. Nazimuddin* and Md. Showkat Ali**

ABSTRACT

A charming feature of symplectic geometry is that it is at the crossroad of many other mathematical disciplines. In this article we review the basic notions with examples of symplectic structures and show the connections of symplectic geometry with the various branches of differential geometry using important theorems.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: nazimuddin@ewubd.edu

**Department of Applied Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: msa317@yahoo.com

Comparative Study of Different Pulse Artifact Correction Techniques during Concurrent EEG-FMRI using FMRIB

Mohammad Arif Iftekhar*, Md Belayat Hossain** and Muhammad E.H. Chowdhury***

ABSTRACT

In this work, a comparative study of three pulse artifact (PA) correction methods –optimal basis set (OBS), simple mean (AAS) and Gaussian-weighted mean (GWM)– along with standard parameters setting for both gradient artefact (GA) and pulse artefact (PA) correction, using open source Functional MRI of Brain (FMRIB) tool-box, in combined EEG-fMRI, is reported. It has been found that, of these three methods, OBS is better in preserving bio-signal while removing PA successfully

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: maik@ewubd.edu

**Faculty of FST, Atish Dipankar University of Science & Technology, Bangladesh, belayat.hossain@adust.edu.bd

**Department of Electrical Engineering, University of Qatar, Doha, Qatar, mchowdhury@qu.edu.qa

A survey based study of public perception towards cell phone use and its association with health complications in an urban setting of Dhaka City

Abid Al Reza*, Tarana Sharmin**, Tasnim Ahmed and Rizwan Mahmud

ABSTRACT

With the advancement of science and technology, the worldwide market of cell phone is growing rapidly and the average lifespan of these equipment is shortening. These electronic equipment, containing toxic elements, imposes high risks leading to health complications. This survey based study is an endeavor to observe public awareness towards cell phone use and its correlation to health complications such as hearing impairment, back pain, problems in eye, headache etc. Remarkably this pilot study implies that adverse health effects for using cell phones are greater in male than in female which can be a great concern for our public health.

Keywords: e-waste; toxic elements; health complications; public health

*Department of Genetic Engineering and Biotechnology, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: abid.reza@ewubd.edu

**Department of Genetic Engineering and Biotechnology, University of Dhaka, Email Address: tarana_geb@yahoo.com

Influential Factors on Prescription; a Cross Sectional Study From Bangladesh: Focus on Pharmaceutical Marketing

Kushal Biswas*, Md. Ariful Islam**, A. K. Azad*** and Ishrat Jahan

ABSTRACT

A physician's decision to adopt a drug is influenced by their exposure to other physicians' attitude, knowledge, or behavior. Quality of drug, efficacy of drug, pricing, status of the pharmaceutical company etc. more or less influence the physician to choose medication for patients. Pharmaceutical marketing is strong strategy to impact on prescription behavior. Because it is quite different from general marketing as the decision makers are the physicians not the patients, thus maximum marketing strategies are designed on focusing to them. This study explores the influence of pharmaceutical marketing on the prescription practices of physicians in Bangladesh. A self-administered questionnaire was applied to collect data from 500 physicians all over the country. The main theme of the study is to develop a framework to find out the impact of different kinds of promotional tools offered by pharmaceutical companies on the prescription of physicians. In this study it was found that prescription behavior of a physician greatly influenced by pharmaceutical marketing. Skillful presentation, up to date information, maintaining good relation and free gift sample can boost up the brand in physicians prescription. The reflection and feedback of this research work is a complete picture of present Bangladesh.

* Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: ksb@ewubd.edu

** Department of Pharmacy, University of Rajshahi, Rajshahi, Bangladesh

*** Department of Pharmacy, Bangladesh University, Dhaka-1207, Bangladesh

Assessment of anticholinesterase activities and antioxidant potentials of Anisomeles indica relevant to the treatment of Alzheimer's disease

Kushal Biswas*, Md. Josim Uddin**, Md. Abdullah-Al-Mamun**, Md. Masudur Rahman** and Md. Asaduzzaman***

ABSTRACT

Alzheimer's disease (AD) is a progressive neurodegenerative disorder, and the most predominant cause of dementia in the elderly. Traditionally Anisomelesindica (L.) Kuntze has widely been used as tonic to brain. Our aim is to investigate the cholinesterase inhibitory activities, and antioxidant properties of the plant extracts in the treatment of AD. The crude methanol extract was prepared by cold extraction method and four fractions namely petroleum ether, chloroform, ethyl acetate, and water fraction were assessed for acetylcholinesterase and butyrylcholinesterase inhibitory activity by the Ellman method, and their antioxidant properties were assessed by several assays including reducing power, scavenging of DPPH and hydroxyl radicals together with quantitative analyses of endogenous substances. Among the tested samples, ethyl acetate extract was found to demonstrate the highest inhibitory activity significantly against both acetylcholinesterase and butyrylcholinesterase enzymes with IC50 values of 176.02 and 143.78 mg/ml, respectively. Similarly, ethyl acetate extract exhibited the highest radical scavenging ability appeared to be comparable to the reference standard catechin used in this study. The IC50 values of the extract against DPPH and hydroxyl radical scavenging activity were 12.67 and 18.61 mg/ml respectively. Quantitative analyses displayed higher contents of phenolics and flavonoids (79.55 and 347.19 mg gallic acid equivalent/g dried extract respectively) in the ethyl acetate fraction. The results revealed that the ethyl acetate extract, possibly due to its phenolic compounds, exerts potential antioxidant and cholinesterase inhibitory activities which may be useful in the treatment of AD.

* Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: ksb@ewubd.edu

**Department of Pharmacy, International Islamic University Chittagong, Chittagong, Bangladesh.

*** Department of Pharmacy, Southeast University, Dhaka, Bangladesh

Influence of Pharmaceutical Marketing on Prescription Behavior of Physicians: A Cross-sectional Study in Bangladesh

Kushal Biswas* and Umme Kawser Ferdousy**

ABSTRACT

Pharmaceutical marketing is quite different from general marketing as the decision makers are the physicians (secondary customers) not the patients (original consumers), thus maximum marketing strategies are designed on focusing to the physicians. This study explores the influence of pharmaceutical marketing on the prescription practices of physicians in Bangladesh. A self-administered questionnaire was applied to collect data from 500 physicians. The effectiveness of the promotional strategies on prescription behavior was marked in a seven point Likert scale. Pharmaceutical marketing influences the choice of the brands by physicians. The main theme of the study is to develop a framework to find out the impact of different kinds of promotional tools offered by pharmaceutical companies on the prescription of physicians. In this study it was found that prescription behavior of a physician greatly influenced by pharmaceutical marketing. Among all promotional strategies "public relation"was found most effective strategy that influence a physician's prescription remarkably while "advertisement" of the pharmaceutical products in a journal or other printing object attracts the physician concentration least.

* Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: ksb@ewubd.edu

** Department of Business Administration, Southeast University, Dhaka, Bangladesh

In vitro antioxidative and cholinesterase inhibitory properties of Thunbergia grandiflora leaf extract

Kushal Biswas* , Md. Josim Uddin**, Mohammad Nazmul Alam** and Md. Atiar Rahman***

ABSTRACT

Among the pathologic hypotheses of Alzheimer's disease (AD), cholinergic deficit and oxidative stress have been implicated as two major hallmarks. Therefore, inhibition of cholinesterase and oxidation are the two promising strategies in the development of a drug for AD. Thunbergia grandiflora leaf extract (TGEx) is used in this research to investigate its anticholinesterase and antioxidant potentials. Anticholinesterase activity was measured by modified Ellman method. Antioxidant potentials were evaluated by the assay of reducing power, radical scavenging and inhibition of lipid peroxidation. The Methanolic extract showed strong anticholinesterase effect. Additionally, the extract exhibited pronounced reducing capacity, radical scavenging ability, and lipid peroxidation inhibitory effect. The IC50 values of the extract for DPPH and hydroxyl free radical scavenging and lipid peroxidation were 10.50 ± 0.68, 24.98 ± 1.39 and 21.84 ± 0.91 µg/ml, respectively. Phytochemical screening of the extract revealed the presence of significant amount of total phenolicsand flavonoids. The tested sample reflects potential antioxidative and anticholinesteraseinhibitory effect which may warrant its effectiveness in the treatment of AD.

* Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: ksb@ewubd.edu

**Department of Pharmacy, International Islamic University Chittagong, Chittagong, Bangladesh.

***Department of Biochemistry and Molecular Biology, University of Chittagong, Bangladesh.

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Eating Disorder: Influences of Hormones and Vitamins

Sufia Islam*, Md Anisur Rahman**, Kushal Biswas***, Tirtha Nandi**** and

Tania Ashraf

ABSTRACT

Eating disorder (ED) is one of the major health concerns in global perspectives. This disorder includes Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, orthorexia, diabulimia and 'Other Specified Feeding or Eating Disorder'. There are psychological and psychiatric components involved with this disorder. Hormones and nutritional factors are also associated with ED. The treatment approach depends on the specific form of ED as well as severity of the illness including co-morbidity. Pharmacotherapy and Psychotherapy both play roles in the treatment strategy of ED. This review will look into different adjunct options of specific agents like hormones and vitamins for the successful management of ED.

* Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: sufia@ewubd.edu

** Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arr@ewubd.edu

*** Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: ksb@ewubd.edu

**** Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: tnandi@ewubd.edu

Antidiabetic property of methanol extract of B. Alba (fruits along with shoots) and its relationship with the antioxidant property

Kushal Biswas*, A.K. Azad**, Ohidul Islam**, Manirul Islam**, M. Khairuzzaman**, Nandita Das**, Nazneen Ahmeda Sultana**, Sophia Hossain**, Sanjida Haque**, Nilima Karmoker**, Anwarul Islam** and Md. Saifuddin***

ABSTRACT

Diabetes is one of the most life threatening diseases of the present world. Among many causes excessive oxidative reactions are notable of them. The present study was designed to evaluate the comparative studies on antidiabetic and antioxidant properties of B. alba. Antidiabetic study was carried out on experimental animal model (Swiss albino mice) for 120 minutes treatment and significant blood sugar decline was observed (16.94 to 7.94mM/L) at the dose of 250mg B. alba extract and (20.0 to 7.30 mM/L) at 500mg dose compared to control group whereas metformin was taken as a reference standard. Antioxidant property was done through free radical scavenging method. Methanol extract of B. alba showed IC50 496.32 (µg/ml). Where, Ascorbic acid was used as a standard with IC50 of 4.78 (µg/ml).

* Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: ksb@ewubd.edu

**Department of Pharmacy, Bangladesh University, Dhaka-1207, Bangladesh

***Department of Mathematics & Statistics, Bangladesh University of Business and Technology, Dhaka-1207,Bangladesh

Antioxidant, antibacterial and cytotoxic activities of various extracts of *Thysanolaena maxima* (roxb) kuntze available in Chittagong Hill Tracts of Bangladesh

Nazia Hoque*, Md. Hossain Sohrab**, Trisha Debnath*** and Md. Sohel Rana****

ABSTRACT

To evaluate the presence of different phytoconstituents and investigate in vitro bioactivities of petroleum ether, chloroform and methanol extracts of Thysanolaena maxima available in Bangladesh. Phytochemical screening was conducted using the specific standard procedure. Antioxidant activity of the extracts was evaluated using DPPH radical scavenging assay and reducing power assay. Determination of total phenolic and flavonoid contents was also carried out. Antibacterial and cytotoxic activities were investigated using disc diffusion method and brine shrimp lethality bioassay, respectively. The methanol extract showed highest DPPH radical scavenging activity as well as possessed highest phenolic content (IC_{50} value for DPPH is 36.94±0.62 µg/ml and total phenolic content is 74.39±2.87 in mg/g, GAE) compared to the petroleum ether and chloroform extracts. On the other hand, chloroform extract possessed maximum flavonoid content (81±7.542 in mg/g, QE) and highest reducing power compare to other extracts. All the extracts showed mild to moderate in vitro antibacterial activity with a zone of inhibition ranging from 7 mm to 16 mm. In brine shrimp lethality bioassay, the LC_{50} values for petroleum ether, chloroform and methanol extracts were found to be 579.05±78.08 µg/ml, 386.92±80.47 µg/ml and 494.29±104.82 µg/ml, respectively which revealed weak cytotoxic potentials of the extracts compared to the positive control. The results indicated that T. maxima could be a very potent source of natural radical scavenger. Isolation of active compounds from this plant responsible for producing such bioactivities is underway.

Keywords: Thysanolaena maxima, DPPH, Total phenolic contents, Total flavonoid contents, Reducing power, Cytotoxicity, Antimicrobial activity

*Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: nzh@ewubd.edu

**Principal Scientific Officer, Pharmaceutical Sciences Research Division, Bangladesh Council of Scientific and Industrial Research, Dhaka, Bangladesh

***Research student, Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh.

****Centre for Natural Product Research, Department of Pharmacy, Jahangirnagar University, Savar, Dhaka, Bangladesh

Coating Efficiency in Preventing Photolytic Degradation of Two Randomly Selected Brands of Metoprolol Tartrate"

Md. Anisur Rahman* , Tirtha Nandi** , Mohammed Faisal Bin Karim, Kazi Imran Adib, Roksana Parvin and Md. Shahriar Mahmud

ABSTRACT

This research work was carried out to determine whether the film coating is effective to prevent the photolytic degradation of Metoprolol tartrate which is known to have photosensitivity. For this purpose, two randomly selected brands of two different pharmaceutical companies were chosen i.e. Brand A and Brand B. These two brands were exposed to different lighting conditions (normal light, direct sunlight as well as two incandescent lights i.e. 25 watt bulb, 40 watt bulb). Potency tests were performed using UV spectroscopy which showed gradual decline in potency of the tablets under aforesaid lighting conditions and the potency degradations were found 11.48%, 12.92%, 22.62%, 16.87% for Brand A and 14.74%, 14.24%, 10.88%, 18.10% for Brand B under 25 watt bulb, 40 watt bulb, direct sunlight and normal room light respectively. So this study reveals that the both brands containing metoprolol tartrate showed significant light sensitivity even though they are coated and protective opaque packaging is highly recommended for their protection.

Keywords: Metoprolol Tartrate, Potency, Light, Incandescent, Photolytic Degradation, Photosensitivity, opaque packaging.

*Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arr@ewubd.edu

**Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: tnandi@ewubd.edu

Impact of Calcium-Vitamin D Supplements on the Dissolution Pattern of Ranitidine Hydrochloride Tablets: An in vitro Dissolution Study using UV Spectroscopy

Md. Anisur Rahman*, Tirtha nandi**, Omer Fayshal Pavel, Sharmin Akhter Liza, Md. Ahsanul Huq, Md. Jahidul Haque and Shoheba Akter

ABSTRACT

The objective of this study was to evaluate the impact of Calcium-Vitamin D supplement formulations on the dissolution pattern of different Ranitidine Hydrochloride tablet formulations. This was an in-vitro dissolution study using USP apparatus II and UV spectroscopy. Three different brands of Ranitidine hydrochloride i.e. Brand A, Brand B and the innovator brand 'Zantac®' were chosen. Besides CS1, CS2 and CS3 were the three Calcium-Vitamin D tablet brands used to carry out the experiments. In our study, all the brands of Ranitidine HCl tablets satisfied the USP requirements by showing dissolution of more than 80% within 60 minutes when tested alone. The dissolution patterns were 98%, 96% and 94% respectively for Brand A, Brand B and 'Zantac®'. However, their dissolution rates were significantly reduced when they were tested with the Calcium-Vitamin D tablets. With the Brands CS1, CS2 and CS3, the percent drug releases were 50%, 46% and 75% for Brand A, 48%, 49% and 73% for Brand B and 49%, 48% and 72% for 'Zantac®'. These results may be due to the common ion effects and/or the altered dissolution medium environment. Therefore, this study suggests separate intake of Ranitidine and Calcium supplements to ensure a better therapeutic efficacy.

Keywords: Dissolution, Ranitidine Hydrochloride, Calcium, Vitamin D, UV spectroscopy.

*Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arr@ewubd.edu

**Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: tnandi@ewubd.edu

Extent of Photo-degradation of Three Different Diazepam Tablet Formulations Available in Transparent Packaging: An UV Analysis

Md. Anisur Rahman*, Tirtha Nandi**, Mohammed Faisal Bin Karim, Nuzhat Ahsan, Sumaiya Khondokar Mitu and Irin Sultana

ABSTRACT

This study was designed to determine the extent of photolytic degradation of diazepam tablets, without light-protective packaging, available in the market. The UV spectroscopy method was designed and applied for this purpose. A total of 2160 tablets (each tablet contained 5 mg diazepam) of three different brand formulations A, B and C were chosen randomly. These tablets were then exposed to different indirect and direct lighting conditions i.e. normal room light condition (for 60 days), direct sunlight exposure (6 hours per day for 3 days), 25 Watt incandescent light bulb exposure and 40 Watt incandescent light bulb exposure (6 hours per day for 3 days). Samples from these light exposures were analyzed for potency determination using UV spectrophotometer and compared against the tablets kept in dark place (Control). Tablets of all three formulations showed marked degradation. The overall average degradations were 23.64%☐ 5.53%; 28.36%☐ 4.87%; 19.72%☐ 4.83% and 25.40%☐ 4.17% respectively for normal room light, direct sunlight, 25 Watt and 40 Watt incandescent bulbs whereas tablets kept in dark place showed little or no decrease in potency (0.01%☐ .01%). These results suggest that the diazepam tablets should be marketed in light-protected opaque packaging to retain their potency and optimum therapeutic effect. At the same time, the existing transparent packaging should also be replaced with the opaque ones by the manufacturers.

Keywords: Photolytic degradation, UV Spectroscopy, Diazepam, Light-Protective

*Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arr@ewubd.edu

**Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: tnandi@ewubd.edu

A New Technique for Solving Transportation Problems by Using Decomposition-Based Pricing and its Implementation in Real Life

Sajal Chakroborty* and M. Babul Hasan**

ABSTRACT

In this paper, we develop a new technique for solving transportation problems (TP) and develop a computer code by using mathematical programming language AMPL. There are many existing techniques for solving TP problems in use. By these techniques one has to determine initial basic feasible solution at first then improve this solution to determine optimal solution by another method. But this process is very lengthy and time consuming. By our technique we can determine optimal solution directly without determining initial basic feasible solution and optimal solution separately and we hope that this technique will provide an easier way than that of the other methods. We use the idea of decomposition based pricing (DBP) method to develop our technique. To our knowledge, there is no other paper which used DBP to solve TP. We demonstrate our technique by solving real life models developed by collecting data from a business organization of Bangladesh.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: scb@ewubd.edu

**Department of Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: mbabulhasan@yahoo.com

A Computer Technique for Solving Linear Fractional Programming Problems by Using Dinkelbach's Algorithm

Sajal Chakroborty* and M. Babul Hasan**

ABSTRACT

In this paper, we introduce a computer oriented technique for solving linear fractional programming (LFP) problems by converting it into a single linear programming (LP) problem. We have used the idea of Dinkelbach's algorithm. We use a mathematical programming language (AMPL) to develop computer code. A number of numerical examples are used to demonstrate the technique.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: scb@ewubd.edu

**Department of Mathematics, University of Dhaka, Dhaka-1000, Bangladesh. Email: mbabulhasan@yahoo.com

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Discrete-Event Systems-Based Power Admission Control of Thermal Appliances in Smart Buildings

Md. Waselul Haque Sadid*, Saad A. Abobakr** and Guchuan Zhu**

ABSTRACT

The present work addresses the admission control of thermal appliances in the context of smart buildings. The scheduling of thermal devices operation is formulated in the framework of discrete-event systems (DES), which allows for the modeling and design of admission control to be carried out in a systematic manner and ensuring the existence of the feasible scheduling prior to exploring control solutions. Simulation results show a noticeable improvement on peak power reduction.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: sadid.wh@ewubd.edu , md-waselul-haque.sadid@polymtl.ca

**Department of Electrical Engineering, Ecole Polytechnique de Montreal, Email: saad.abobakr@polymtl.ca, guchuan.zhu@polymtl.ca

Introducing Cache Tree to manage web cache: A secondary index to reduce validation check request

Mohammad Rezwanul Huq* and Al Imtiaz

ABSTRACT

Cached contents not only help to browse faster but also save web traffic. To use a cached contents browser have to send a validation check request to the server to check the freshness of that particular contents to make sure that the cached resources stored in browser cache are still fresh and users are not missing any valuable information. To complete this validation check procedure the browser and server have to communicate with each other and this generates some extra web traffics on the internet. To minimize this huge amount request developer may use 'Max-age' attribute of cached contents. But there is no appropriate value of 'Max-age'. If the value is large than there are possibilities to loss some update and again if the value is small than the number of unnecessary request will increase. The aim of this project is to find out an efficient and effective solution to reduce this validation check request. "Cache tree" will help to track and find any changes of cacheable contents of server side. Regular file system keeps track of all files through a table with their location, size, name and type. Cache tree will use that information and generate a tree based on following rules.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mrhuq@ewubd.edu

Transforming a Multi-value Database System into a Relational Database System for Faster Querying

Mohammad Rezwanul Huq* and Md. Zahid Hasan

ABSTRACT

When the data is fluid and relationships among attributes are getting complex and are changing rapidly over time, a Multi-value Database Management System (MVDBMS) can provide a great deal of support to handle that. MVDBMSs can handle attributes taking a list of values unlike a Relational Database Management System (RDBMS) that can only accept single-valued attributes to conform first normal form (1NF). It is suitable to use multi-valued database in case where a list of values can be assigned to a single attribute in a particular record. In this case, MVDBMS can save a lot of storage space and it is quite efficient to retrieve a specific record. However, when it comes into retrieving data based on Select-Project-Join (SPJ) queries, a multivalued database cannot handle these queries in a straightforward manner. In this paper, we propose techniques to transform a MVDBMS into a RDBMS for faster querying and retrieval. During the transformation, we carefully considered the trade-off in between execution time of queries and storage space consumed by data. Therefore, we introduce two novel techniques: one of them will generate database schema conforming to 3NF and the other will be in 1NF. We also evaluate the performance of these two techniques for different types of queries.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mrhuq@ewubd.edu

Developing a User-friendly Tool for Executing Queries using MapReduce over Hadoop Framework

Mohammad Rezwanul Huq*, Tahira Biswas Anny and Minhazur Rahman

ABSTRACT

In Relational Database Management System (RDBMS), we use queries for retrieving any information from the database or storing information into the database. But now-a-days, as the volume of data is rapidly increasing at every second, it is difficult to manage this massive amount of data as a form of relational database. A MapReduce program, executed over Hadoop Distributed File System (HDFS), allows us to get useful information from massive amount of data. Therefore, we present a tool which can deal with huge volume of unstructured data. Using this tool, there is no need to write any traditional query/program to retrieve information. It works over any numbers of flat files for executing queries. It does not directly ask for query from the user, rather it gives the user different menu-based options and conditions. A user with a limited technical knowledge can use the tool. It does not require any previous knowledge about RDBMS, SQL or any other programming knowledge. The main goal of our work is to develop a user-friendly tool using which without having any knowledge of the used framework, a user can have the benefit of executing queries over large datasets.

*Department of Computer Science and Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mrhuq@ewubd.edu

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High Quality Location Controlled Poly-crystalline Silicon Nanowires For Biosensors and Cytokine Binding Kinetics

M. M. A. Hakim*, Kai Sun**, P. Ashburn**, M. Lombardini***,M. R. R. de Planque*** and H. Morgan***

ABSTRACT

Polysilicon nanowire have been fabricated using a top-down process and were used to determine the binding kinetics of two inflammatory biomarkers. A very low cost nanofabrication process was developed, based on simple and mature photolithography (minimum linewidth 3μm), thin film technology and plasma etching, enabling an easy route to mass manufacture. The polysilicon nanowires are rectangular in shape, with excellent control of nanowire width, which is essential for reproducible sensitivity of top-down fabricated nanowires. Antibody-functionalized nanowire sensors have been used to measure the proteins interleukin-8 (IL-8) and tumor necrosis factor-alpha (TNF-α), two established markers for inflammation. Real-time detection is demonstrated over a wide range of concentrations, with excellent sensitivity and selectivity, exemplified by a reliability of detection of 10fM in the presence of a 100,000-fold excess of a non-target protein. Nanowire-generated titration curves gave antibody-antigen dissociation constants which are in good agreement with low-salt enzyme-linked immunosorbent assays (ELISAs). Our fabrication process thus results in high-quality nanowires that are suitable for low-cost mass production, providing a realistic route to the realization of disposable nanoelectronic Point-of-Care devices.

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dmmah@ewubd.edu

**School of Electronics & Computer Science, University of Southampton, Southampton, SO17 1BJ, UK

***Institute for Life Sciences, University of Southampton, Southampton, SO17 1BJ, UK

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An investigation of the effects of doping and thickness on the electrical characteristics of polycrystalline silicon nanowire biosensors

M. M. A. Hakim*, Laila Parvin Poly and Md. Asrarul Haque

ABSTRACT

We study for the first time the effect of nanowire thicknesses and doping concentrations on the electrical characteristics of polycrystalline silicon nanowires to find out the proper combination of nanowire thickness and doping for sensitive operation of polycrystalline silicon nanowire biosensors. For nanowire thicknesses of 100 nm and 75 nm, a plausible sub-threshold slope around 100 mV/dec for a viable biosensor operation can only be achieved if doping concentration is 2×10^{16}/cm^3 or below. For a 50 nm nanowire thickness a relatively wide doping concentration range can be chosen for biosensor design while maintaining decent sub-threshold characteristics. In this thickness a doping up to 4×10^{17}/cm^3 with a sub-threshold slope around 100 mV/dec can be chosen. The widest range of doping concentrations can be chosen for 25 nm and 10 nm nanowire thicknesses with a maximum doping up to 10^{18}/cm^3 while maintaining a promising sub-threshold slope around 95 mV/dec for a viable biosesnsor design using polycrystalline silicon nanowires. As such this research reveals the possible combinations of nanowire thickness and doping to ensure the sensitive operation of polycrystalline silicon nanowire biosensors.

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dmmah@ewubd.edu

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Bias dependent non-linear electrical characteristics of poly-silicon nanowire and assessment of biosensing application using liquid gate

M. M. A. Hakim*, Tanvir Alam Shifat, Rubiya Nila and Muktadir Imam Jan

ABSTRACT

We investigate the bias dependent modulation of the electrical characteristics of poly-silicon nanowire and perform a feasibility study of poly-silicon nanowire for biosensing application using liquid gate arrangement. Electrical characteristics of a 100 nm thick and 10 μm long p-type poly-silicon nanowire with a doping density of 10^{16}/cm^3 is investigated. For positive drain voltage application nanowire's output characteristics exhibit a non-linear diode like behavior whereas for negative drain voltages output characteristics exhibit a perfect transistor behavior with saturation in the characteristics. While nanowire's output characteristics reveal quite a drastic change with drain bias polarity, the sub-threshold characteristics exhibit excellent behavior for both positive and negative drain bias application with a sub-threshold slope of 102.61 mv/decade implying that poly silicon nanowire is good candidate for bio sensing operation with an achievable sensitivity around 800%. It is also found that for positive drain voltages sub-threshold characteristics shifts with the change in drain bias providing the flexibility of a wide range of liquid gated voltages for physiological activity monitoring. For negative drain voltages sub-threshold characteristics does not shift thereby restricting the applicable liquid gate voltages for sensitive operation of biosensors. As such, this study reveals the applicable bias conditions of a 10 μm long 100 nm thick low doped p-type poly-silicon nanowire biosensors physiological process monitoring and the maximum achievable sensitivity for detection of biomarkers.

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dmmah@ewubd.edu

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A method for making artificially intelligent robots: A study on speech recognition and synthesis software

Fakir Mashuque Alamgir* and **Arshad Rafid****

ABSTRACT

This paper presents an approach for making artificially intelligent robots that operate with speech recognition and speech synthesis. It explores a way of creating a primitive artificial intelligence that can accomplish simple to complicated tasks by hearing a specific word or a specific combination of words by means of speech recognition and can reply vocally by means of speech synthesis. This all can be done with very limited resources and may be less difficult to accomplish compared to other methods of creating artificial intelligence.

Keywords: Artificial intelligence, robotics, voice recognition, speech to text, text to speech, Raspberry pi robot, Sphinx, Racket, Arduino, speech synthesis, Firmata, eSpeak..

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: fma@ewubd.edu

** Student, Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arshad.rafid021@gmail.com

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Performance simulation and comparision in high altitude platforms (haps) communications systems under psk, dpsk,qam & fsk modulation schemes and awgn,rician & rayleigh communication channels

Fakir Mashuque Alamgir* and **B M Adnan****

ABSTRACT

This paper contemplates the examination by simulation of a digital narrow-band communication system for a situation which incorporates of a High-Altitude aeronautical/ spacecraft Platform generally known as (HAP) and fixed/ mobile terrestrial transceivers under different modulation schemes and different communication channels. The aeronautical channel is designed considering geometrical (angle of elevation vs. horizontal distance of the terrestrial reflectors) and statistical arguments. Following these conditions, a serial concatenated coded digital transmission is scrutinized for some presumptions related to radio-electric coverage areas. Various flaws that can influence the signal strength are investigated in this specific case. We have investigated this case under most common digital modulation schemes which are PSK, DPSK, QAM and FSK and three basic channel types to design the aeronautical channel. To evaluate the channels performance, we used Specific Bit Error Rate (BER) against Signal to Noise ratio per bit (Eb/No). The outcomes show a good feasibility for the proposed and analyzed communication system. Keywords— High altitude platforms(HAPs); Aeronautical channel; Angle of elevation; Echo; Rice factor; Line-of-Sight (LoS); Distance; Coverage; Concatenated coded systems; Communication channels; Phase shift keying(PSK); Differential phase shift keying(DPSK); Quadrature amplitude modulation(QAM); Frequency shift keying(FSK); Bit error rate (BER); Signal to noise ratio per bit(Eb/No)

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: fma@ewubd.edu

**Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: adnan_shovo@yahoo.com

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Matlab based performance replication in high altitude platforms (haps) communication system

Fakir Mashuque Alamgir*, B M Adnan**, M. M. Jahazeb Alam*** and Sopan Chakma****

ABSTRACT

This thesis considers the examination by simulation of a digital narrow-band communication system for a scenario which consists of a High-Altitude aeronautical/ spacecraft Platform (HAP) and fixed/ mobile terrestrial transceivers. The aeronautical channel is modeled considering geometrical (angle of elevation vs. horizontal distance of the terrestrial reflectors) and statistical arguments and under these circumstances a serial concatenated coded digital transmission is investigated for several assumptions related to radio-electric coverage areas. Different flaws which can affect the signal strength are investigated in this particular case. We have considered specific modulation type (Differential Phase Shift Keying Model) and three basic channel types to model the aeronautical channel. Specific Bit Error Rate and Signal to Noise ratio per bit are considered to evaluate channel performance. The results indicate a good viability for the communication system proposed and analyzed.

Keywords: High altitude platforms (HAP's);Aeronautical channel model; Angle of elevation; Rice factor; Coverage; Concatenated communication systems; Differential phase shift keying (DPSK); Bit error rate; Signal to noise ratio per bit

*Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: fma@ewubd.edu

**Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: adnan_shovo@yahoo.com

***Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: jahazeb_alam@yahoo.com

****Department of Electrical & Electronic Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: chakma_sopan@gmail.com

Tumor detection in brain MRI image using Template based K-means and Fuzzy C-means Clustering Algorithm

Rasel Ahmmed* and Md. Foisal Hossain**

ABSTRACT

This paper presents a robust segmentation method which is the integration of Template based K-means and modified Fuzzy C-means (TKFCM) clustering algorithm that, reduces operators and equipment error. In this method, the template is selected based on convolution between gray level intensity in small portion of brain image, and brain tumor image. K-means algorithm is to emphasized initial segmentation through the proper selection of template. Updated membership is obtained through distances from cluster centroid to cluster data points, until it reaches to its best. This Euclidian distance depends upon the different features i.e. intensity, entropy, contrast, dissimilarity and homogeneity of coarse image, which was depended only on similarity in conventional FCM. Then, on the basis of updated membership and automatic cluster selection, a sharp segmented image is obtained with red marked tumor from modified FCM technique. The small deviation of gray level intensity of normal and abnormal tissue is detected through TKFCM. The performances of TKFCM method is analyzed through neural network provide a better regression and least error. The performance parameters show relevant results which are effective in detecting tumor in multiple intensity based brain MRI image.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: rsa@ewubd.edu and rasel_kuet2k8@yahoo.com

**Department of Electronics and Communication Engineering, Khulna University of Engineering & Technology, 9203, Bangladesh, Email: foisalkuet@yahoo.com

Phytochemical and pharmacological investigations of Thysanolyna maxima (Roxb.) Kuntze available in Bangladesh

Nazia Hoque*, Md. Hossain Sohrab** and Md. Sohel Rana***

ABSTARCT

The objective of the study was to evaluate the presence of different phytoconstituents and investigate in vitro bioactivities of petroleum ether, chloroform and methanol extract of Thysanolaena maxima (Roxb.) Kuntze available in Chittagong Hill tracts of Bangladesh. Phytochemical screening was conducted using specific standard procedure. Antioxidant activity of the extracts was evaluated using DPPH radical scavenging assay and reducing power assay. Determination of total phenolic and flavonoid content was also carried out. Antibacterial and cytotoxic activities were investigated using disc diffusion method and brine shrimp lethality bioassay respectively. Phytochemical analysis revealed the absence of alkaloids and presence of terpenoids, carbohydrates, tannins, flavonoids, saponins and glycosides in all extracts of T. maxima in varying amount. The methanol extract of T. maxima showed the highest DPPH radical scavenging activity and highest phenolic content (IC50 value for DPPH is 36.94 ± 0.62 μg/ml and total phenolic content is 74.39 ± 2.87 mg/g, Gallic acid equivalents) compared to the pet ether and chloroform extract. In antibacterial study, all the extracts showed mild to moderate activity against 5 gram positive and 6 gram negative bacteria with zone of inhibition ranging from 7 mm to 16 mm. In brine shrimp lethality bioassay, the LC50 values for petroleum ether, chloroform and methanol extract were 579.05 ± 78.08 μg/ml, 386.92 ± 80.47 μg/ml and 494.29 ± 104.82 μg/ml. The results indicate that T. maxima could be a very potent source of natural radical scavenger and antimicrobial agents.

*Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: nzh@ewubd.edu

**Principal Scientific Officer, Pharmaceutical Sciences Research Division, Bangladesh Council of Scientific and Industrial Research, Dhaka, Bangladesh

***Centre for Natural Product Research, Department of Pharmacy, Jahangirnagar University, Savar, Dhaka, Bangladesh

Bioactive metabolites from two aquatic plants of Bangladesh and their associated endophytic fungi

Nazia Hoque*, Md. Hossain Sohrab**, Md. Sohel Rana***,
Nargis Sultana Chowdhury**** , Muhammad Abdullah Al-Mansur*****
and Choudhury Mahmood Hasan******

ABSTRACT

There is a general call for new antibiotics and chemotherapeutic agents that are highly effective and possess low toxicity. Plants and microorganisms, being the major source of many drugs, have attracted scientists from ancient times. Endophytes provide an abundant reservoir of bioactive metabolites for medicinal exploitation, and an increasing number of novel compounds are being isolated from endophytic fungi. This study was conducted to characterize and explore the bioactive metabolites from two aquatic plants of Bangladesh namely *Monochoria hastata* (L.) Solms and *Aponogeton undulatus* Roxb., as well as their associated endophytic fungi. Extracts from the plants and endophytic fungi were screened for bioactivities followed by isolation and characterization of the active constituents by various chromatographic and spectroscopic methods. Preliminary screening of cru

*Department of Pharmacy, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: nzh@ewubd.edu

**Principal Scientific Officer, Pharmaceutical Sciences Research Division, Bangladesh Council of Scientific and Industrial Research, Dhaka, Bangladesh

***Centre for Natural Product Research, Department of Pharmacy, Jahangirnagar University, Savar, Dhaka, Bangladesh

**** Manarat International University, Dhaka Bangladesh

***** NMR Scientist, Bangladesh Council of Scientific and Industrial Research, Dhaka, Bangladesh.

****** University of Dhaka, Dhaka , Bangladesh

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Isolation and Characterization of Osmophilic Fermentative Yeasts from Bangladeshi Honeys

Roushney Fatima Mukti*, Md. Miraj Kobad Chowdhury** and M Aftab Uddin**

ABSTRACT

Despite the medicinal values and economic importance, honey is also a source of osmophilic fermentative yeasts. Here, we have isolated total eight strains from five physicochemically defined florally diversified honey samples of Bangladesh. For this, we inoculated 1 ml of honey in YPD broth containing 4% dextrose. After overnight incubation, the broth was streak on an YPD agar plate to isolate and purify yeast colonies. These yeasts were observed under the light microscope for their morphology. We observed that these yeasts have one of three distinct shapes: ovoid, spherical, or cylindrical. The cytoplasm in young, actively reproducing cells occupied most of the interior and looks homogeneous. Later, the plasmid profile and the growth pattern of these isolates were determined. Two plasmids of around 3kb and 2.1 kb were common in these strains except one strain. While compared with Baker's yeast, these strains showed faster growth. We suggest that these strains have potentialities for efficient bioethanol production to meet the increasing demand of biofuel. Further studies to determine the fermentation capacity and identification of the yeast isolates would be carried out.

*Department of Genetic Engineering and Biotechnology, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. E-mail : roushney@ewubd.edu

**Department of Genetic Engineering and Biotechnology, University of Dhaka, Dhaka-1000

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Risk Factor Assessment of Coronary Artery Disease amongst Bangladeshi People

Roushney Fatima Mukti*, Mohiuddin Kabir*, Rejaul Khalique Miah** , A. S. M. Mahadiuzzman, Md. Arafat Rashid and Rozely Hussain

ABSTRACT

Coronary Artery Disease (CAD) represents one third percent of global death toll ratio. It is the prominent cause of death in developing countries like in Bangladesh. Nevertheless, inadequate emerging risk factor assessments are being demonstrated merely for Bangladeshi people. The scope of the overall assessment is to evaluate prognostic information as well as risk factor analysis based on socio-demographic factors amongst Bangladeshi people, and also to focus as well as establish a full-fledged database about CAD. A cross-sectional survey was carried out. The analysis included 793 patients (446 male and 347 female) with 248 controls and 545 patients from a time limit of November 2015 to October 2016 by using a constructed questionnaire containing details of CAD risk factors including blood cholesterol level (Total Cholesterol, Triglyceride, HDL, LDL) BMI, diabetes (type 1 and 2), hypertension, smoking, residential and working area, angina, mental trauma, genetic factor, annual income, education, diet and physical activity. Statistical analysis and testing of hypothesis were conducted using SPSS software (version 20.0). The study revealed that CAD was more prevalent in males than females. Crosstab, independent sample t-test, logistic test revealed that blood cholesterol level was the highest risk factor (Total Cholesterol>240 mg/dl, Triglyceride>200 mg/dl, HDL<40 mg/dl and LDL>160 mg/dl) followed by previous diabetes and hypertension. Consequently, BMI, diet, mental trauma, education, and socio-economic status also exhibited significant correlation with CAD. The obtaining results from this study was staggering and it indicated the importance of creating cautiousness of not only in diet consumption or physical activity but also in detrimental effects of smoking leading to CAD.

*Department of Genetic Engineering and Biotechnology, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: md.mahadi2013@gmail.com

**Department of Pharmacy, Manarat International University, Mirpur, Dhaka-1216, Bangladesh

Identification and Quality Grading of Mango Fruit among Different Fruits Using Fuzzy Inference System

Rasel Ahmmed*, Md. Foisal Hossain**, Tasmeen Akhtar Tonima** and Proma Nag**

ABSTRACT

This research work represents a technique which is effective in differentiating mango from other fruits and ensuring quality of mango with less computational complexity. The technique has several portions to complete this task like-preprocessing, features extraction, fruit differentiation, defects identification, and quality grading. In the preprocessing the images of different fruits like apple, banana and mango are converted to gray level image with proper labeling including thresholding. The image features are extracted from the different fruit images under morphological operation with binary filled image. The features i.e. mean, standard deviation, and eccentricity are used under some rules of fuzzy inference system (FIS) for fruit differentiation specially isolating mango from other fruits. There are three input variables for these features and one output for fruit differentiation. There are some membership function to define which implies the variation of features and the classified fruits. Again, the size of differentiated mango leads to calculate defect region. In this criterion area, length, and width of the mango are used as input variables and size is defined for output variable. The size of the mango is classified into six groups through the defuzzified output value from the 78 rules of fuzzy inference system. Then, defected portion of the mango is extracted through k-means clustering algorithm. The quality of mango is determined using correlation ratio that is obtained based on 28 FIS based rules for defected and original images. These values signify the quality of the mango. This technique shows better accuracy in finding and ensuring good quality of the mango relevant to other techniques.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: rsa@ewubd.edu and rasel_kuet2k8@yahoo.com

**Department of Electronics and Communication Engineering, Khulna University of Engineering & Technology, 9203, Bangladesh, Email: foisalkuet@yahoo.com, tasmeentonima@yahoo.com, and promanag47@gmail.com

Quality Grading of Fruits Using Image Processing

Rasel Ahmmed*, Md. Foisal Hossain**, Tasmeen Akhtar Tonima**, Md. Shahraj Chowdhury** and Proma Nag**

ABSTRACT

This paper presents a method of fruit quality grading using image processing and machine vision system. Nondestructive quality grading of fruits is important and plays a vital role for the fruit and agricultural industry. Traditionally grading of fruits is performed primarily by visual inspection using by human. Image processing offers solution for automated fruit grading to provide accurate, reliable, consistent and quantitative information apart from handling large volumes, which may not be achieved by employing manual inspection. The proposed method is comprised of preprocessing, group and size classification with defected parts, and quality grading. In the pre-processing step, image is firstly converted to gray level image which implies the morphological operation. The image features are extracted through morphological operation along with binary filled image. The extracted features are used for fruits type classification under some fuzzy rule based operation where there are three input and one output variable. The type of the fruits such as apple, banana and apple is classified through the defuzzified output value from the 140 rules of fuzzy inference system (FIS). Then the size of each type of fruits is determined using extracted features and FIS. Then, defected portion of the fruit is extracted using K-means clustering algorithm and correlation ratio is obtained through 2D correlation approach between defected and original images. The quality of each type of fruits is determined automatically without human inspection using size and correlation values. This proposed method will increase the performance of fruit industry which will help country to export good quality of fruits and so increase foreign remittance income.

*Department of Electronics and Communications Engineering, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: rsa@ewubd.edu and rasel_kuet2k8@yahoo.com

**Department of Electronics and Communication Engineering, Khulna University of Engineering & Technology, 9203, Bangladesh, Email: foisalkuet@yahoo.com, tasmeentonima@yahoo.com, sahahrajece@yahoo.com and promanag47@gmail.com

Faculty of Liberal Arts and Social Sciences

Indian claims over Geographical Indications of Bangladesh: sustainability under intellectual property regime

Mohammad Ataul Karim*

ABSTRACT

WTO-TRIPS regimes aspire to establish fair and competitive business practice – free from unfair competition, trade piracy, misleading consumers – with a view to facilitating just and fair dividends to the stakeholders. Bangladesh, as a developing country, needs to reap the benefits from the existing systems. It has huge potentiality with some of its famous foodstuffs, handicrafts and cultural heritage. Although some of its local and indigenous articles are recognized, however they are yet to be protected by the regional and international players. Recent Indian steps to register some reputed foodstuffs and handicrafts of Bangladesh have posed a potential threat to Bangladesh in protecting its legitimate interests. These Indian claims over GIs of Bangladesh are not maintainable under its intellectual property regime. Historical exploration reveals much stronger evidence of the origin of those GIs in some localities that are unquestionably part of Bangladesh. The present-day GI and trade policies strongly advocate restrictions on unfair competition and, thus, recent Indian claims are controversial and questionable in terms of historical origin and legal analysis. The precedents set by the Indian courts place prohibitions on GI piracy of other countries as well. Even under the Indian state, practice in regard to the famous Basmati rice case has proven that the recent attempts to overlook or undermine the issues of legality are not compatible with the country's intellectual property regime.

Keywords: geographical indications, geographical indications of Bangladesh, geographical indications of India, intellectual property, intellectual property rights.

*Department of Law, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: karimataul@ewubd.edu

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Mohammad Ataul Karim*

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*Department of Law, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: karimataul@ewubd.edu

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*Department of Law, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: karimataul@ewubd.edu

Politics, Ethics and Professionals in Policy Evaluation

Anisur Rahman Khan*

ABSTRACT

The importance of evaluation is well acknowledged in the domain of public policy and public administration. Politics, ethics and the roles and responsibilities of professionals are closely intermingled in the domain of policy evaluation. However, their implications are often poorly understood. Since the field of evaluation is expanding quite significantly, it demands to have a substantial level of understanding about the roles and responsibilities of professional evaluators and their interface with the ethical and political aspects of policy evaluation. This paper, through a content analysis, explores the various dynamics related to the roles and responsibilities of professionals, and issues linked up with politics and ethics of policy evaluation. Without having a careful consideration of these aspects, the fundamental purpose of policy evaluation might be plunged into serious tribulation. Thus, a professional evaluator must demonstrate highest professionalism in dealing with ethics and politics.

Keywords: Policy evaluation; Professionals; Ethics; Politics

*Department of Social Relations, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arkhan@ewubd.edu

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ABSTRACT

The importance of evaluation is well acknowledged in the domain of public policy and public administration. Politics, ethics and the roles and responsibilities of professionals are closely intermingled in the domain of policy evaluation. However, their implications are often poorly understood. Since the field of evaluation is expanding quite significantly, it demands to have a substantial level of understanding about the roles and responsibilities of professional evaluators and their interface with the ethical and political aspects of policy evaluation. This paper, through a content analysis, explores the various dynamics related to the roles and responsibilities of professionals, and issues linked up with politics and ethics of policy evaluation. Without having a careful consideration of these aspects, the fundamental purpose of policy evaluation might be plunged into serious tribulation. Thus, a professional evaluator must demonstrate highest professionalism in dealing with ethics and politics.

Keywords: Policy evaluation; Professionals; Ethics; Politics

*Department of Social Relations, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arkhan@ewubd.edu

Public and Private Organizations: How Different or Similar are They

Anisur Rahman Khan* and **Shahriar Khandaker****

ABSTRACT

In spite of a growing body of research attempting to draw distinctions between public and private organizations over the years, it remains a disputable issue yet to be settled by organizational theorists and scholars alike. No conclusive understanding regarding the similarities and differences has been availed, and the scholarly discussions between these two types of organizations predominantly ended up finding out differences rather than similarities. Given the background, this paper attempts to ascertain the similarities and differences between public and private organizations based on the application and relevance of some important organizational concepts drawing on literature review as well as researchers' application of reflexivity in investigating the issues. The concepts that have been used and analyzed include goals, goods and services, resource ownership, structure, culture, leadership and managership, decision making. This analysis indicates that despite manifestation of diverse variations between public and private organizations, in some cases/aspects they do share common attributes. For example, it is assumed that bureaucracy is the most dominant feature in public organizations, but such model is also being followed by many big private organizations. On the other hand, private managerial practices and structural components are also being adopted by public organizations. Further empirical research or case study could be conducted/developed using the concepts used in this analysis concerning the similarities and differences between these two types of organizations in order to grapple a concrete understanding about organization as a whole. At the same time, it is also suggested to minimize the gaps between public and private organizations by sharing the best practices of each other for greater developmental requirements.

Keywords: Public, private, organization, similarities, differences.

*Department of Social Relations, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arkhan@ewubd.edu,

**Department of Social Relations, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: shahriarkh@ewubd.edu

Designing a Mobile Based Library Information and Service Delivery System: A model plan for libraries of Bangladesh

Md. Hasinul Elahi*

ABSTRACT

The purpose of the study is to identify the need of a mobile based library information and service deliverysystem in developing countries, identify the services that are possible to provide with the help of mobile phones and their applications, design a mobile based library information and service delivery system, and identify major challenges regarding mobile based library information and service delivery systems. The research is exploratory in nature. This paper is based on a review of literature, survey information, and on the author's own viewpoints. A comprehensive search of scientific literature has been done along with a survey for validating the necessity of designing mobile based library information and service delivery systems. Responses to closed-ended questions in particular on 7-point Likert scales were analyzed using the descriptive analysis techniques of SPSS 20.0 and responses to other closed-ended questions were analyzed using general statistics. The research indicates that users of academic libraries, especially students and faculty members, have a positive notion regarding designing and implementing a mobile based library information and service delivery system. It also reveals user opinions regarding the possible problems associated with the design and implementation of a mobile based library information and service delivery system. The paper explores mobile based library information and service delivery systems for better and faster service provision to its potential users.

*Department of Information Studies and Library Management, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email : elahi.islm@gmail.com, h.elahi@ewubd.edu

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*Department of Social Relations, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: arkhan@ewubd.edu,

**Department of Social Relations, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: shahriarkh@ewubd.edu

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*Department of Information Studies and Library Management, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email : elahi.islm@gmail.com, h.elahi@ewubd.edu

Digital Library Network of South Asia: A Special Focus on Free and Open Source Software (FOSS) Movement

Dilara Begum*, Md. Nazmul Hasan** and **Md. Mamun-Or-Rashid*****

ABSTRACT

In the recent years, use of Free and Open Source Software (FOSS) in Libraries and Information Centers becomes popular in developing countries, especially in South Asia, for the development of library automation system, e-Resource Management, Digital Library (DL)/Institutional Repository and other relevant functions in libraries. Digital Library Network of South Asia (DLNetSA) was formed to initiate the FOSS movement in this region with the aim to promote the sustainable digital library systems and knowledge sharing activities. Since the formation of DLNetSA, remarkable initiatives were taken and implemented in Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. DLNetSA has been playing a significant role in developing digital libraries, especially in the areas of: building DL in regional languages; translatingthe Open Source Software (OSS) digital library interface in regional languages; organizing training-workshop-seminar-meeting; conducting surveys and promotional activities; building network among DL users; doing advocacy by highlighting its significances; sharing e-Resources in terms of locally produced indigenous knowledge through open access initiatives and so on. Considering these issues, the article aimed to explore all aspects of DLNetSA initiatives and outcomes regarding the FOSS effort. A systematic literature review/document analysis has been conducted through giving a special focus on the activities of DLNetSA from the perspective of Libraries in South Asia. Besides, authors' experiences have also been incorporated in this paper. Remarkable challenges and problems were faced by DLNetSA in popularizing the FOSS in this region, which required further initiatives from the stakeholders to gain the sustainability of DL. Finally, the article made an effort to come up with a guideline providing suggestions to overcome those challenges and problems for sustainability of the systems developed by FOSS.

*Department of Information Studies and Library Management, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: dilara@ewubd.edu, dilara.lab@gmail.com

** Department of Information Science & Library Management, Rajshahi University, Rajshahi, Bangladesh. Email: nhasan177@gmail.com

***Department of Information Studies and Library Management, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: mamun.lis@ewubd.edu, mamun.lis@gmail.com

Subversion or Subservience? The Remains of the Empire in Nigeria

Farhana Zareen Bashar*

ABSTRACT

Postcolonial literature is supposed to be a battleground on which an active pursuit of decolonisation should continue in every possible way. African literature written in the language of the Empire does not appear to be completely anticolonial. Ngugi wa Thiong'o feels a need for linguistic decolonization of African literature. According to him, African literature manifests the domination of the Empire by using their language. He classifies the works of Chinua Achebe and Wole Soyinka as Afro-European literature. But is taking up the language the same as accepting the standards of the colonizer? The language question has many implications, especially when it comes to African literature. We see that Achebe attempts to decentralize control over language by extensively modifying it. My paper examines how the Nigerian authors Chinua Achebe and Wole Soyinka have developed their own written English vernacular codes and the way they Nigerianize their texts using pidgin English in their dialogue—the English that is actually used by some Nigerians. My paper also shows that there are other manifestations of imperial domination apart from the linguistic hegemony in African literature. The English of the Empire has been domesticated by Achebe and it has effectively become the language of literary expression, but a preference for the White Man's codes and customs is seen in socio-cultural settings. There was cultural domination in the country, which is still at work in present-day Nigeria. My paper shows that the domestication of the English language is able to carry the weight of the African culture, but these authors point out that internal indigenous structures are flawed and these deficiencies allow the apparently dead seeds of hegemony to germinate all over again in native soil. So, in Ngugi wa Thiong'o's words, the decolonization of the mind has not yet taken place. In this paper I include my personal experiences of and interactions with the westernized Nigerian and their apparent Afro-European lifestyle. The years I have spent in Nigeria have brought me in contact with the westernized educated Igbos and Yorubas of the South, and my description of their day-to-day tendencies explicitly show that there is a serious imperial effect deeply rooted in the Nigerians.

*Department of English, East West University, A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka-1212, Bangladesh. Email: zareen@ewubd.edu

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