

Abstracts of Published Papers 2020, Vol.15



East West University Center for Research and Training
East West University

PREFACE

It is my pleasure to write this introductory note for the fifteenth volume of the Abstracts of Published Papers 2020. The Abstracts of Published Papers is an annual publication 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 fifteenth volume of the Abstracts of Published Papers, which contains abstracts of the academic publication published in 2020. 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, five book chapters were published abroad, as well as 18 papers were published in international 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.

M. S. Haque

Professor Muhammed Shahriar Haque, PhD
Executive Director
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Faculty of Business and Economics

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Performance Evaluation and Impact of Grameen Bank on Social Development and Women Empowerment in Bangladesh

Tanbir Ahmed Chowdhury* and **Sehel Somani****

ABSTRACT

Bangladesh is one of the fastest growing economies in Asia. However, it is still a developing country which is trapped in the vicious cycle of poverty. Nobel Laureate Professor Muhammad Yunus introduced the concept of Grameen Bank which focuses on providing small loans to poor people especially women in the rural areas of Bangladesh. Due to the huge success of Grameen Bank more micro finance institutions are replicating this model and hence more poor people are relying on this kind of projects. Therefore, it is important to know how sustainable Grameen Bank is and its true impact on social development and women empowerment. We have tried to assess the performance of Grameen Bank through different variables such as number of members, total deposits, loan to deposit ratio, capital adequacy ratio, scholarship schemes, beggars' loan, house loan, micro enterprise loan, net income etc. For evaluating the performance of Grameen Bank 26 different trend equations and square of correlation coefficients have been tested with its different types of activities. The square of the correlation coefficient has also been calculated for all trend equations, out of which 21 shows r^2 is closer or more than 0.5 meaning well fitted trend lines. With the positive trend equations in most of the aspects this study proves that Grameen Bank has a better scope to grow in the future which will support the social and economic status of rural poor, particularly women.

Keywords: Bangladesh, Grameen Bank, Microfinance, Women Empowerment, Poverty Alleviation, Social Development

Contribution/ Originality: This study is one of very few studies which have investigated to add value to the microfinance literature, women empowerment and social development from the perspective of Grameen Bank, Bangladesh by showing its overall impact and sustainability in Bangladesh.

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Impact of Covid-19 in Bangladesh Stock Market

Sunjida Haque* and **Tanbir Ahmed Chowdhury****

ABSTRACT

The world's big economies is roiled and going under a devastating threat amid impact of COVID-19 pandemic. No country will be safe as this virus will eventually outbreak everywhere, regardless how countries prepare to avoid it. The economic ramification as well as the stock market crisis will be uncertain due to extended suspension of economic activities in almost every country. No wonder, the clattered stock markets of Bangladesh which has experienced inefficient and irrational fluctuations in previous years will experience colossal crisis due to the pandemic. The article provides an investigation on comparable analysis of impact on stock markets of Bangladesh, Dhaka stock exchange and Chittagong stock exchange, before and after the pandemic situation with current market data. We also examine the potential consequence of policy interventions to the market and to the investors during pandemic.

Keywords: Covid-19, Bangladesh Stock Market, Market Operators, Pandemic

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TQM Components as a Source of Competitive Advantage in a Beverage Organization: A Resource Based View

Amir Ahmed* and Farhana Ferdousi**

ABSTRACT

This study reports on a case study of TQM adoption in searching for answers of why and how organizations adopt such approaches to gain competitive advantages within a Bangladeshi beverage company. It focuses organizational approaches to adopt TQM as a strategic option and the subsequent changes in organizational set-up. Moreover, using the resource-based theory, this study explores what TQM components help achieving competitive advantage. Findings reveal that due to the change in customer requirements in respect to tastes and quality; and increased price pressure led the case organization to adopt TQM. The result shows that the case organization has brought a series of changes in adopting TQM including appointing a consultant; encouraging a culture of continuous learning; developing a mechanism of communicating information; involving top management along with the employees in the improvement process; and emphasizing the use of teams. Following the resource-based view, findings show that the adoption of TQM helped the case organization in identifying its capabilities that facilitated the achievement of competitive advantage. The findings may help other organizations to learn lesson from the case organization through the identification of tacit resources that are generated by a TQM initiative.

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Attitude Toward Social Media Reviews and Restaurant Visit Intention: A Bangladeshi Perspective

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ABSTRACT

Purpose – While the usage of social media reviews has become increasingly popular in recent years, few studies in this context of Bangladesh have investigated its impact on restaurant visit intention. Therefore, this study aims to explain the role of attitude toward social media reviews in customers' restaurant visit intention from the perspective of Bangladesh. In doing so, predictors of attitude toward social media reviews were also ascertained and their indirect effects on restaurant visit intention were investigated. **Design/methodology/approach** – A survey questionnaire was administered to 300 university students. A six-factor based measurement model was proposed, and structural equation modeling (SEM) was used in testing the hypotheses represented by the model. Furthermore, a focus group discussion with 12 respondents was also held to assess how negative reviews on social media affect the customers' restaurant visit intention. **Findings** – This study reveals that perceived usefulness, perceived ease of use, trustworthiness and information quality of social media reviews are positively related to attitude toward using positive social media reviews for choosing a restaurant. Furthermore, attitude toward positive social media reviews directly contributes to the intention to visit restaurants. Besides, attitude toward social media reviews fully mediates the relationship of perceived usefulness, perceived ease of use and trustworthiness with restaurant visit intention, whereas it partially mediates the relationship between information quality and restaurant visit intention. Besides, results from focus group discussion revealed that customers typically trust negative reviews which reduce their intent to visit restaurants. **Research limitations/implications** – The samples chosen for this study belong only to a particular stratum of the population (students from a specific institution/university). Hence, the outcomes should be generalized with caution. **Practical implications** – This study provides practical guidelines for the restaurant marketers to formulate improved strategic decisions by tracking the restaurant customers' attitudes, behavioral intentions, sentiments and share of voice on social media platforms. The results of this study will encourage the restaurant marketers to build sustainable relationships with influential food bloggers to spawn positive electronic word of mouth (e-WOM). **Originality/value** – This is one of the first studies in Bangladesh that have covered up a timely and untouched research area, providing empirical evidence regarding the effects of attitude toward social media reviews on restaurant visit intent in the context of a South Asian country like Bangladesh.

Keywords: Attitude, Social Media Review, Restaurant, Behavioral Intention, E-WOM

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Innovation in Financial Services: The Case of Bangladesh

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ABSTRACT

The financial services industry of Bangladesh has achieved phenomenal success and advancing day by day for the growth of technology. Bangladesh has long been considered a role model for financial inclusion, first with the emergence of proliferation and prominence of microfinance institutions, especially in rural areas. This paper examines the financial services innovation in Bangladesh by presenting the changes in the industry over the years. The paper also analyses the comparative picture of Bangladesh's financial inclusion and world financial inclusion. This study is a descriptive study where quantitative data has been collected from secondary sources. The study reflects a very positive picture of financial innovation in Bangladesh. We expect that the study can be used by concerned business people in decision making for the better implication of financial innovation.

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Sustaining Rice Productivity, Soil Fertility, and Income from Prawn-Rice Joint Culture in the Gher System in Bangladesh

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ABSTRACT

This paper examines the long-term impacts of joint prawn-rice gher farming system on agricultural and household incomes, soil fertility, and productivity of modern variety (MV) rice in southwestern Bangladesh based on socioeconomic data of the gher farmers and soil fertility data of their gher plots. In 2005, 20 farmers operating on 30 plots were randomly selected from the Bilpabla village of Khulna from whom prawn, and MV rice production data were collected using a questionnaire; soil samples were also collected and tested. In 2011 and 2017, the sustainability of the gher system over time was assessed through another survey of farmers following the same methodology. Results revealed that although the nominal income from gher farming increased by 59 percent in 2011 and 23 percent in 2017, the real income and per capita household income remained unchanged over time. Agricultural income has contributed about 65 percent to household income and household income of gher farmers was about 200 percent higher than the rural people of Bangladesh. Rice productivity declined slightly from its 2005 level. However, the productivity of MV rice under prawn-rice gher farming is substantially higher than the conventional MV rice farming system. The positive estimates of the Mean Soil Quality Index and Soil Degradation Index for land used for MV paddy production within the gher indicate an increase in soil nutrients. Thus, the joint prawn-rice gher farming system is relatively sustainable as it has improved soil fertility and stabilized real income. To promote agricultural growth in the southwestern region of Bangladesh, policy implications include research on developing varieties of MV rice suited to prawn-rice gher farming system and the development of commercial feeds and markets for prawn to increase productivity vis-à-vis income of gher farmers.

Keywords: Soil Fertility, MV Rice Productivity, Income, Prawn-Rice Gher Farming, Bangladesh

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Income Inequality, Poverty and Food Security of Plain Land Ethnic Communities of Bangladesh

Farhana Afrin Tithi*, **Basanta Kumar Barmon**** and **Sanzidur Rahman*****

ABSTRACT

The present study examines the level of income inequality, poverty and food security of two plain land ethnic communities residing alongside ethnic Bengalis (the majority in Bangladesh). It uses a randomly selected sample of 150 households (50 Bengali, 50 Koch and 50 Santal) from Phulbari subdistrict of Dinajpur district, located in the northwestern region. Results revealed that the level of illiteracy is highest for the Koch community, followed by the Santal community estimated at 58% and 50% respectively, as compared to the Bengali rate of 46%. It is encouraging to know that income inequality is much lower for the Koch and Santal communities as compared to the Bengali community, estimated at 0.24, 0.20 and 0.35, respectively, but their average annual total income is about 59.2% and 43.0% lower than the total annual income of the Bengali community. All measures of poverty and depth of poverty is much higher for both the Koch and Santal communities. Similarly, the level of food insecurity is very high for both ethnic minority communities. About 86% of both communities are food insecure. Furthermore, 60% and 52% of Koch and Santal households classify as absolute poor, consuming less than 1,805 kcal/capita/day, whereas the figure for the Bengali community is 44% and the national average for rural areas is 35.2%, respectively. Policy implications include investments in education and other income generating programs targeted at the ethnic minority communities so that they can participate in economic activities and reduce their poverty and food insecurity levels.

Keywords: Income Inequality, Poverty, Depth of Poverty, Food Security, Ethnic People, Bangladesh

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Productivity Growth and Efficiency Changes in Prawn-Carp-Rice Farming in ‘Gher’ System in Bangladesh: A Färe -Primont Index Approach

Sanzidur Rahman*, **Basanta Kumar Barmon**** and Asif Reza Anik***

ABSTRACT

‘Gher’ farming system refers to the joint operation of three enterprises: freshwater prawn, carp and HYV rice practiced widely in the southwestern coastal Bangladesh. The paper estimates growth in total factor productivity (TFP) and its six finer components (technical change, technical, scale and mix efficiency changes, residual-scale and residual-mix efficiency changes) of the prawn-carp-rice joint culture and identifies their determinants by exploring a panel database of a cohort of 90 ‘gher’ farms over a 13-year timespan (2002–14) from southwest Bangladesh. The aim is to judge sustainability of this unique farming system. Results revealed that TFP grew @ 0.86% p.a. mainly powered by technical change @ 0.54% p.a. and mix-efficiency change @0.06% p.a. while technical and scale efficiency changes declined @ 0.17% and 0.10% p.a., respectively. Farm-level socio-economic factors exerted differential impacts on TFP growth and its components. The key conclusion is that the ‘prawn-carp-rice’ joint culture in ‘gher’ system is sustainable and has the potential to support growth of the broader agricultural sector and the Bangladesh economy. Experience and education, ‘gher’ area, share of family labour and tenancy significantly improved TFP growth and technical change. The policy interventions include additional funds in education for ‘gher’ farmers, land and tenurial reforms to consolidate operation size and training for female labourers to improve long-term growth of the ‘prawn-carp-rice’ joint farming.

Keywords: Productivity Growth, Efficiency Change, Prawn-Carp-Rice Joint Culture, Socio-Economic Factors, Farm-Level Panel Data, Bangladesh

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The Impact of Intellectual Capital Disclosure on Firm Performance: Empirical Evidence from Pharmaceutical and Chemical Industry of Bangladesh

Md. Musfiqur Rahman*, Raihan Sobhan** and **Md. Shafiqul Islam*****

ABSTRACT

The main purpose of this study is to examine the impact of intellectual capital disclosure (ICD) on firm performance in the pharmaceutical and chemical industry of Bangladesh. In this study, 21 listed pharmaceutical and chemical companies have been selected as sample for 2016 and 2017. This study used the intellectual capital disclosure index developed by Rahman, Sobhan, and Islam. Return on assets and return on equity have been used as the proxy variable of firm performance. In this study, content analysis is performed to assess the level of disclosure regarding intellectual capital and pooled cross-sectional analysis is used to assess the relationship between ICD and firm performance. The study has found a positive and significant relationship between ICD and firm performance. Besides, an in-depth analysis of this study shows that all the components of ICD namely internal capital disclosure, external capital disclosure, and human capital disclosure are also positively and significantly associated with firm performance. The study suggests the development of an intellectual capital disclosure framework by the regulatory authority for mandatory compliance. This will improve the quality and quantity of ICD in the annual reports. Besides, firms should more emphasize on ICD which will help to improve their performance.

JEL Classification: M1, M14, M41, M48

Keywords: Intellectual Capital, Firm Performance, Internal Capital, External Capital, Human Capital

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Accounting and Auditing through the Lens of Non-Accountants: An Emerging Economy Experience

Ibrahim Khan* and Md. Shafiqul Islam**

ABSTRACT

Both accounting and auditing involve public interest and so it is important to understand the legitimacy of these fields from the point of view of the non-accountants. Therefore, this study looks at the perception of accounting among non-accountants; status of non-accounting users' understandability of accounting information; and finally, perception of non-accountants about the effectiveness of audits. Using 33 semi-structured interviews to draw common factors in the first stage and conducting a questionnaire survey among 125 participants to test the consistency of the interview results in the second stage, this study found that non-accountants, in general, view accounting as an excessively technical, less forward-looking and number crunching discipline. This study also found that non-accountant investors lack understanding of accounting reports and metrics, make trading decisions based on other sources of information and have low level of faith in accounting numbers. However, the comparability feature of accounting information tends to offset some of the decision-making barriers. Another finding of this study is that the credibility of audit reports, in general, is low among non-accountants. The role of an audit is considered an ornamental exercise. The findings show that awareness about accounting and auditing is relatively low in Bangladesh suggesting a small number of "informed users".

Keywords: Accounting, Audit, Emerging Economy, Non-Accountant, Bangladesh

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Integrated Thinking, Earnings Manipulation and Value Creation: Malaysian Empirical Evidence

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and Norhayati Mohamed*

ABSTRACT

Purpose - Prior literature proposes that integrated reporting (IR) drives integrated thinking (IT), enabling an organisation to create value for stakeholders in both quantitative (economic performance) and qualitative manners (beyond financially-oriented information). Fraud triangle theory also predicts that earnings manipulation may also affect the creation of value. Thus, this study seeks to provide empirical evidence on the relationship between IT, earnings manipulation and value creation. **Design/methodology/approach** - This data sample comprises of 497 observations from 2014 to 2018 of the top 100 market capitalisation of Malaysian public listed companies (PLCs) in Bursa Malaysia. This study used an index score for IT variable and Beneish's M-score as a proxy to detect earnings manipulations and to classify the companies into non-manipulators and manipulator companies. Value creation measurements consist of four variables under shareholder's value creation and one variable represents value creation through innovation. **Findings** - The findings show that IT is significantly related to value creation, whereas earnings manipulation had no significant relationship with value creation except for value creation measured using Tobin's Q ratio. The alarming finding is that a fraud predictor, namely earning manipulation, measured by Beneish-M, is not a predictor of whether companies are creating better or less value. **Originality/value** - This study is among the early literature that provides empirical evidence of the relationship between IT and value creation. Furthermore, this paper adds to look at the association of earning manipulation and value creation.

Keywords: Integrated Reporting, Integrated Thinking, Earnings Manipulation, Value Creation, Malaysia

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Post-Initial Public Offering Performance Drift

Md. Shafiqul Islam* and **Shihabul Anwar****

ABSTRACT

This paper examines if there is any post-IPO performance drift in the stock market of Bangladesh using five different performance indicators. We use 300 firm-year observations of 50 IPO firms from the period of 2009 to 2014, compiled from the annual reports and prospectuses of these firms. The results show that there is a statistically significant decline in performance measured by operating ROA after going public. The results may indicate the 'window dressing' of the accounting numbers in the pre-IPO period.

Keywords: Initial Public Offering, Operating Performance, Alpha, Prospectus, Agency Theory

JEL Classification: M41, E44, G14, G32

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Real-Time Seismic Damage Assessment of Various Bridge Types Using a Non-Linear Three-Stage Least Squares Approach

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ABSTRACT

In the event of a strong earthquake, the motorway administrator will likely have to interrupt network operations to inspect potentially damaged bridges. Although continuing operation without inspection may be dangerous for motorway users, unnecessary interruption may have adverse consequences, especially with respect to rescue operations. This calls for development and implementation of a RAPid REsponse (RARE) system, which will facilitate rationalized decisions. Such system requires real-time assessment of the seismic damage of motorway infrastructure, including which bridges are arguably the most vulnerable. This study addresses the issue by combining nonlinear finite element (FE) simulations with advanced econometric modeling. Based on a published simplified modeling approach and classification schemes, simplified FE models of characteristic bridge categories are developed, accounting for key structural components (pier, deck, abutment bearings, abutment stoppers) and soil-structure interaction. Employing the three-stage least squares (3SLS) approach, the data from the FE analyses are used to develop a relationship among the seismic damage (using the maximum and residual drift ratio, and the ratio of maximum ductility demand over ductility capacity as damage indices) of the bridge and the statistically significant intensity measures. The proposed 3SLS approach accounts for (1) both simultaneous equation bias and cross-equation contemporaneous correlation of the disturbances (error terms) caused by shared unobserved effects across the damage indices; (2) endogeneity among the damage indices with the use of instrumental variables; and (3) unobserved heterogeneity and panel effects, through the use of fixed effects. The 3SLS approach is compared to a traditional ordinary least squares (OLS) regression, and the comparison depicts the superiority of 3SLS in terms of explanatory power and forecasting accuracy.

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U-Shaped Ferrocement Wrapping with Inter-Surface Locking for Flexural Strengthening of RC Beam

G.M.S. Islam, **M.N Haque***, M.R. Alam, S.H. Niloy and M.M. Islam

ABSTRACT

This study aimed to evaluate the flexural performance of RC beam strengthened with u-shaped ferrocement wrapping and inter-surface locking. Total 12 numbers of RC beams were prepared and tested under third point loading. Three options viz. (i) u-shaped ferrocement wrapping with inherent cementitious bonding, (ii) u-shaped ferrocement wrapping with epoxy bonding and (iii) u-shaped ferrocement wrapping with epoxy and screw bonding were explored for strengthening of RC beam. The first cracking load, load–deflection behaviour, stiffness, energy absorption and the crack patterns were compared between the control and strengthened beams. It was found that the u-shaped ferrocement wrapping with inherent cementitious bonding increases the average flexural capacity up to 19.17% which further increased up to 41.29% by improving the inter-surface locking between the ferrocement layer and the original beam surfaces. The strengthened beam gave up to 35.58% less deformation for the same load compared to the control beam when the inter-surface locking was improved by applying epoxy and screw together. On the other hand, a significant improvement in stiffness and energy absorption capacity was obtained through strengthening with various inter-surface locking. At the maximum test load, all beams showed flexural cracks without any sign of debonding of ferrocement. From this study it could be concluded that u-shaped ferrocement wrapping effectively enhances the flexural capacity of RC beam and this could be further increased by improving the inter-surface locking between ferrocement wrapping and original concrete surface of RC beam.

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Role and Task Allocation Framework for Multi-Robot Collaboration with Latent Knowledge Estimation

Mario Gianni* and Mohammad Salah Uddin**

ABSTRACT

In this work a novel framework for modeling role and task allocation in Cooperative Heterogeneous Multi-Robot Systems (CHMRSs) is presented. This framework encodes a CHMRS as a set of multidimensional relational structures (MDRSs). This set of structure defines collaborative tasks through both temporal and spatial relations between processes of heterogeneous robots. These relations are enriched with tensors which allow for geometrical reasoning about collaborative tasks. A learning schema is also proposed in order to derive the components of each MDRS. According to this schema, the components are learnt from data reporting the situated history of the processes executed by the team of robots. Data are organized as a multirobot collaboration treebank (MRCT) in order to support learning. Moreover, a generative approach, based on a probabilistic model, is combined together with nonnegative tensor decomposition (NTD) for both building the tensors and estimating latent knowledge. Preliminary evaluation of the performance of this framework is performed in simulation with three heterogeneous robots, namely, two Unmanned Ground Vehicles (UGVs) and one Unmanned Aerial Vehicle (UAV).

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Freshwater Shrimp Farm Monitoring System for Bangladesh Based on Internet of Things

Mohammad Salah Uddin*, Md. Fatin Istiaq Mohd Rasadin and Md. Ruhel Talukder

ABSTRACT

The freshwater shrimp (*Macrobrachium rosenbergii*) fisheries sector is of vital significance to the economy of Bangladesh. This sector plays an important role in supplying nutrition, employment creation, poverty alleviation, and overseas currency acquisition. Rapid population growth, environmental pollution, and global warming are reducing the production level of the fisheries (freshwater shrimp) sector. There are various environmental metrics, such as acidity and salinity level of water, turbidity, dissolved oxygen level, and so on, which play a vital role in the effective production of shrimps. It is hence paramount environmental and production parameters be constantly monitored to ensure quality in the production chain. Nevertheless, old-fashioned (ie, manual) monitoring systems are cumbersome, time-consuming, and never performed in real time. Therefore, a constant and computerized monitoring system is the only way to handle those metrics efficiently and in real time. In order to address these problems, a real-time freshwater shrimp farm monitoring system is presented in this article. This monitoring system integrates technologies such as microcontroller-based physical devices, internet of things, and web applications, that allow users to remotely monitor a shrimp farm, as well as to receive alerts when an out-of-range water parameter (ie, temperature, pH, dissolved oxygen, salinity level, and turbidity of water) is detected. The physical implementation of this system consists of a set of sensors that allow for collecting data about the water metrics of shrimp farm. This system was evaluated to test its effectiveness in terms of the size, weight, and the percentage of survival of the shrimp achieved when the shrimp culture pond is monitored by this system.

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Modeling of Dispersion-Engineered All-Chalcogenide Step-Index Fiber for Wideband Supercontinuum Generation in the Mid-Infrared

M. R. Karim, **M. M. Rahman***, H. Ahmad and B. M. A. Rahman

ABSTRACT

Mid-infrared region supercontinuum (SC) generation through designing broadband light sources recently attracts considerable attention in the field of nonlinear optics owing to their numerous applications in sensing and biological imaging. Broadband light sources designed based on different waveguiding structures adopted until today, the SC generation using optical step-index fiber is the prominent one due to its design and fabrication flexibility. In this study, a promising 5-cm-long SC source has been designed and modeled using a step-index fiber structure employing highly nonlinear chalcogenide (ChG) materials such as As_2Se_3 glass as a core and $\text{Ge}_{11.5}\text{As}_{24}\text{Se}_{64.5}$ glass for its outer cladding. Fiber structure is suitably modeled through its group-velocity dispersion optimization by varying core diameter. The optimized fiber structures are excited using a pump source having 170-fs pulses at $5.5\ \mu\text{m}$ with a peak power of 10 kW. Initial all-normal dispersion excitation produces SC broadening up to $9.5\ \mu\text{m}$. Further study in a new optimization shows that spectral evolution can be expanded beyond $17\ \mu\text{m}$ covering the wavelength from 3.2 to beyond $17\ \mu\text{m}$ if the fiber structure is excited in the anomalous dispersion regime through a suitably tailored flat group-velocity dispersion curve with smaller in magnitude over a wide wavelength range. Such a promising SC source, which is designed based on typical step-index fiber principle using highly nonlinear ChG glass system, can be utilized in a variety of mid-infrared region applications.

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Anisotropic Transport in Tellurene Field Effect Transistors

Khairul Alam*

ABSTRACT

Tellurene, a single layer of tellurium, is a new emerging 2D material and a possible candidate for the post-silicon era. It has anisotropic carrier effective mass in zigzag and armchair directions. Therefore, the study of the anisotropic performance of tellurene FETs is a timely topic. In this work, the authors study the transport mechanism and performance metrics of tellurene n-channel and p-channel transistors using a quantum simulation. Heavy carrier mass in the armchair direction effectively blocks the tunnelling current and the transport is governed by thermionic emission over the potential barrier. On the other hand, lighter carrier mass in the zigzag direction results in a mixed tunnelling and thermionic transport mechanism. The n-channel transistor has an on-state current of $894 \mu\text{A}/\mu\text{m}$, a sub-threshold slope of $62 \text{ mV}/\text{dec}$, a $9.27 \text{ mS}/\mu\text{m}$ transconductance, a 0.129 ps delay, and a $0.046 \text{ fJ}/\mu\text{m}$ dynamic power loss. The p-channel metrics are, respectively, $852 \mu\text{A}/\mu\text{m}$, $62 \text{ mV}/\text{dec}$, $9.24 \text{ mS}/\mu\text{m}$, 0.117 ps , and $0.040 \text{ fJ}/\mu\text{m}$. Both the transistors comply with the International Technology Roadmap for Semiconductors 2026 low operating power device requirements.

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Physical Insight and Performance Metrics of Monolayer MX₂ Heterojunction Tfets

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ABSTRACT

The physics and performance of monolayer MX₂ heterojunction n TFETs are studied using a quantum simulation. The imaginary wave vector reveals that WTe₂ is the most promising source material. Results of heterojunction TFETs with WTe₂ source material and of WTe₂ homojunction TFET reveal that WTe₂–MoS₂ heterojunction TFET is the most promising candidate with a 620 $\mu\text{A}/\mu\text{m}$ drive current for a 0.3 volt gate swing. The energy gap between the valence band of source material and the conduction band of channel material, dE_{cv} , is the key parameter for high drive current. The WTe₂–MoS₂ heterojunction has the smallest dE_{cv} value that results in small band bending near the heterojunction, which creates the shortest tunnel path and therefore yields the highest drive current. The WTe₂–MoS₂ TFET has an average turn-on slope of 15.6 mV/dec, an on/off current ratio of 6.2×10^8 , a drive current of 620 $\mu\text{A}/\mu\text{m}$, a transconductance of 10.98 mS/ μm , a total capacitance of 0.829 fF/ μm , a switching delay of 0.401 ps, and a cutoff frequency of 2.1 THz. The performance metrics closely comply with the ITRS 2026 LOP and LSTP device requirements. Its I_{60} value of 11.97 $\mu\text{A}/\mu\text{m}$ is large enough to compete with MOSFETs.

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Temperature-Dependent Energy Gain of Bifacial PV Farms: A Global Perspective

M. T. Patel *, R. A. Vijayan **, R. Asadpour *, M. Varadharajaperumal **, **M. Ryyan Khan** *** and M. A. Alam*

ABSTRACT

Bifacial solar panels are perceived to be the technology of choice for next-generation solar farms for their increased energy yield at a marginally increased cost. As the bifacial farms proliferate around the world, it is important to investigate the role of temperature-dependent energy-yield and the levelized cost of energy (LCOE) of bifacial solar farms relative to monofacial farms, stand-alone bifacial modules, and various competing bifacial technologies. In this work, we integrate existing irradiance and light collection models with experimentally validated physics-based temperature-dependent efficiency models to compare the energy yield and LCOE of various bifacial technologies across the world. We find that temperature-dependent efficiency changes the energy yield and LCOE by approximately -10 to 15%. Indeed, the results differ significantly depending on the location of the farm (defines the illumination and ambient temperature), the elevation of the module (increases light collection), as well as the temperature-coefficients of various bifacial technologies. The analysis presented in this paper will allow us to realistically assess location-specific relative advantage and economic viability of the next generation bifacial solar farms.

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A Study on the Effects of Combining Different Features for the Recognition of Handwritten Bangla Characters

Halima Begum* and **Muhammed Mazharul Islam****

ABSTRACT

This paper studies and compares the effectiveness of four different features and their combinations on the recognition accuracy of handwritten Bangla characters. The longest run, chain code histogram, shadow, and Gabor filter-based features and their eleven (11) combinations were tested on a standard Bangla database of 15; 000 basic handwritten characters to compare their recognition performances. From the experiments performed, it was observed that the combination of the longest run, chain code histogram, and the shadow features (having feature vector sizes of 20, 20, and 16 respectively) produce the highest recognition accuracy of 84:01%. Furthermore, inclusion of a feature with a large vector size compared to the other features in the combination generally dominates the recognition accuracy. In our case, inclusion of the Gabor filter-based features with a vector size of 1024 in the combination produced a recognition accuracy of 69:71%, which is worse than the accuracy obtained using the other three features. The analysis of the results indicates that the combinations of different feature vectors produce better accuracy as long as the sizes of each individual feature vector is comparable with each other in the combination.

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Evolution of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2) As Coronavirus Disease 2019 (COVID-19) Pandemic: A Global Health Emergency

Thamina Acter*, Nizam Uddin, Jagotamoy Das, Afroza Akhter, Tasrina Rabia Choudhury and Sunghwan Kim

ABSTRACT

According to data compiled by researchers at Johns Hopkins University in Baltimore, Maryland, more than two and half million cases of coronavirus disease 2019 (COVID-19), caused by a newly discovered virus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), have been confirmed on April 20, 2020 (Nature, 2020b). Since the emergence of this infectious disease in Asia (Wuhan, China) late last year, it has been subsequently span to every continent of the world except Antarctica (Rodríguez-Morales et al., 2020). Along with a foothold in every country, the current disease pandemic is disrupting practically every aspect of life all over the world. As the outbreak are continuing to evolve, several research activities have been conducted for better understanding the origin, functions, treatments, and preventions of this novel coronavirus. This review will be a summa of the key features of novel coronavirus (nCoV), the virus causing disease 2019 and the present epidemic situation worldwide up to April 20, 2020. It is expected that this record will play an important role to take more preventive measures for overcoming the challenges faced during this current pandemic.

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Enhancement of Antimicrobial Properties of Shoe Lining Leather Using Chitosan in Leather Finishing

Yead Mahmud, Nizam Uddin, **Thamina Acter***, Md. Minhaz Uddin, A.M. Sarwaruddin Chowdhury, Md. Latiful Bari, Ahmad Ismail Mustafa and Sayed Md. Shamsuddin

ABSTRACT

In this study, a chitosan based coating method was developed and applied on the shoe lining leather surface for evaluating its inhibition to bacterial and fungal attacks. At first, chitosan was prepared from raw prawn shells and then the prepared chitosan solution was applied onto the leather surface. Secondly, the characterization of the prepared chitosan and chitosan treated leather was performed by solubility test, ATR-FTIR, XRD pattern, SEM and TGA. Evaluation of antimicrobial efficacy of chitosan was assessed against two gram positive, two gram negative bacteria and a reputed fungi by agar diffusion test. The results of this study demonstrated that chitosan took place in both the surface of collagen fibres and inside the collagen matrix of crust leather. The chitosan showed strong antimicrobial activities against all the tested microorganisms and the inhibition increased with increasing percentage of chitosan. Therefore, the prepared chitosan in this study can be an environment friendly biocide, which functions simultaneously against different spoilage bacteria and fungi on the finished leather surface. Thus by using the prepared chitosan in shoe lining leather, the possibility of microbial attack during shoe wearing can be minimized which is one of the important hygienic requirements of footwear.

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Feasibility Study of Beetroot Cultivation and Sale in Bangladesh

Md. Harun-Ar Rashid, **Thamina Acter***, Nizam Uddin, Md. Abdur Rahim and Md. Bellal Hossain

ABSTRACT

Aim: The study was carried to evaluate beetroot cultivation, feasibility of production and market value in the country. **Materials and Methods:** The basic characteristics of beetroot were highlighted. Then, the responses of 22 beetroot farmers and 53 beetroot sellers were analyzed. **Results:** The farmers and sellers were familiar to the beneficial effects of consuming beetroots. The farmers wanted to continue their cultivation and to get adequate technical assistance. Because the major challenges they faced during this crop cultivation was seeds crisis. Most of the farmers sold their cultivated crops to the local market. One of the major problems of selling beetroot vegetables to customers and dealing with buyers is pricing. **Conclusion:** It was concluded that this vegetable found economically feasible to the most of the sellers. It urged that beetroot production and selling should be prompted in Bangladesh and necessary steps are to be taken to increase its production.

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Application of the Flow Curvature Method in Lorenz-Haken Model

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

ABSTRACT

We consider a new approach so-called the flow curvature method based on the differential geometry to analyze the Lorenz-Haken model. According to this method, the trajectory curve or flow of any dynamical system of dimension n considers as a curve in Euclidean space of dimension n . Then the flow curvature may be computed analytically. The set of points where the flow curvature is null defines the flow curvature manifold. This manifold represents the analytical equation of the slow invariant manifold associated with the model. In this article, we apply the flow curvature method for the first time on the three-dimensional Lorenz-Haken model to compute the analytical equation of the slow invariant manifold where we use the Darboux theorem to prove the invariance property of the slow manifold.

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Slow Invariant Manifold of Brusselator Model

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ABSTRACT

In this paper, differential geometry based new developed approach called the flow curvature method is considered to analyze the Brusselator model. According to this method, the trajectory curve or flow of any dynamical system of dimension n considers as a curve in Euclidean space of dimension n . Then the flow curvature or the curvature of the trajectory curve may be computed analytically. The set of points where the flow curvature is null or empty defines the flow curvature manifold. This manifold connected with the dynamical system of any dimension n directly describes the analytical equation of the slow invariant manifold incorporated with the same dynamical system. In this article, we apply the flow curvature method for the first time on the two-dimensional Brusselator model to compute the analytical equation of the slow invariant manifold where we use the Darboux theorem to prove the invariance property of the slow manifold.

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Pharmacological Investigation of *Ceraceomyces tessulatus* (Agaricomycetes) in Mice with Nonalcoholic Steatohepatitis

Kenichi Watanabe, **Rejina Afrin***, Remya Sreedhar, Vengadeshprabhu Karuppagounder, Meilei Harima, Xavier Alexander, Ravichandiran Velayutham and Somasundaram Arumugam

ABSTRACT

Nonalcoholic steatohepatitis (NASH) is becoming the most common cause of hepatocellular carcinoma (HCC). Natural products including edible mushrooms are gaining attention for the prevention and treatment of lifestyle related disorders. *Ceraceomyces tessulatus* (strain BDM-X) possesses potent antioxidative stress activity. In this study, we hypothesize that BDM-X treatment protects the liver of mouse with NASH by reducing inflammation in a novel NASH-HCC mouse model. C57BL/6J female pups were exposed to low-dose streptozotocin (STZ) and fed a high-fat diet (HFD) 32 from the age of 4 weeks to 16 weeks. Water extract of BDM-X was given at 500 mg/kg dose daily by oral gavage started at the age of 12 weeks and continued until 16 weeks of age along with HFD feeding. We found that BDM-X improved the histopathological changes, serum aminotransferases, and blood glucose levels in NASH mice. The hepatic protein expressions of SIRT1 and IL-10 were significantly repressed in NASH mice. BDM-X treatment restored these expressions. BDM-X treatment effectively reduced the progression of NASH by suppressing the protein expression of SREBP1c, p-NF- κ B, Ep-CAM, and prothrombin in the NASH liver. In conclusion, our data suggest that BDM-X can protect the liver against inflammation and lipogenesis in NASH-HCC mice.

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Brain Adaptations of Insulin Signaling Kinases, GLUT3, P-Badser155 and Nitrotyrosine Expression in Various Hypoglycemic Models of Mice

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ABSTRACT

Aim and objective: Insulin-induced moderate or severe hypoglycemia (MH or SH) impairs cognition and SH causes neuronal death. On the contrary, alternate day fasting (ADF) protects the brain during excitotoxic stress and improves cognitive function. Unlike the scenario in the periphery, insulin and its relationship towards brain glucose uptake and metabolism are considered to be less significant. Yet, the hypoglycemia associated brain metabolism is not clearly understood. The authors broadly investigated the brain metabolism in various hypoglycemic models such as insulin-induced MH, SH, SH with glucose reperfusion, 24 h fasting and ADF in the cortex or hippocampus of C57BL6/J mice. The authors analyzed the protein expression of insulin signaling kinases (plays a key role in neuronal survival and memory), Bcl-2 associated death promoter (p-BADser155) (dephosphorylation inhibits glucokinase activity and reduces glucose or increases ketone body metabolism in the brain), neuronal-specific glucose transporter 3 (GLUT 3) and nitrotyrosine (marker of nitric oxide which is involved in neuronal glucose uptake via GLUT 3) using western blotting analysis. **Results:** Insulin-induced MH or SH differentially regulated the brain insulin signaling kinases. The expression of p-BADser155 decreased in all hypoglycemic models except the insulin-induced MH in hippocampus. The trended higher GLUT 3 and increased nitrotyrosine expression of insulin-induced SH were restored after glucose reperfusion. The trended higher or increased GLUT 3 and nitrotyrosine expression of ADF were positively correlated with serum beta-hydroxybutyrate levels. **Conclusion:** During hypoglycemia, it can be suggested that the brain might decrease glucose metabolism via glycolysis or prefer ketone body metabolism (except the insulin-induced MH in hippocampus) by modifying the p-BADser155 expression. In addition to the ketone body metabolism, the brain might adapt to uptake glucose in insulin-induced SH or ADF by modifying the GLUT 3 or nitrotyrosine expression.

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Inhibitory Activity of Extract, Fractions, and Compounds from *Zingiber montanum* Rhizomes on the Migration of Breast Cancer Cells

Mohammad Al-Amin, Nagla Mustafa Eltayeb, **Chowdhury Faiz Hossain***, Melati Khairuddean, Siti Sarah Fazalul Rahiman and Salizawati Muhamad Salhimi

ABSTRACT

Zingiber montanum rhizomes are traditionally used for the treatment of numerous human ailments. The present study was carried out to investigate the inhibitory activity of the crude extract, chromatographic fractions, and purified compounds from *Z. montanum* rhizomes on the migration of MDA-MB-231 cells. The effect of the extract on cell migration was investigated by a scratch assay, which showed significant inhibition in a concentration-dependent manner. Vacuum liquid chromatography on silica gel afforded four fractions (Frs. 1 - 4), which were tested on cell migration in the scratch assay. Frs. 1 and 2 showed the most significant inhibition of MDA-MB-231 cell migration. The effect of the most potent fraction (Fr. 2) was further confirmed in a transwell migration assay. The study of Frs. 1 and 2 by gelatin zymography showed significant inhibition of MMP-9 enzyme activity. Chromatographic separation of Frs. 1 and 2 afforded buddledone A (1:), zerumbone (2:), (2E,9E)-6-methoxy-2,9- humuradien-8-one (3:), zerumbone epoxide (4:), stigmaterol (5:), and daucosterol (6:). In a cell viability assay, compounds 1: - 4: inhibited the viability of MDA-MB-231 cells in a concentration- dependent manner. The study of buddledone A (1:) and zerumbone epoxide (4:) on cell migration revealed that 4: significantly inhibited the migration of MDA-MB-231 cells in both scratch and transwell migration assays. The results of the present study may lead to further molecular studies behind the inhibitory activity of zerumbone epoxide (4:) on cell migration and support the traditional use of *Z. montanum* rhizomes for the treatment of cancer.

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Influence of Vertical Plates on Force Coefficients of Square Plates

M.N. Haque*

ABSTRACT

The aim of this study is to investigate the influence of attaching vertical plates on force coefficients of square cylinder. Four vertical plates of equal height are attached at the middle position on four sides of square cylinder to control the flow and investigate its effect on force coefficients. The normalized height w.r.t. to the depth of the square cylinder is varied from 0.01 to 0.14. Direct Numerical Simulation (DNS) is adopted to calculate the responses of the cylinder. Second order accurate numerical schemes are utilized to discretize the flow both in space and time. Reynolds number is kept constant at 100. Aerodynamic force coefficients such as drag, lift and moment are predicted and flow field are analyzed. The calculated force coefficients are compared in between various cases. It is found that due to attachment of vertical plate the force coefficients of the square cylinder altered noticeably and showed specific trend in the result due to variation of plate height. For a specific value of a normalized plate height, the drag coefficient showed a minimum value which is also lower than the square cylinder without any attachment. Similar to the force coefficients, the strouhal number of the square cylinders also showed very high sensitivity to the height of vertical plate.

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Effectiveness of Corner Modification to Optimize Aerodynamic Responses of Square Cylinder

M.N. Haque *

ABSTRACT

This study investigates the effectiveness of a new technique to optimize aerodynamic responses of square cylinder by corner modification. The corner of the square cylinder was modified by introducing a small inclined opening which was measured in terms of corner point dislocation. Four specific opening widths (normalized with the depth of the cylinder) viz. 0.02, 0.08, 0.12 and 0.18 were considered. The normalized length of the inclined opening was 0.05 for all cases. The aerodynamic responses of these four modified square cylinders are compared with the unmodified square cylinder. Direct Numerical simulation was utilized to predict the aerodynamic responses and the flow field. Second order accuracy was maintained both in space and time. The Reynolds number was kept constant at 100. The mean and RMS values of the force coefficients are calculated and compared. The flow field is analyzed in terms of vorticity field, mean flow streamlines and after-body wake characteristics. Due to corner modification, a drag reduction of approximately 5% is achieved for square cylinder with corner opening. Along with the separated flow, the corner opening affected the wake of the cylinder as well. Square cylinder with corner opening had different wake characteristics as compared to the unmodified cylinder.

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IEEE Region 10 Symposium (TENSYMP), 2020**Time Division Multiplexed Data Analysis Technique using Auto-Morphing
Experimental Studies of PV Systems to Minimize Variability**

J. B. Jahangir, Md. Al-Mahmud, Md. S. S. Shakir, S. Rahman, A. Haque and **M. R. Khan***

ABSTRACT

As the price of electricity from photovoltaic (PV) systems approach grid parity, there is an increased interest in experimentation and research in advanced PV systems to further reduce its cost. Limited space in PV experimental facilities, and large number of configurations to be tested have led to small scale experiments. The scaled down testbeds are prone to unwanted fluctuations of different variables which can affect the outcomes of an experiment. We present a technique where a single setup is automatically remorphed into different configurations with recording of data for each configuration in quick sequence. The data of all the configurations are therefore multiplexed in the data stream. By synchronizing the setup re-configuration with data acquisition, we can later de-multiplex the data to their corresponding configurations. This method can minimize variability such as effects of spurious light collection, panel to panel performance inconsistencies, day to day insolation changes, etc. to design more controlled experiments with accurate analysis.

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When and Where to Track: A Worldwide Comparison of Single-axis Tracking vs. Fixed Tilt Bifacial Farms

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Muhammad A. Alam* and **M. Ryyan Khan*****

ABSTRACT

The quest to increase the energy yield of solar PV farms has led to extensive research on bifacial modules and tracking systems. Previous studies have shown ~12% increase in power for single-axis tracking of standalone bifacial PV modules, but the corresponding gain for bifacial solar farms remains unknown. In this paper, we demonstrate the modeling and physics of single-axis tracking bifacial PV farms that include the essential aspect of mutual shading between the rows of PV panels. Our results show that single-axis tracking bifacial farms outperform fixed mono/bifacial for locations and times with higher direct light fraction. The worldwide maps show a range of yearly power gain from 10-20% for latitudes > 40°. Overall, a judicious deployment of single-axis tracking bifacial solar PV farms would offer immense potential in energy yield maximization and eventual LCOE minimization.

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Analytical Model of Band-to-Band Tunneling in ATLAS-TFET

Ahasan Ahamed, **Nusrat Jahan Ananna*** and Quazi D.M. Khosru

ABSTRACT

The Atomically Thin and Layered Semiconducting-channel Tunnel Field Effect Transistor (ATLAS-TFET) is a recent development from the conventional TFET that shows a sharp transition from off to on and has an exceedingly low subthreshold swing (SS) with minimum recorded value of 3.9 millivolts per decade. In this paper, a semiclassical analytical model of the tunneling current of this device is derived. The electric field and charge concentration is calculated by solving Poisson's equation. The generation current is then obtained using Kane's generation model for band-to-band tunneling (BTBT) along with maximum electric field approximation (MEFA). Quantum mechanical factors are incorporated in our model using necessary correction factors. The values obtained from this model are plotted along with the experimental data and the results are found to be very similar.

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Identification and Differentiation of *Acinetobacter Calcoaceticus* –*Acinetobacter Baumannii* Complex: Common Nosocomial Infections Among Children

Shuborno Islam, **Mohiuddin Kabir***, Md. Hasanuzzaman, Md. Saiful Islam Sajib and Samir K. Saha

ABSTRACT

Acinetobacter baumannii is one of the most common pathogens causing nosocomial infections worldwide involving a range of infections such as surgical site infections to pneumonia and others. Due to multidrug resistance worldwide, their identification is crucial for effective treatment. *Acinetobacter* is a complex genus containing multiple species, most of which have similar morphological characteristics and biochemical properties leading to a complicated analysis procedure in a routine laboratory facility. This study was based on clinical isolates where *Acinetobacter baumannii* and other closely related pathogenic species of *Acinetobacter*, commonly called *Acinetobacter calcoaceticus*-*Acinetobacter baumannii* (ACB) Complex were observed. Simultaneously, the Antibiotic Susceptibility Test (AST) results of these isolates from the routine laboratories were analyzed to understand their resistance pattern. The results indicated that PCR methods were able to confirm *Acinetobacter baumannii* more accurately compared to conventional biochemical methods, and that both the primers can be used simultaneously for accurate identification. We also found the presence of other *Acinetobacter species* from the ACB complex which were not possible to identify by conventional biochemical methods. Conversely, *Burkholderia species* was found among these isolates which marked that they showed a conflicting biochemical results with *Acinetobacter species* and might lead to misidentification. From the AST results, we observed high resistance pattern in *Acinetobacter baumannii* isolates in almost all of the available antibiotics.

Keywords: Antibiotic Susceptibility Test (AST), ITS Region, ACB Complex, Bla_{oxa}-51-LIKE

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Future Perspective of Biodegradable Plastic

Md Raihanul Kabir, Muzahidul Islam and **Mohiuddin Kabir***

ABSTRACT

Petrochemical based plastics and their derivatives that are non-biodegradable cannot be ignored at all because they have been using in every aspects of our daily life such as applications in packaging, textile, agriculture, electronics, medical, building construction, injection and moulding. Consumption of these materials are increasing day-by-day that are ultimately causing global warming, pollution in soil and water, and increasing huge wastemanagement cost as well as threatening the biodiversity and life on earth. Since the earth is the only planet that contains life among the trillions of planets, this world needs to be protected by reducing the pollution. Therefore, biodegradable plastics should be used as an alternative to non-biodegradable plastics. Bioplastics can be derived from different sources such as starch, cellulose, chitin, lactic acid and polyhydroxyalkanoates (PHAs) produced from a variety of plants and microorganisms that are decomposed naturally within short period of time, and are capable to reduce the greenhouse gas emission up to 70%. Many companies are currently producing different types of bioplastics. But, the cost of these materials is very high and not economically comparable to the petrochemical based plastics. Therefore, our objective is to analyze the bioplastic production strategies, downstream processing and the manufacturing costs from the above-mentioned sources. It has been found that the production cost of bioplastic's raw materials ranges from US \$3/kg to \$13/kg depending on the sources. In contrast, the price of raw materials for petrochemical based plastics varies between US \$0.5/kg and \$1.5/kg depending on the oil price per barrel, which is cheaper than that of bioplastics. In Bangladesh, Dr. Mubarak Ahmed Khan (Scientific Advisor, BJMC) has recently introduced biodegradable "Sonali Bag" from jute, and the size of such bag is 13 inch in height and 12 inch in width that costs 10 taka per piece. This price for one bag is comparatively higher in our socio-economical condition because many polythene bags with such size can be purchased using 10 taka.

Key words: Biodegradable Plastics, Waste Management, Greenhouse Gas, Global Warming

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Hepatoprotective Effect of Basidiomycetes-X Against Non-Alcoholic Steatohepatitis in Experimental NASH-HCC Mice Model

Mst. Rejina Afrin*, Somasundaram Arumugam, Remya Sreedhar, Vengadeshprabhu Karuppagounder, Meilei Harima, **Chowdhury Faiz Hossain**** and Kenichi Watanabe

ABSTRACT

Non-alcoholic steatohepatitis (NASH) is becoming the most common cause of hepatocellular carcinoma (HCC) in developed countries. Natural products including edible mushrooms are gaining attention for the prevention and treatment of life-style related disorders. Basidiomycetes (BDM)-X is a novel edible mushroom, possesses potent anti-oxidative stress activity.

In this study, we hypothesize that BDM-X treatment protects the liver of mouse with NASH by reducing inflammation. For this we have used a novel NASH-HCC mouse model in this experiment. To prepare this experimental model, C57BL/6J female pups were exposed to low-dose streptozotocin (STZ) and fed a high-fat diet (HFD) 32 from the age of 4 weeks to 16 weeks. Water extract of BDM-X was given at a dose of 500 mg/kg daily by oral gavage started at the age of 12 weeks and continued until 16 weeks of age along with HFD32 feeding. At the age of 16 weeks, serum and liver tissues were separated for biochemical, histological, and molecular analysis. We found that BDM-X improved the histopathological changes, serum aminotransferases and blood glucose levels in NASH mice. The hepatic protein expressions of SIRT1, HO-1, and IL-10 were significantly repressed in NASH mice. BDM-X treatment restored these expressions along with increasing the hepatic protein expression of PPAR α in the NASH liver. BDM-X treatment effectively reduced the progression of NASH by suppressing the protein expression of p-NF- κ B, glypican-3, VEGF-B, Ep-CAM, and prothrombin in the NASH liver. In conclusion, our data suggest that BDM-X can protect the liver against inflammation, and lipogenesis in NASH-HCC mice.

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Isolation and Purification of Arjunolic Acid from Terminalia Arjuna and Evaluation of Its Toxicological Effects in Sprague Dawley Rats

Mst. Rejina Afrin*, Aditya Arya, Khurram Aamir, Hidayat Ullah Khan, Imam Shaik, Naguib Salleh, Nelli Giribabu, **Farzana Khan Sristy**** and **Chowdhury Faiz Hossain*****

ABSTRACT

Many important pharmacological effects of arjunolic acid (AA) have been reported on various in vitro and in vivo studies. Despite of its potential medicinal properties, scientific data related to its safety profile and toxicological parameters is still insufficient. Although AA is commercially available, but highly expensive (in Sigma EURO 227/mg). This study aimed to isolate AA in large scale, and to evaluate its oral toxicity in animal model. The dried bark of *T. arjuna* (3.0 kg) were extracted by Soxhlet's apparatus with different solvents. Triterpenoid acid rich EtOAc extract (53.4 g) was separated by different chromatographic techniques to get crude AA (2.0 g), which upon crystallization yielded pure AA (1.2 g). Purified AA was identified by analysis of NMR spectra. AA was administered orally (dose: 300 mg/kg/day and 2.0 g/kg/day of body weight) for two weeks in female Sprague Dawley rats. All the rats were closely monitored during the experimental period to identify any physical or behavioral changes. At the end of experiment, the blood sample and tissues of different organs were collected from all groups to conduct biochemical analysis and organ effects. Different staining techniques (Hematoxylin and eosin, Masson trichrome, periodic acid sciff and oil O red) were used for the histopathological evaluation. No morbidity and mortality were noticed among the AA treated groups. Food and water consumption patterns, hematological and biochemical parameters, macroscopic and microscopic tissues appearances were unchanged between AA treated and control groups. Our findings support that AA has a good safety margin for therapeutic use.

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Curcumin Attenuates Hepatic and Renal Damage Against Non-Alcoholic Steatohepatitis in NASH-HCC Mice Model

Mst. Rejina Afrin*, Somasundaram Arumugam, Hiroshi Suzuki and Kenichi Watanabe

ABSTRACT

Background: Non-alcoholic fatty liver disease (NAFLD) is emerging as a growing public health problem worldwide. It is reported that progressive stage of NAFLD particularly non-alcoholic steatohepatitis (NASH) plays an important role in the advancement of chronic kidney disease (CKD). Curcumin, a phenolic compound, has a wide spectrum of therapeutic effects such as antitumor, anti-inflammatory, anti-cancer and so on. Objective: In this study, we aimed to examine the impact of curcumin on NASH instigated chronic kidney damage (CKD) and liver damage with possible mechanisms. Methodology: To prepare this NASH model, neonatal C57BL/6J male mice were exposed to low-dose streptozotocin (STZ) and were fed high-fat diet (HFD) at the age of 4 weeks and continued up to 14 weeks, curcumin was given at 100 mg/kg/day dose by orally after 10 weeks of STZ injection and continued for 4 weeks along with HFD feeding. The hepatotoxicity and nephrotoxicity were evaluated by serum biochemical assay and histopathological test, using hematoxylin and eosin, and masson's trichrome staining. The protein expressions of oxidative stress marker, inflammatory marker, and apoptosis both in hepatic and renal tissues were evaluated by Western blotting. Results: NASH incited mice were demonstrated hepatotoxicity and nephrotoxicity as proved by declining hepatic and renal capacity due to significantly increased triglycerides, total cholesterol aminotransferases, blood urea nitrogen and creatinine in serum, blood glucose levels and histopathological variations from the norm. These progressions were significantly switched by curcumin treatment, which brought about huge change both in hepatic and renal capacity. Furthermore, curcumin markedly decreased NAD(P)H oxidase subunit p67phox ($p < 0.05$ vs. NASH) and CYP2E1 protein expression ($p < 0.001$ vs. NASH) both in kidney and liver tissues as well as reduced pro-inflammatory cytokine expression (IL-1 β , IFN γ) ($p < 0.05$ vs. NASH). Protein expression of ERK1/2 and CHOP ($p < 0.01$ vs. Normal) were increased both in liver and renal tissues of NASH induced mice. Curcumin treatment attenuated these increased expressions in a significant level. In addition, curcumin treatment decreased the hepatic lipogenesis and progression of NASH to HCC. Conclusions: Taken together, our results suggest that curcumin preserves both hepatic and renal function, probably by attenuating steatosis, inflammation, and oxidative stress.

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Isolation of FKS1 from the Barks of Terminalia Arjuna and Evaluation of Anti-Diabetic Activity

Farzana Khan Sristy*, **Mst. Rejina Afrin****, **Shamima Sultana***, **Shahziad Khondokar***, **Aditya Arya**, and **Chowdhury Faiz Hossain*****

ABSTRACT

Background: Terminalia arjuna, a well-esteemed medicinal plant widely available in Bangladesh, is one of the major sources of arjunolic acid (AA), a natural oleanane-type triterpenoid acid. Although AA is reported as one of the major active compounds of T. arjuna for its health benefits due to hepatoprotective, cardioprotective and antidiabetic effects. But it is not still explored the pharmacological effects of any other derivatives of AA. **Objective:** Here we aimed to isolate an AA derivative, FKS1 from the dried bark of Terminalia Arjuna and investigate its anti-diabetic effects in type 1 diabetes mellitus model. **Methodology:** The dried powder of T. arjuna were extracted by Soxhlet apparatus with EtOAc to get triterpene rich crude extract. Then the crude extract was separated by vacuum liquid chromatography to get more polar triterpenoid fraction of AA. From this fraction, FKS1 (740 mg) was purified by open column chromatography, gel filtration, preparative HPLC, successively. All isolation processes were monitored by pre-coated TLC. Structure of FKS1 was investigated by UV, IR and ¹H and ¹³C-NMR spectroscopic methods. Diabetes was induced by a single intraperitoneal injection of streptozotocin (150 mg/kg) in adult Swiss albino male mice, and FKS1 was given orally at dose 3 mg/kg of body weight (BW) daily for two weeks. At the end of the experiment, organs and serum were collected for further analysis. **Results:** It was found that the blood glucose level ($p < 0.001$), organs index were markedly elevated, and BW was significantly reduced ($p < 0.01$) in the diabetic mice. FKS1 treatment tended to alter all of these changes in diabetic mice. The serum glucose levels and the total cholesterol ($p < 0.001$, $p < 0.01$ vs normal) were also significantly increased in diabetic mice. FKS1 significantly reduced the serum glucose levels ($p < 0.05$ vs. DM) and tended to reduce the cholesterol levels. **Conclusion:** In conclusion, our data suggest that FKS1 possesses potent anti-diabetic and lipid lowering effects.

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Phytochemical Screening and Evaluation of Analgesic Activity of Cyclo-Hexane Fraction of Terminalia Bellirica in Acetic Acid Induced Swiss Albino Mice

Rabeya Akter Laboni*, Chowdhury Faiz Hossain and Mst. Rejina Afrin*****

ABSTRACT

Terminalia bellirica Roxb. (combretaceae) has been used as folk medicine to treat various disorders for decades. Severe scientific works have been explored in different fractions of *Terminalia bellirica* roxb. However, the pharmacological effects of its non-polar fraction cyclohexane still unclear. The aim of this study was to investigate the preliminary phytochemicals and analgesic potential of the cyclohexane fraction of *Terminalia bellirica* roxb. (combretaceae) fruits on Swiss albino male mice. To conduct this experiment, the dried fruits of *T. bellirica* 500g were extracted with methanol at room temperature with occasional shaking and stirring. The crude methanol extract was sequentially fractionated with cyclo-hexane, chloroform, ethyl acetate and butanol to yield their corresponding extracts. The cyclohexane fraction was assessed for the phytochemical screening. Preliminary phytochemical screening revealed the presence of tannins, flavonoids, saponins, carbohydrates, alkaloids, resins, sterols, and coumarins in cyclohexane fraction of *T. bellirica* roxb. Then to assess the analgesic activity, Swiss albino male mice were administered with cyclohexane fraction of *T. bellirica* orally at a dose of 100mg/kg and 1000mg/kg of body weight to compare with a reference standard drug indomethacin (10mg/kg). After 40 minutes of doses administration the abdomen contraction was induced by intraperitoneal injection of 0.7% acetic acid in the mice and then counted the writhing for 15 minutes. The data revealed that at higher doses (1000mg/Kg), cyclo-hexane significantly inhibit the pain sensation (44%) in acetic acid induced mice when compared to the without treated group ($p < 0.01$) but at low dose no significant improvement was noticed. This shows that the fraction contains phytochemical screening with analgesic activities. The active compounds responsible for pain inhibition in cyclo-hexane fraction of *T. bellirica* fruits further need to be investigated with its molecular mechanisms.

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Comparative Evaluation of Analgesic and Anti-Diabetic Activities Among Different Extracts and Fractions of *Gynura Procumbens* on Experimental Mice

Sabrina Mahbub*, Mst. Rejina Afrin, Amin Sifat*, Shariful Islam*, Al Mahadi Hossain Rizvi* and Chowdhury Faiz Hossain*****

ABSTRACT

Gynura procumbens is used as folk medicine to treat different diseases for its medicinal values in Southeast Asia. The aim of this study was to evaluate the analgesic and antidiabetic activities of different extracts and their fractions-subfraction of *G. procumbens* leaves in-vivo experimental mice model to isolate active compounds. For this study the dried powder of *G. procumbens* leaves were extracted by Soxhlets apparatus with different solvents of increasing polarity (petroleum ether (PE), CHCl₃, EtOAc and MeOH, successively). PE and CHCl₃ extracts were fractionated by various chromatographic methods. Content of secondary metabolites in different fractions were monitored by analytical thin layer chromatographic method. A triterpenoid metabolite of *G. procumbens* was purified by crystallization. The structure of the purified compound was investigated by various spectroscopic methods. Diabetes was induced by a single intraperitoneal injection of streptozotocin (150 mg/Kg) in Swiss albino male mice and were administered orally with PE, CHCl₃, EtOAc, and MeOH extracts at a dose of 300 mg/kg of body weight (BW) for two weeks. To assess the analgesic activity, acetic acid induced abdominal writhing test was conducted in Swiss albino male mice. Prior to the pain induction mice were orally administered with PE, CHCl₃, EtOAc extracts and chromatographic fractions of PE at doses of 1g/kg and 3g/kg of BW, and indomethacin (10 mg/kg of BW) as a reference drug once only. It was observed that all the treatment significantly reduced the elevated fasting blood glucose level in diabetic mice in compare to the negative control group. Body weight and organ index were improved by all those treatments. It was found that all the fractions (>65%) and sub-fractions significantly inhibited the pain sensation (p<0.001) in compare to the negative control group (0%) and reference drug (85%). Structure elucidation and evaluation of bioactivity of the pure triterpenoid compound isolated by bioassay guided separation are ongoing.

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Bangladesh's Progress Toward Attainment of the SDGs: An Analysis of SDG Tracker

Tamanna Hossain*, **Abdur Rahaman Sumon**** and **Rumana Rahman*****

ABSTRACT

The major purposes of this chapter are to explore the progress of Sustainable Development Goals (SDGs) made by Bangladesh based on the data available in the SDG Tracker and to suggest some measures for the better implementation of the SDGs. The study follows documentary and descriptive research methods. This research is exploratory, which employs a content analysis of the SDG Tracker of Bangladesh. Besides a systematic review of literature, this study analyses the available data against the indicators of each of the SDGs. Data were collected from the SDG Portal, one of the components of the Tracker of Bangladesh and the UN's Sustainable Development Dashboard. The progress of each indicator has been determined and remarked as "improvement," "deterioration" or "stable" in status based on the tracker data. The performances by the indicator data are later used to determine the extent of the progress of each goal as represented in tabular forms. The goals are then analyzed as "goals on track" and "goals facing challenges". Indicators, for which data are available, such as growth rates of household expenditure or income per capita among the total population, suggest that they attained notable success during the SDG implementation period and are on track. The study also reflected on 39 priority indicators from where data is available only for 18 indicators. National Priority Indicator (NPI) 3, NPI 33, and NPI 38 show that global index score is increasing at less than 50% of the required rate, which means they need to be looked with more attention. NPI 5, NPI 6, NPI 7, and NPI 19 are seen to be on track to achieve the goal by 2030. The results have explored some significant challenges by determining which goals require more supervision that might help to make effective decisions for better implementation of the SDGs in Bangladesh within the timeframe. This study is based on the data available in the SDG Tracker of Bangladesh which might not be all comprehensive. The study is an original work by the authors, which is based on an objective, constructive, and philosophical approach.

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Transformational Leadership Behavior Styles of Professionals in Private University Libraries of Bangladesh

Rumana Rahman* and Dilara Begum*

ABSTRACT

Purpose: The purpose of this study was to measure the transformational leadership behavior style among the Library and Information Science (LIS) professionals in the Private University Libraries of Bangladesh. The study explored to identify the extent to which transformational leadership behavior style was practiced and recommendations was proposed to improve transformational leadership behavior styles of professionals. **Design/Methodology/Approach:** The design of the study was seeking transformational leadership behavior style among the LIS Professionals in the Private University Libraries of Bangladesh. Transformational leadership is a process in which leaders and followers help each other to advance to a higher level of morale and motivation (Burns, 1978). Four private university libraries were selected for the purpose of the study and all library professionals were included for collecting data. This study was quantitative in nature and Multifactor Leadership Questionnaire (MLQ) technique developed by Bass and Avolio was used for the study. **Findings:** The findings of the study revealed that most of the LIS professionals (80%) of private university libraries adopted transformational leadership behavior style with highly satisfactory rating. From the Head of the Librarian to Junior Assistant Library Officer accepted this leadership behavior style as appropriate for dynamic works. Results also showed that transformational leadership behavior style had a positive influence on the performance of academic librarians. But the study suggested that leader should be more innovative and should have the ability to develop challenging vision with his/her employees. Some training programs should also be arranged for the leaders to make transformational leadership behavior style much more effective. **Research limitations:** The study was limited to only private university library professionals. **Implications:** Future research should be occurred in both private and public university libraries which operate a lengthy period of time. A qualitative approach can also be undertaken to from recommendations. **Practical implications:** The results of this study can be used to know the transformational leadership behavior style of the LIS Professionals in the Private University Libraries of Bangladesh. The study can also be used to improve the individual's creativity whereas transformational leadership behavior style is used. Our main goal is to further investigate the mechanisms fostered by transformational leadership that promote follower performance, as well as the specific effects of these influence processes on different performance criteria. **Social implications:** Leaders who adopts transformational leadership behavior work as change agents that elicit and transform followers' beliefs, attitudes and motivations (Bass, 1985). The study can be used by private university library professionals to promote their performance. **Originality:** The results of the study obtained from the LIS professionals are original. **Value:** This is the first attempt in Bangladesh to measure the Transformational leadership behavior style among the Library and Information Science (LIS) Professionals in the Private University Libraries of Bangladesh and the study is useful to understand the transformational leadership behavior style in university library.

Keywords: Transformational Leadership Behavior Style, Library and Information Science Professionals (LIS), Private University Library, Bangladesh

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Knowledge Management in Libraries and Information Centers: A Model-based Analysis

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and A. K. M. Eamin Ali Akanda****

ABSTRACT

The role of libraries and information centers in knowledge management (KM) is now widely accepted as substantial and crucial. However, there have been some disagreements regarding the exact nature of the involvement of library professionals in KM. This chapter offers a model that shows what role the library information centers (LICs) can play in developing and sustaining KM. This study relies on a review of relevant literature combined with the authors' teaching experiences and practical involvement in developing a KM system. The research draws upon the results of more than 40 research papers as well as interviews with library professionals and KM practitioners at 10 institutions. The main findings of this chapter is a KM model that is multidisciplinary and accounts for the changing nature of KM practices in libraries. The key components of the model are, namely, the importance of creating a knowledge culture, providing necessary assistance in the promotion of communities of practice (CoP), and undertaking auditing and assessment of KM systems by library professionals as knowledge experts. The secondary findings include the provision of several recommendations for strengthening KM practices in LICs. The research would have yielded more comprehensive results had it incorporated a questionnaire-based survey of KM practitioners and library users. However, in-depth interviews of library professionals and KM experts provided insights for the development of the model. A large number of LIC professionals in Bangladesh and elsewhere are uncertain about their own as well as their LIC's role in KM. The model proposed in this chapter will help them design and manage a more reliable KM system in their libraries. The uniqueness of the chapter lies in its holistic approach toward KM practices in LIC that have resulted in the development of a model to help realize the LICs full potential for KM.

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Information Literacy and Digital Literacy for Public Sector Employees of Bangladesh: A Competence-based Integrated Framework for Providing Quality Services

Md. Hasinul Elahi* and Dilara Begum**

ABSTRACT

Information Literacy (IL) and Digital Literacy (DL) concepts are critical for survival in this modern society, which is popularly known as an information society. There are some skills and competencies involved with these concepts which are inevitable for every individual to make them competent in achieving their respective goals in the workplace. Especially, in the public sector, the importance of these skills and competencies are crucial for providing quality services. The main objectives of the present study are to identify the set of IL and DL skills and competencies for public-sector employees and to propose a framework for providing quality services. This study is basically an exploratory research. This is founded on an extensive review of the existing literature and the insights and viewpoints of the authors. A widespread and comprehensive search of the scholarly literature has been done for identifying various skills and competencies of IL and DL for public sector employees. A qualitative content analysis of existing relevant literature was made to address each of the above objectives. Based on key findings of the reviewed literature IL and DL skills and competencies have been retrieved for public sector employees and a proposed framework has been prepared for enhancing quality services in public services. This study is the first attempt in Bangladesh to identify IL and DL skills and competencies for public sector employees and proposes an IL-DL integrated framework for providing quality services.

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Literacy and Awareness of Sustainable Development Goals among Undergraduate Students: A Study of a Private University in Bangladesh

Md. Hasinul Elahi*

ABSTRACT

The main aim of the research is to find out the literacy and awareness of Sustainable Development Goals (SDGs) among the undergraduate students of East West University (EWU), a leading private university in Bangladesh. It also aims to identify the role of the young generation, especially students in achieving SDGs. The study adopted a combination of both qualitative and quantitative approaches to research. The study conducted an online survey of undergraduate students of East West University (EWU). Yamane's method of calculating the sample size with 5 percent of the margin of error was adopted for sampling. The structured questionnaires were sent to 418 students and received 325 of them filled-in with a response rate of 77.8 percent. Data were collected through an online questionnaire prepared by using Google form. The quantitative data were analyzed using statistical methods, while the qualitative data were analyzed thematically. The study shows a satisfactory level of media and information literate students at EWU (68% medium, high 3%, and expert 2%). The study indicates that most of the undergraduate students at EWU (203, 62%) are familiar with the concept of SDGs. Positive outcomes of the SDGs have been found from the study. The students also agreed with the statements regarding their role in achieving SDGs particularly in saving electricity (98.4%), raising voice against all forms of violence against girl child (96.4%), saving the environment by not harming (95.9%). Based on the findings, several recommendations have been put forward for increasing the level of literacy and awareness of the students and involve them in achieving SDGs. The present study is limited within the perception and awareness of undergraduate students of EWU only. Based on the level of awareness and literacy regarding SDGs, university-wise promotional campaign on SDGs can be undertaken for undergraduate students. It will make them more literate on SDGs and will create a pathway in achieving SDGs as well. This is the first initiative in Bangladesh for assessing the literacy and awareness of undergraduate students in SDGs.

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Implementation of Post method Pedagogy as an Alternative to Communicative Language Teaching at the Tertiary Level Education

Naushin Nazifa Islam*

ABSTRACT

Along with the subsequent development in the field of English Language Teaching, the idea of methods has been criticized for not being sensitive to the contextual factors and also for being imperialistic in nature. The linguistic and cultural dimensions of archetypal methods establish the culture and language of the native speakers as the only erudite variety by promoting monoculturalism and monolingualism. Furthermore, even in Bangladesh, it can be seen that CLT has been applied as a method to teach English as a foreign/second language since the mid-nineties, but it has not brought any significant changes. Therefore, to overcome the obstacles and limitations experienced by the application of the prototypical methods, the notion of postmethod pedagogy has been introduced which focuses on the significance of contextualized materials to bring authenticity in English language classrooms, which in turn ensures learners' motivation and successful intake of the lesson. At the same time, it also emphasizes the importance of teacher and learner autonomy. Hence, this research paper explores the scopes of the implementation of postmethod pedagogy and its effectiveness at the tertiary level English language classrooms in Bangladesh.

Keywords: Communicative Language Teaching (CLT), postmethod pedagogy, English Language Teaching (ELT), tertiary level, Bangladesh

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Looking Backward to a Distant Land: South Asian Diaspora and Function of Nostalgia in ‘Silver Pavements, Golden Roofs,’ ‘Mrs. Sen’s’ and *The Inheritance of Loss*

Farzana Akhter*

ABSTRACT

A tendency of the protagonists of South Asian diaspora literatures is to look backward to their left behind land in nostalgic reminiscence. This nostalgic reminiscence, however, should not be thought of as a debilitating form of escapism; instead, the diasporic protagonists’ nostalgia offers valuable insights into their present condition of disenfranchisement. In this paper, analyzing the diasporic experiences of the protagonists of three literary works of South Asian diaspora—Chitra Banerjee Divakaruni’s “Silver Pavements, Golden Roofs,” Jhumpa Lahiri’s “Mrs. Sen’s” and Kiran Desai’s *The Inheritance of Loss*, I contend that exclusion from first-class citizenship rights, marginalization, and the inability to exercise rights and power result in a sense of alienation in the protagonists which consequently lead them to be nostalgic. Simultaneously, I challenge the general tendency of seeing nostalgia as a mere uncritical yearning for the lost home, and using Iris Marion Young’s institutional racism theory and the theories of Stuart Tannock and Fred Davis on nostalgia, I advocate to see nostalgia from a more critical angle — where nostalgia not only functions as active critique but is also instrumental in unveiling the protagonists’ desire for equality and empowerment

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Negative Emotions in Fieldwork: A Narrative Inquiry of Three EFL Researchers' Lived Experiences

Adilur Rahaman* and Shuvo Saha**

ABSTRACT

Through narrative inquiry this research depicts and interprets the negative emotions that three English as Foreign Language (EFL) researchers experienced in different research sites during their fieldwork. Narrative inquiry informs the design of this investigation as the approach is particularly useful for understanding lived experiences. The study draws on autobiographical as well as narrative data to report the negative emotions that evolve during English language education fieldwork, an aspect absent in the existing literature. Findings suggest that the researchers experienced a wide range of negative emotions namely ethical dilemma, anger, anxiety, guilt, and shame. These results carry implications for language education research methodology, teaching, and fieldwork related ethical requirements of Institutional Review Board (IRB), and language education researchers' necessary psychological support.

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Online Information Literacy Training for Users During Covid-19 Pandemic: A Case Study of East West University Library, Dhaka, Bangladesh

Dilara Begum*, Md. Roknuzzaman** and **Md. Hasinul Elahi*****

ABSTRACT

The study aims at exploring the present status of online Information Literacy (IL) training at East West University Library (EWUL), Dhaka, Bangladesh and providing some recommendations for the successful implementation and sustainability of the program. It adopted a case study method and conducted interviews of fifteen (15) library staff of EWUL using a pre-structured interview protocol. The findings reveal that a total seventy-nine (79) users participated in the online IL training program organized by EWUL during COVID-19 pandemic. The number of participants as well as the sessions conducted during COVID-19 were less than traditional mode of IL training. The languages of both the training were English and Bangla, however, some minor changes in the format of online training were identified. The structure of the online IL training program is based on ten modules with distinctive features. A number of problems including online infrastructure issues, lack of awareness, short duration of training, non-engaging users, lack of policy, absence of follow-up after training, etc. were faced by the library staff of EWUL while conducting online IL training. The implications of this study are discussed by providing a set of practical recommendations which may encourage other academic libraries adopting online IL training programs.

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Employability Skills of New Generation LIS Professionals in Bangladesh

Mashiat Tabassum*, Md. Roknuzzaman** and **Dilara Begum*****

ABSTRACT

The roles and challenges of library practitioners are changing at a fast pace as a result of information explosion and technological advancement. The main objectives of this paper are to explore the current state of employability skills of LIS professionals as demanded by the employers, and to suggest some measures for better employment opportunities of LIS professionals in Bangladesh. The study conducted a questionnaire-based survey of 102 LIS professionals working in 10 university libraries of Bangladesh selected purposely. Follow-up interviews of 10 employers from the sample libraries were also carried out to get insights and in-depth data. The analysis follows a mixed-methods approach of research. The findings of the study reveal that LIS professionals need to possess a range of skills, such as core disciplinary knowledge, IT-based skills, managerial skills, customer service-oriented skills, generic skills and personal attributes. The existing LIS curricula address all of such skills more or less, however, the curricula lack in practical skills of ICT and digital librarianship along with business and management skills, research skills, presentation skills, etc. Finally, the study suggests strengthening national skill development policy, ensuring uniformity in service structure, renovating curricula compatible with the job market, and expanding the LIS job market, etc.

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Awareness and Use of Open Access Resources in Higher Education and Scholarly Research: Faculties versus Students Perspectives

Abdullah-Al-Mahmud*, A. K. M. Eamin Ali Akanda**, Md. Nazmul Hasan***, Md. Armanul Haque**** and **Dilara Begum*******

ABSTRACT

Purpose- The study aims to identify, and to compare the awareness and attitude of faculties and students towards Open Access Resources. Design/methodology/approach- The study employed a mixed method research approach. A survey has been conducted among purposively selected students (52) and faculties (17) through distributing a structured questionnaire (1-5 point likert scale, and open ended).SPSS v.20 and coding method have been used for analyzing quantitative and qualitative data respectively. Findings-Both faculties and students had positive perceptions towards OARs though faculties were more knowledgeable than students in terms of understanding on major OA concepts. Digital format and free availability were considered as motivational factors for using OARs. Both respondents indicated plagiarism and copyright violation as important vulnerabilities in using OARs. Originality/value-This paper highlights the awareness level of faculties and students towards open access resources in higher education in scholarly research. Apart from purposes, sources, preferable model, and state of publication in open access mode, the study focuses on motivational factor, vulnerabilities, and integration of open access resources in higher education and scholarly research from faculties and students perspectives which demonstrate its originality. Implication- It would generate awareness among the academics, library professionals as well as OA publishers to promote OARs for wider use.

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Amnesties and Developments of International Law: Re-Evaluating the Validity of Amnesties Purportedly Granted by Bangladesh to the Alleged Pakistani War Criminals

Md. Pizar Hossain* and Esrat Jahan Siddiki

ABSTRACT

After the 1971 Liberation War of Bangladesh, a total 195 Pakistani war criminals were specifically alleged to have committed genocide, crimes against humanity, and war crimes against the civilian Bangladeshi people. However, they are yet to be prosecuted and therefore, whenever the demand of ending this impunity arises, the amnesties granted to them by the Bangladesh government appears as the biggest challenge. In contrast, there have been debates over granting amnesties to the individuals who are charged with committing such crimes. Hence, the authors endeavour to re-evaluate the validity of the concerned amnesties considering the developments of international law.

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Analyzing Child Rape in Bangladesh: A Socio-Legal Perspective

Monira Nazmi Jahan*

ABSTRACT

Bangladesh is experiencing an epidemic of child rape. Discrimination based on patriarchal philosophies, inadequate rape laws, inadequate policies to address child rape, a conservative criminal justice system, and a conventional judicial environment has culminated in injustice for victims. Laws exist that require severe punishments; however, child rape has not been satisfactorily prevented. Societal norms, stigma, political pressure, money, power, and the critical process of the justice system make it extraordinarily difficult for victims to receive justice. This article describes the reasons why men rape children, including offenders' psychological conditions and the advantages that men have over the weaker in the criminal justice system, enjoying impunity. While attempting to understand the reasons broadly, statistical data show that the reporting of such crimes has been increasing, but this does not genuinely represent the actual number of crimes committed. The article focuses on social phenomena associated with child rape culture and identifies reasons why crimes are not reported. An in-depth discussion of inappropriate laws for child rape and of the loopholes in these laws demonstrates the hardship that victims face in their fight for justice. Finally, social and legal recommendations for the prevention of child rape are highlighted.

Keywords: Impunity, Pedophilia, Psychological Treatment, Punishment, Rape Culture

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Medical Malpractice in Bangladesh: Behind the Mist of the Corona Pandemic

Monira Nazmi Jahan*

ABSTRACT

Fraud in public health care often involves misleading claims about medical conditions by health care providers. This can include inaccurate reporting of a patient's disease and treatment and often means hiding medical neglect and abuse. Such false reporting as a part of government-funded health care fraud is widespread and growing. This reflects the complexity of the health care system, the lack of accountability and consistency in the payment process, and the massive amount of money involved. During the COVID-19 pandemic, the most unethical and immoral activity is the fraud committed by medical practitioners and health care providers. Greed leads such health care providers to play with people's lives by selling them bogus COVID-19 test certificates, masks that offer no protection, and other pseudo-treatments. Medical malpractice is not a new phenomenon in Bangladesh; however, lawsuits are not regularly filed against the wrongdoers. That is one reason why they continue to be dishonest, even during this fragile state of the world. This article proposes to identify the best legal method to prosecute these unethical offenders.

Keywords: Medical Fraud, Fake COVID-19 Certificate, Organized Crime, Money Laundering, Bangladesh

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Parenting Stress and Family Resilience Affect the Association of Adverse Childhood Experiences with Children's Mental Health and Attention-Deficit/Hyperactivity Disorder

Jalal Uddin* Najwa Alharbi**, Helal Uddin***, Md Belal Hossain****, Serra S. Hatipoglu*****, D. Leann Long***** and April P. Carson*****

ABSTRACT

Introduction: Exposure to adverse childhood experience (ACE) has harmful consequences for children's health and well-being. However, it is less clear how different social processes may amplify or mitigate the effects of ACE on children's mental health. We examined how parenting stress mediates and family resilience moderates the associations of ACE with children's mental health and attention-deficit/hyperactivity disorder (ADHD) outcomes. **Methods:** This secondary data analysis included 44,684 children aged 6–17 years from the 2016–17 National Survey of Children's Health (NSCH). Logistic regression with survey weights was used to account for the complex survey design and obtain odds ratios (OR) and 95% CI adjusted for sociodemographics. **Results:** Overall, 7.3% of children had any mental health condition and 10.4% had ADHD. A higher ACE score (per 1-unit increase) was associated with a higher prevalence of any mental health condition (OR = 1.33, 95% CI: 1.27–1.40) and ADHD (OR = 1.21; 95% CI: 1.15–1.27) after adjustment for sociodemographics. Parenting stress mediated 57% of the total effect of ACE on any mental health condition and 60% of the total effect of ACE on ADHD diagnosis. The effect of ACE on mental health and ADHD outcomes was stronger among children with low levels of family resilience and connection index (FRCI) than among those with higher levels of FRCI. **Conclusions:** Parenting stress may be a potential mechanism through which ACE impacts a child's mental health and behavioral outcomes. Family resilience can lessen the impact of ACE on children's mental health and behavioral disorders.

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Association of Women's Occupation with Actual and Ideal Number of Children in Bangladesh: A Case of Role Incompatibility

Jalal Uddin*, Helal Uddin** and Mostafizur Rahman***

ABSTRACT

Most of the studies that focused on women's employment and fertility documented an inverse association between women's labor force participation and fertility, mostly in the context of developed countries. However, it remains unclear whether a similar association exists in lower-income and pro-natalist countries, where the cost of childcare is relatively cheaper. Given this gap in the literature, this study examines the associations of women's occupation with two outcomes of fertility-related behaviors — actual and ideal number of children in Bangladesh. The study used the 2014 Demographic and Health Survey (DHS) of Bangladesh. The analysis included 14,318 married women aged 18 years or older. Logistic regression models were used to assess the associations of women's occupation with the actual and ideal number of children. In general, women's labor force participation is inversely associated with the actual and ideal number of children in Bangladesh. Compared to non-working women, women in the professional/skilled sector were more likely to have 2 or fewer living children (OR=1.35; 95 % CI=1.16-1.58) and 2 or fewer ideal number of children (OR=1.51; 95 % CI: 1.21-1.88) in the fully adjusted model. Further, the association significantly varies by the levels of exposure to mass media such that women in the professional/skilled sector have a higher probability of having 2 or fewer living children at the higher levels of mass media exposure. The findings have implications for the social and population policies of Bangladesh. Policymakers can promote income-generating activities and encourage women's participation in economic spheres, which have the potential to lower the fertility and control population growth at the national level.

Keywords: Women's Occupation, Actual and Ideal Number of Children, Role Incompatibility, Mass Media.

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Information-Seeking Behavior of the Graduate Students: A Developing Country Perspective

Abdur Rahaman Sumon* and Md. Anwarul Islam**

ABSTRACT

The study attempted to investigate the information-seeking behavior (what kind of information do they need, how do they seek information, where do they go, with whom do they consult) of the graduate students of Dhaka University. It relied on survey method. The data for this study was collected over a period of sixty days between July and August 2018. A total of 350 questionnaires were distributed among graduate students from which 266 questionnaires were returned. The response rate was 76 percent. It was found that most graduates need job-related and current information. Considering the graduate unemployment problems, graduates often go to the library for studying competitive examination books. For seeking information and consultation, they prefer friends to talk and heavily depend on Google, online forum and social media. Most graduates daily visit the library and use formal sources e.g., class lectures, text books for course, project and thesis work. The findings of this study will shed light to design information systems and services for the graduates of other universities in Bangladesh. It will also help other developing countries to develop appropriate information systems and services at graduate level. Very few attempts have been made to assess the information need and seeking behavior of graduate students in Dhaka University. Findings of this study will enrich the limited literature on the topic in Bangladesh.

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Dionysian Africa as an Antithesis of the Apollonian West

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ABSTRACT

On his deathbed, the protagonist Harry in the story “The Snows of Kilimanjaro” examines his past life. He concludes that he lived an empty life and that none but he is to blame for it. The narrative is structured in a diegetic frame, telling the past events of the protagonist by separating them off from the present events. The narrative, consequently, swings back and forth from interjected flashbacks to flashforward scenes, suggesting a triumph of the Apollonian virtue over the Dionysian vice, as the yardstick to measure a man. In setting his locales and depiction of places, Hemingway employs Manichean dialectics, indicative of his internalizing an Orientalist perspective that places Africa as opposed to the West. The bipartite representation reflects the author’s subscription to the high Victorian values that he had absorbed while growing up. This paper contends that “The Snows of Kilimanjaro” embodies a dialectical struggle between the Apollonian virtue and the Dionysian vice in the human soul, presented as thesis and as antithesis. It attempts to decode the embedded binary symbols, illustrating that the usage of the imageries of the snow-capped mountains and the peaks, as opposed to the dusty plane of Africa infested with beasts, alludes to representation of life and death. Further, it asserts that the idea of Africa is feminized when Hemingway equates the continent with the image of Helen, making the latter a synecdoche of the former; and that this blending of hegemony and misogyny reinforces a politics of aesthetics that obliterates, distorts, and dehumanizes the image of Africa.

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Khasru Chowdhury and his Metanarrative of the Sundarbans: Deep Ecology, Ethnicity, and the Question of National Identity

Shibly Azad*

ABSTRACT

Contemporary Bengali literature lacks a rich literary tradition in nature writing. Whatever scanty pieces published locally, are written to feed the demand of the press, often marked by adulteration, absurdity, and nonsensical commentaries. Khasru Chowdhury fills the gap. His magnum opus *Sundarabanera Baghera Pichua Pichua* lays the genesis of a deep ecological writing in Bengali, akin to American pastoral tradition, therefore, demanding a thorough critique in light of the Anglo literary tradition. For, the monograph encases an embedded ideology, borne out of nationalistic nostalgia and is riddled with attempts at marginalizing the indigenous ethnicities. My purpose in this paper is to unfold these embedded nationalistic bents discernable in the narrative. I will attempt to illustrate that the encased hegemonic design that the text subtly espouses borders a majoritarian chauvinism and misogyny in projecting the self, collective ethos, and the question of national identity, encapsulated in the monograph. Drawing on the combinations of analytical tools appropriated from eco-criticism, cultural studies, and the indigenous' resistance literary theory pertaining to Chicano Movement in the United States, my scrutiny will further expose the patriarchal public gaze projected in the narrative that undermines the minority community, already marginalized in the Sundarbans locality.

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Prospects and Challenges of MOOCs in Bangladesh: A study of Students and Academicians

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ABSTRACT

Purpose:The release of massive open online courses (MOOCs) has quickly attracted the attention of scholars, academicians and students. Many feel interest to learn through this learning model. The aim of this study is to report on the present status of MOOC and explore its prospects and challenges in the context of Bangladesh. **Design/methodology/approach:** Data were collected from students and academicians of different private universities who had participated at least one MOOC through interviews. It was an exploratory qualitative research in nature and data were analyzed thematically. **Findings:** “MOOCs create global learning communities that benefit both students and universities, and generate unique challenges and opportunities for academic libraries” (Wu, Kerry, 2013). The findings of this paper expressed that both students and academicians considered MOOCs as very useful learning model. But they identified number of challenges like language constraints, unawareness, low bandwidth etc. The study was recommended that awareness should built through campaign to get more people and institutions involved in MOOC. **Practical implications:** The paper had found out number of challenges and suggested a list of recommendations for the developing MOOC education, which might improve the scenario of MOOC in Bangladesh. But the study didn't focus on the views of officials and owner of academicals institutions. Further research need with the participation of them. **Social implications:** This work allowed us to better knowledge the prospects and challenges of MOOCs in Bangladesh's social context. **Originality/value:** The collected data were original.

Keywords: Massive Open Online Courses, Prospects and Challenges, Bangladesh

Reference: WU, K. (2013). Academic libraries in the age of MOOCs. *Reference Services Review*, 41(3), 576-587.

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Use of E-Resources in English Medium School Libraries of Bangladesh: A Study on Information Professionals

Rumana Rahman*

ABSTRACT

Purpose: The study aimed to measure the present status and use of e-resources in the English Medium School Libraries of Bangladesh. In addition, the survey identified the degree to which Electronic Information Services (EIS) were available in the School libraries with an opinion from the Information Professionals of the respective schools. At length the paper reported problems and constraints in accessing e-resources and providing EIS with recommendation to cure the problems. **Design/methodology/approach:** E-resources has been defined as, “information accessed by a computer, may be useful as bibliographic guides to potential sources but, as of yet, they infrequently appear as cited references in their own right” (Graham, 2003). A Survey Method was used to identify e-resources accessibility and explores the quantity of their use in English Medium School libraries and the crucial role that professionals play in providing users with EIS through results based on standardized questionnaire responses. For doing this survey we choose 10 most prominent English Medium School Libraries of Bangladesh. One professional from each school library was requested to fill up the questionnaire. SPSS software was used for analyses the data. **Findings:** The findings showed that over the last decade e-resources and services were introduced in the school library. Various types of e-resources had been used in the library. Among the e-resources E-book was in top position. Google and Yahoo! were the most commonly used search engines while less use was made of the other search options. The availability of online databases was limited solely to a selected few School libraries. Some problems were found like unawareness of authority, lack of annual budget etc. Results were also reported some constructive suggestions for the development of e-resources and services. **Practical implications:** The paper limits the analysis to e-resources and the librarians of 10 major English Medium School libraries as the respondents in its discussion context. **Originality/value:** The study results are original, and this is the first attempt in Bangladesh to analyze the use of E-Resources in English Medium School Libraries of Bangladesh.

Keyword: E-resources, Electronic Information Services, English Medium School Libraries, Information Professionals, Bangladesh.

References: Graham, S.R. (2003). Historians and electronic resources. A citation analysis. *JAHC*, 3 (3), 18-24.

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Engaging Mass Community with Public Library: A Framework

Md. Hasinul Elahi* and Tabassum Hossain**

ABSTRACT

Public libraries are considered as people's university where anyone can access and get their required information for diversified purposes. Though it is a harsh reality that the acceptance of public libraries are decreasing with the passage of time. People are becoming involved and dependent more with the web-based contents. Libraries often comes with the promise of ensuring quality and authentic information which is ignored in web-based contents most of the times. This is the high time when the public libraries need to adopt measures to attract and engage the mass community with their services for the purpose of providing credible and authentic information. The primary aim of this study is to provide a framework for a public library to engage mass community. This study took a public library as a case and tried to find out the problems and based on those stated problems, finally a framework has been proposed. The problems were identified based on the interview of the users of District Public Library of Natore. The framework has been proposed based on the existing techniques that are being adopted by other institutions for engaging their respective audiences with them. This framework is basically designed for a public library of Bangladesh but still it can be implemented on other public libraries in Bangladesh and also in the developing countries. The successful implementation of this framework can be worked as a pioneer for engaging users to the public libraries.

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Managing Citation Through Popular Citation Management Tools: An Analysis

Abdur Rahaman Sumon*

ABSTRACT

Background: Citations of relevant literatures are the integral part of any research work and academic writing, but managing reference or citations are not an easy task. Citation management tools offer an easy way to store, organize and manage the research data in systematic way. Currently there are several citation management tools available among which some of them are paid and some of them are free to use. **Objectives:** The aim of this paper is to analyze some of the major citation management tools that now exist to assist the researchers in managing their scholarly work. The paper gives an overview of important trends in citation management and describes the most popular tools. **Methodology:** An extensive literature review has been conducted for the present study and the findings of the study were based on the review and analysis of the existing related literature. **Findings:** This paper reviewed some of the popular citation management tools i.e., Mendeley, Zotero, EndNote and RefWorks and found that among all the tools Mendeley offers a comprehensive list of features that are highly usable and functional. The findings of the study also revealed that some of the tools facilitate collaboration in collecting references and writing scholarly papers. The citation management tools also help the scholars to connect with other researchers and allow the researchers to import citations from several other databases. **Implications:** This study will aware the researchers about the popular citation management tools and will influence the researcher to select one particular citation management tool to pursue.

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