

Abstracts of Published Papers 2011

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**East West University
CENTER FOR RESEARCH AND TRAINING**

PREFACE

It is my pleasure to write this introductory note for the sixth volume of the *Abstracts of Published Papers*. The Abstracts of Published Papers is an annual production of the 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 abstracts of published research articles, book chapters, books, and also conference papers of our colleagues.

It is indeed a matter of pride for the East West University Center for Research and Training (EWUCRT) to publish the sixth volume of the *Abstracts of Published Papers 2011*. This publication is a collective effort of all the faculty members of the University. Our scholars have enthusiastically and immensely contributed in the areas of business, economics, social science, engineering, telecommunication, liberal arts and literature, population health, computer science, pharmacy, and technology. In this volume, as many as sixty-six research articles, book chapters, and conference presentations have been included.

Remarkably, forty research papers authored by our faculty members were published in international journals, two articles appeared in national journals, and four book chapters were published abroad. It is noteworthy to mention that our faculty members presented a total of twenty papers both at national and international conferences in 2011. Considering their academic achievements, we profoundly extend our congratulations to all of them.

The Center expresses its sincere thanks to Dr. Rafiqul Huda Chaudhury, Chairperson of the EWUCRT and Member, Board of Trustees, and all the Members of the Research Committee (RC) for their support and encouragement.

Finally, Ms. Farha Naz completed this job single-handedly and she has done a wonderful job within a very short period of time. I thank her for her work and I remain grateful to her for great efforts.



Dr. Muhammad Sirajul Haque
Executive Director
EWUCRT

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Work Family Conflict of Women Managers in Dhaka

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Abstract

This research paper investigates the work-family conflict (WFC) of women managers in Dhaka. Through stratified sampling four strata are selected (Doctors, Teachers, Bankers and Managers) and then total forty samples are chosen from different strata. From this study it is revealed that longer working hours affect work family balance directly and children are the worst victims of this WFC. This study confines itself within Dhaka metropolis. The scope of this study can be further extrapolated through bigger sample size and wider study area.

Keywords: Work family conflict, Working hours, Dhaka, Children, Women manager

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Effect of Entrepreneur and Firm Characteristics on the Business Success of Small and Medium Enterprises (SMEs) in Bangladesh

Md. Aminul Islam*, Mohammad Aktaruzzaman Khan**, Abu Zafar Muhammad Obaidullah***, **M. Sayeed Alam******

Abstract

This study examines the effect of characteristics of entrepreneur and characteristics of the firm on the business success of Small and Medium Enterprises in Bangladesh. The study is based on survey methodology through a questionnaire administered on the owners and employees of small firms. Data are analyzed using statistical package for social sciences (SPSS). Two hypotheses are proposed and tested. The characteristic of entrepreneur is found to be a significant factor for business success of SMEs in Bangladesh. However the firm characteristics are found not to be significant factor on the business success of SMEs in Bangladesh. The results of the analysis show that only one of the demographic factors which is duration of organization operated has significant effect toward business success of SMEs. SMEs that are operated longer period have been more successful in comparison to those who have been in operation for a shorter period. In addition to this, independent sample t-test shows that gender plays a significant role on business success of SMEs in Bangladesh. This study has implications for entrepreneurs and policy makers.

Keywords: Business Success, SMEs, Entrepreneur and firm characteristics, Bangladesh

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Penetrating the Middle Class of the SAARC Region: A Gateway to Competitiveness of Emerging India

Kohinoor Biswas*, M Sayeed Alam*

Abstract

At a time when emerging India pushes hard for a forward move to gain a competitive position in the landscape of the world this concept paper looks deeper into the potential of SAARC, in particular, the potentials of the 'middle class' of the region. Authors, in this paper, have drawn in arguments from a wide array of literatures in favor of the notion that emerging India can further accelerate her growth engine through optimum exploration of the latent potentials of the 'middle class' in the SAARC (South Asian Association of Regional Cooperation). The rise in 'middle class' in the East Asia has been the result of greater economic advancement of the region at large, which has reciprocated growth further through greater consumption. SAARC region, where the size of middle class stands around 385.25 m with an average annual consumption of \$ 310 b holds an immense ground of potential. There exists some common denominators that are shared by the 'middle class' in the region; like: aspiration to live better, propensity to consume world class sophisticated products and cultural homogeneity. This qualitative feature adds further to the existing 'size' opportunity. With India's lead in technology, innovation, media, R&D and human capital she is in upper hand to realize the potentials of the 'middle class' of the SAARC.

Keywords: Emerging market, Middle class, Competitiveness, South Asian Association of Regional Cooperation (SAARC), Country of Origin (CoO), 'India '

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A Nexus Between BOP Entrepreneurs And BOP Consumers: A Snapshot From Bangladesh

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Abstract

Poorest of the poor in the developing part of the world is defined as a promising market segment, namely BOP (Bottom of the Pyramid) with a market size of \$ 1.3 trillion. Traditionally, businesses are meant to serve a single bottomline: profit maximization. The new business model proposes that businesses can rather serve the double bottomlines of profit maximizing and poverty alleviation by capitalizing on the untapped potential of BOP consumers. This paper looks into the potential of BOP entrepreneurs in the segment of BOP consumers. The authors attempt to explore the consumption pattern and profile of the two different entities: BOP entrepreneurs and BOP consumers. 30 respondents are chosen from each category and in-depth interviews are conducted. The findings are: BOP entrepreneurs can exploit the untapped potentials of the BOP consumer market which would add to their earning and ease out the poverty condition. On the contrary, the BOP consumers would benefit from better quality and competitive price contributing towards more savings and better consumption.

Keywords: BOP, BOP entrepreneurs, BOP consumers, Bangladesh

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Rice-prawn Farming System: Impacts on Soil Quality and Land Productivity of Modern Variety Paddy Production in Bangladesh

Basanta Kumar Barmon*, Takumi Kondo**, Junichi Yamaguchi***, Fumio Osanami**

Abstract

The rice-prawn gher (RPG) farming system, locally known as the White Revolution, is an advanced, indigenous agricultural technology solely developed by local farmers in southwestern Bangladesh in the mid-1980s. This paper examined the impact of RPG farming on soil quality and land productivity of paddy production of modern varieties (MV) in Bangladesh. Two contrasting farming systems - RPG and year-round modern varieties (YRMV) - were considered. A total of 40 farmers (20 farmers from RPG and 20 from YRMV paddy farming) were randomly selected. Each of the sampled 20 RPG and 20 YRMV paddy farmers owned 30 farm plots. Soil sample collection procedures were conducted in two phases - at the beginning of paddy transplanting and during harvesting - in both farming systems. RPG farming has significant impacts on soil quality and land productivity in Bangladesh. The findings indicate that the leftover feeds of prawn production provide a significant amount of soil nutrients, such as nitrogen, soil organic matter, phosphorus, potassium, to soils in fields for paddy production under the RPG farming system. As a result, RPG farmers use comparatively less chemical fertilizers per unit of MV paddy production compared to YRMV farmers. Moreover, per unit yield of MV paddy was higher in RPG farming than in YRMV paddy farming.

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Motivation of Civil Servants in Bangladesh: A Comparative Study of Technical Cadres and Administrative Cadres

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Abstract

The present study aims at investigating the differences between the officers of administrative cadres and technical cadres of Bangladesh Civil Service (BCS) in terms of their levels of motivation and performance. Primary data were used in this study. The information on performance, motivation, score, etc. of administrative and technical cadres was randomly collected from 60 administrative cadres and 60 technical cadres from 12 upazilas in Jessore and Kushtia district. The findings of the study indicate that the officers of administrative cadres were significantly more motivated than their colleagues from technical cadres. The result also suggests that there was a significant positive influence of motivation on performance. Personal factors such as experience, education and income had no significant influence on motivation. Working condition, promotional facility, participation in decision making and recognition have been perceived as the prime sources of high motivation for the technical cadre officers. On the other hand, salary, open communication with boss and training facility have been considered as strong sources of high motivation for the administrative cadre officers. Poor salary, lack of fair promotional opportunity, status and bad working condition had been perceived as the major causes of low motivation for the technical cadre officers.

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The Effects of Country Associations and Price on Consumer Quality Perceptions: A Cognitive Information Processing Perspective

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Abstract

This paper proposes a framework for the analysis of partitioned country-of-origin associations on consumer product quality evaluations. This research clarifies the roles of country-of-design, country-of-assembly, country-of-parts and price in evaluating consumer perceptions of product quality. To test the hypotheses, a specially-designed questionnaire was completed on 300 students at a local university. The research result indicate that country knowledge on the part of consumers influences their reactions to products from that country; confirming the existence of a relationship between country of origin associations and consumer product responses. One of the shortcomings of this study is the use of convenient student samples. Consequently, the generalization of our results may be limited.

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Performance Evaluation of Agricultural Banks in Bangladesh

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Abstract

Bangladesh has a primarily agrarian economy. Most Bangladeshis earn their living from agriculture. The performance of this sector has a major impact on the overall economic development of the country. For efficient performance of this sector proper credit facilities and adequate support is essential both from government and private sector. In this paper we have analyzed the development and growth of specialized agricultural banks in Bangladesh and the different services and facilities they are providing for the overall improvement of this sector. It is observed that both agricultural banks are able to achieve a steady growth in terms of employees, branches, deposits, loans and advances during the period 2004-2008. Different trend equations and square of correlation coefficient (r^2) have been tested for different activities of agricultural banks of Bangladesh. Finally, results are interpreted in this context and suggestions are given for improving the future performance of these banks.

Keywords: Agriculture, Deposits, Loans, Poverty Alleviation, Micro Credit

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Intellectual Capital Reporting in a South Asian Country: Evidence from Bangladesh

Mohammad Nurunnabi*, Monirul Alam Hossain**, Md. Hossain***

Abstract

Purpose – The purpose of this paper is to examine the intellectual capital reporting (ICR) practices of listed non-financial companies in Bangladesh as an example of a South Asian developing country, and to empirically investigate some company characteristics as determinants of such practices.

Design/methodology/approach – This is an empirical study of ICR by 90 listed companies in Bangladesh in 2008-2009 using content analysis of annual reports. The study uses a weighted disclosure index and ordinary least squares regression analyses to test the association between company characteristics and the extent of ICR.

Findings – The study finds that despite the stock market growing significantly during the recession period, there is a tendency of companies not to disclose IC. The study also confirms that size and industry are important attributes to explain the IC disclosure (ICD) issues in Bangladesh. Unlike prior studies, the study finds that the IT sector does not tend to disclose more extensively, and that companies currently fail to disclose many important items such as patents, trademark and copyrights. The result is an indication that companies in Bangladesh are reluctant to disclose IC. The study is also similar to Abeysekera and Guthrie, who found that Sri Lanka is a proactive rather reactive country in terms of ICR. The study also finds ICR depends on the self-interests of the company.

Research limitations/implications – The scope of this study is limited to single year, 2008-2009. It would be interesting to replicate this study in other developing countries or a group of developing countries in South Asia that have many similarities to the Bangladesh socio-economic environment. Nevertheless, the study incorporates the current level of ICR transparency in Bangladesh.

Originality/value – Unlike previous studies, the present study is based on a developing country where the capital market is growing significantly during the recession years. The study also develops a weighted disclosure index in a developing country context, based on the extensive literature of ICD and some new characteristics, namely non-family ownership, audit committee and liquidity risk.

Keywords: Bangladesh, Developing countries, Capital markets, Intellectual capital reporting (ICR), South Asia

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Recent Unrest in the RMG Sector of Bangladesh: Is this an Outcome of Poor Labour Practices?

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Abstract

RMG sector of Bangladesh is experiencing disputes and violent protest by the labors in recent times. This study has been conducted to explore the reason for recent un-rest in garment sector. Since, managers are mainly responsible for applying human resource practices; this paper has given particular attention to their views on recent attitude changes of labor. Results show that mutual understanding among workers and managers is absent in RMG sector. This study also states that high-work load, poor behavior of line manager, skills and wage rates are the notable reasons for high job turnover and social unrest. Poor relationship between worker and supervisor is the main sources of conflict. This study finds that there is growing demand for work life balance among the workers of RMG sector.

Keywords: Bangladesh, ready-made garment sector, labour management, labour dispute, HRM

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Promotional Activity Involvement of Commercial Banks: A Comparative Analysis among Three Generation Banks in Bangladesh

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Abstract

Banking industry in Bangladesh up to now is leading the financial system. Based on the time of inception all the commercial banks have been divided into three generations. Banks of all the three generations are introducing new and new products to meet the dimensional demands of customers. But only adoption of new products is not sufficient. Customers should get the proper information about the products. For this banks are now emphasizing on proper marketing strategy. And of course in this aspect they are applying different promotion mix. Through this promotion mix, banks try to sell more & more deposit and loan products to potential customers which affects the total deposit collection & loan disbursement of the banks. In this paper we have tried to observe the difference in promotion activities in the three generation banks and the influence of promotion activities upon deposit and loan amount of some selected private commercial banks in Bangladesh.

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**Random Walk and Return Predictability in a New and Emerging Market:
The Case of Chittagong Stock Market (CSE)**

Md. Gazi Salah Uddin*, Abdullah M Noman**, Nasim Sydee***

Abstract

This paper examines the weak form efficiency of the Chittagong Stock Exchange (CSE) in Bangladesh using daily data of two indexes for the period between January 01, 2001 and December 30, 2008. Unit root tests and variance ratio tests (individual and multiple) are applied to see whether the indexes follow a random walk process and whether returns are predictable in this new and emerging market. Although the results strongly suggest that both of the price series are nonstationary process, the increments of the associated return series are serially correlated. It is, therefore, concluded that the Chittagong Stock Exchange (CSE) is not weak form efficient.

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Remittances and Output in Bangladesh: an ARDL Bounds Testing Approach to Cointegration

Biru Paksha Paul*, Md. Gazi Salah Uddin**, Abdullah M. Noman***

Abstract

Although the relationship between remittances and output is still inconclusive in literature, most studies find that remittances have a positive effect on output in the long run. Contrary to this conventional direction of causality from remittances to output, our study finds that output alone determined long-run movements in remittances in a positive direction in the Bangladesh economy over the last 35 years from 1976 to 2010. We use the autoregressive distributive lag (ARDL) bounds testing approach to cointegration to explore this long-run relationship. Surprisingly, remittances do not appear to be a long-run forcing variable to the explanation of Bangladesh's output over the same period. While examining the channels of this output-remittance mechanism remains an area of research for the future, we hypothesize that the rise in remittances in response to increased income occurs through higher import demand and greater investment opportunities. This finding implies that Bangladeshi policymakers can influence remittances through national output in the long run.

Keywords: Remittances, Output, Cointegration, Error correction, ARDL bounds testing Bangladesh

JEL Classification: C32, F24, F43

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Effect of Policy Reforms on Market Efficiency: Evidence from Dhaka Stock Exchange

Md. Mahmudul Alam*, Shakila Yasmin**, Mahmudur Rahman***, **Md. Gazi Salah Uddin******

Abstract

The paper tries to find evidence supporting the impact of continuous policy reforms on the market efficiency on the Dhaka Stock Exchange (DSE). Different policies formed/reformed from 1994 to 2005 were categorized in eleven groups depending on their time of issue and subject matter. To get the result, both nonparametric test (Kolmogrov-Smirnov normality test and run test) and parametric test (autocorrelation test, autoregression) have been performed. Analyses were done for each policy group, and it is found that formed/reformed policies for DSE during the study period failed to improve the market efficiency even in the weak form level.

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Energy and Output Dynamics in Bangladesh

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Abstract

The relationship between energy consumption and output is still ambiguous in the existing literature. The economy of Bangladesh, having spectacular output growth and rising energy demand as well as energy efficiency in recent decades, can be an ideal case for examining energy-output dynamics. We find that while fluctuations in energy consumption do not affect output fluctuations, movements in output inversely affect movements in energy use. The results of Granger causality tests in this respect are consistent with those of innovative accounting that includes variance decompositions and impulse responses. Autoregressive distributed lag models also suggest a role of output in Bangladesh's energy use. Hence, the findings of this study have policy implications for other developing nations where measures for energy conservation and efficiency can be relevant in policymaking.

Keywords: Energy and output, Bangladesh economy, Granger causality, Variance decomposition, Impulse responses

JEL classification: Q43, C32, O53

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Human Resource Management (HRM) in Hospitals: A Research on the Recruitment Process of a Bangladeshi Hospital

Laila Zaman*

Abstract

There is greater recognition that distinctive competencies are obtained through highly developed employee skills, distinctive organizational cultures, management processes and systems. Realizing the importance of HRM now a day's most of the organization keeps a separate HR dept. Like any other business organization hospitals also need HR dept. and to run it efficiently they need talented, skilled and self-motivated people. The research on 'A Hospital & Research Institute' provides a dissatisfactory recruitment policy and practice in hospitals of Bangladesh. The research is trying to clearly identify the underlying problem of above for a better understanding with probable strategic implications.

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Performance Appraisal Process of Pharmaceutical Companies in Bangladesh: A Case Study on GlaxoSmithKline Bangladesh Limited

Laila Zaman*

Abstract

There is greater recognition that distinctive competencies are obtained through highly developed employee skills, distinctive organizational cultures, management processes and systems. To attain such recognitions HR plays a key role and one of the important aspects of HR process affiliated with the above objective is performance appraisal process. In this study an attempt has been made to understand the performance appraisal process of pharmaceutical companies in Bangladesh and GlaxoSmithKline (GSK) Bangladesh Ltd.; a subsidiary of GlaxoSmithKline plc. has been taken as a case study in this regard. The repercussion of this study reveals the performance appraisal process and eventually concludes with some implications for pharmaceutical companies of Bangladesh to make the present performance appraisal process more effective and objective oriented.

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An Analysis on the Growth of Chittagong Stock Market

Tanbir Ahmed Chowdhury*, **Kashfia Ahmed***, A. A. Mahboob Uddin Chowdhury**

Abstract

The stock market is yet to play an important role in the industrialization of a developing country like Bangladesh. To make the stock market competitive and to provide more service to the investors the Chittagong Stock Exchange (CSE) was established in 1995. In this paper we have tried to analyze the development and growth of CSE. The challenges for CSE include expansion of branch network of brokers and dealers, and improvement of transparency.

Keywords: Stock Market, Chittagong Stock Exchange, Securities, Brokers.

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Impact of Corporate Governance on Disclosure Transparency in Bank Annual Reports in Bangladesh

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Abstract

This paper reports the results of an empirical study of the role of selected corporate governance variables on financial reporting transparency of listed banks in Bangladesh. The three corporate governance variables examined were: the institution of an audit committee; (ii) institutional shareholding; and (iii) auditor reputation. A comprehensive disclosure index comprising 446 voluntary and mandatory items has been used to measure the degree of financial reporting transparency in terms of disclosure comprehensiveness. A multivariate analysis of annual reports of 27 banks (out of 29 listed at the time of analysis) shows that banks that have instituted audit committees by the end of 2003 and employed Big 4 auditors produce significantly more transparent financial reports than those who did not. The results also show that leverage is negatively associated with disclosure transparency. Finally, institutional shareholding, size, profitability, and complexity do not have significant impact on disclosure transparency. Results of this study provide a greater understanding of the role of corporate governance tools in enhancing financial reporting transparency in the financial services sector in developing countries.

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Marketing Practices in the Informal Enterprises: an Excerpt from Dhaka

Kohinoor Biswas*, M Sayeed Alam*, Imtiaz Ahmed*

Abstract

This paper attempts to explore the nature of marketing practices in the informal enterprises. Economic activities those are not recorded in the national accounts and not within formal rules of contract are called informal sector. In Bangladesh, a predominant part of the economy runs informally. A sample of 70 informal entrepreneurs is considered for this survey that is chosen by random sampling without replacement method. All the informal entrepreneurs are from urban areas. Enterprises with 2-5 employees and at least two years in business are considered for this survey. The information is collected through in depth interview. The research findings show that employment starts mostly within 30. Education status of this segment is poor. For most of the respondents, their fathers had also a profession in the informal sector. Unemployment is found to be the major motivation to start business. In most of the cases, starting capital is found to be more than 8000 taka. Majority of the enterprises procure merchandises from the wholesaler, mark up pricing is found to be used most commonly. The businesses mostly run on cash payment. This study is focused only in Dhaka with a small sample. So survey on extended areas including both urban and rural sample is imperative in order to obtain a more comprehensive picture.

Keywords: Informal enterprises, Dhaka, Marketing practices

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Poverty and Food Security in Rural India (ed. by Raj, Sundara. P), Novel Corporation, Chennai, pp. 273-282, India, 2011. ISBN: 978-81-906529-4-6

Chronic Poverty Trap: An Etiology from Dhaka and Few Recommendations for India

Kohinoor Biswas*, M Sayeed Alam*

Abstract

Chronic poverty research center of India defines 'chronic poor' as the group remaining in the dire straights of poverty for an extended period of time. Though, India, has progressed significantly in the arena of poverty reduction, still, 22 to 33 percentage of the Indian population are chronic poor, with historically high incidences found among the marginalized groups. While literatures are aplenty on the etiology of poverty, encompassing a wide diversity in viewpoints; for instance: the development view, or the neo-liberal view; research on chronic poverty is scanty in India. Authors in this paper attempt to outline a conceptual model of chronic poverty trap through in-depth interview of conveniently chosen 100 male chronic poor from Dhaka. Random sampling without replacement method is used to collect data. The sample constitutes two clusters namely: Ricksha pullers, and security guards. From each cluster, the respondents are chosen randomly. Given the commonness of the state of chronic poverty, few recommendations from Dhaka's perspective can be extrapolated to add some meaningful policy guideline to the context of Indian chronic poverty. Study reveals that respondents happen to be compelled to start an earliest living at as early as their teens. Having deprived of education they end up choosing unskilled job with a meager wage. On top of that, with an average number of 5 dependents to feed, each family incurs a monthly deficit of around \$33, turning them to run a credit account from informal source at a high rate of interest, forcing again their children out of school into the streets looking for meager means of living- all leading to the dead ends of poverty and completing the vicious cycle.

Keywords: Chronic poor, Dhaka, Education, Unskilled day labors

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Women and Rural Development (ed. by Raj, Sundara. P), Novel Corporation, Chennai, pp. 517, India, 2011. [ISBN 978-81-906512-1-9]

Cooperative Finance: A New Product for Women in Business

Kohinoor Biswas*, M Sayeed Alam*

Abstract

This paper proposes a new financial concept 'Cooperative Finance' targeted to a niche of women owned businesses. We conducted an experiment to test this concept with 30 one-to-one in-depth interviews of woman business owners. The respondents represent a niche with a specific demographic profile: having educated family background, highly educated (university graduate), aged between 30 and 40, married with children, motivated by the need of independence and having to balance between work and family domain. Observations from the experiment pass this concept as respondents supported this notion. As women possess a distinctive set of soft skills to believe in democratic style of leadership it is expected that the accrued benefits of 'Cooperative Finance' will outweigh the potential risk of conflict.

Keywords: Women owned business, Cooperative Finance, Dhaka

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Branding for Retail Informal Market: A Road to the Formal Economy

M Sayeed Alam*, Kohinoor Biswas*

Abstract

The authors in this study explore the idea of branding opportunity for retail business in the informal sector. The presence of the informal sector in Bangladesh is obvious and significant like many other developing countries. A question exists from an economic and political perspective as to whether the informal economy should be left in the control of *laissez faire* or intervened. In-depth interviews have been conducted with a total of 30 informal entrepreneurs, divided into four strata; namely: processed food vendor, raw food vendor, clothing vendor and service selling entrepreneurs. Findings reveal that branding opportunity is high among the processed food vendors, who run on relatively less risk, involve low working capital, do significant value addition, are less affected by fluctuations in demand and can take advantage of customer relationships. For the informal entrepreneurs in the raw food and clothing categories: risk involvement is higher, requirements for working capital are relatively higher, the degree of value addition is almost nonexistent, there is very little differentiation, and they survive at the mercy of mere price competition. For the service-selling stratum: risk is less perceived, capital requirements are low, and skill differentiation is almost non-existent.

Keywords: Informal economy, retail business, branding

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Non-Financial Barriers and Access of the Chronic Poor to Healthcare in Dhaka

Kohinoor Biswas*, M. Sayeed Alam*

Abstract

The chronic poor are the group of people stuck in poverty for an extended period of time. This small-scale study aims to explore the non-financial barriers that the chronic poor face to access healthcare service in the context of Dhaka. In this qualitative and exploratory research the authors deploy a convenient sampling technique to reach a sample-size of 100 chronic poor in Dhaka. For the purpose of this study, 30 unskilled male day-laborers, who migrated to Dhaka from villages, earn an average of US\$ 2-3 daily, and were compelled to start a living at their early teens, qualified to be the respondents. Since the study focuses on qualitative first-degree exploration of information with respect to having a generalized understanding on the nature and typology of the non-financial barriers, in-depth interview appeared to suit to this purpose. Around 68% of the respondents were found to be the earning members of the family. On top of this, with an average of 5 family members dependent on their earning for households and other domesticities, invariably every family had a monthly deficit, which amounted to US\$ 20 or around. With an average of 5 to 10 hours of laborious daily work and lack of sufficient nourishment, they became prone to frequent attacks by common cold-related diseases; other commonly-found medical disorders were: musculoskeletal pain, ENT-related diseases, visual disorders, and maternity problems. The study observed long queuing time, insufficient time given to a patient, middlemen's interference to access the doctors, insufficient attention given to a patient—culmination of what leads to dissatisfaction and leaves a feeling of being 'neglected'. Generalization of these findings does not appear practical given the size of the sample. A more elaborative quantitative study is imperative to draw a set of guidelines to overcome these barriers.

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Practice of Corporate Social Responsibility in Islamic Banks of Bangladesh

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Abstract

The evolution of Shariah based profit –loss sharing centered Islamic banking, worldwide has changed the thought of financial institutions even of the developed countries in the west. On the other hand the recognition of importance of corporate social activities in the business organizations as well as in financial institutions has accelerated the significance of Islamic banks as in Islam these CSR practice have been emphasized in different ways. Likewise the Islamic financial institutions all over the world, Islamic banks in Bangladesh are also being engaged in various social activities as a part of their responsibilities. In this study it has been tried to find out whether the Islamic Banks of Bangladesh are adhering to the prescribed forms of the CSR activities or not. This paper is mainly designed based on the CSR forms to be followed by Islamic banks as has been prescribed by Farook (2007) in his study “On Corporate Social Responsibility of Islamic Financial Institutions” under the light of Islamic Shariah. The research found compliance to the mandatory forms by the sample Islamic banks in Bangladesh whereas variety in involvement in recommended forms of CSR activities. The study also finds a strong positive correlation between CSR expenditure and sample banks’ deposit, loan and profitability.

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Effective Elimination of Child Labour and the Complexity of Expanding Compulsory Primary Education as Remedy: A Case Study from Bangladesh

Md. Atiqur Rahman Sarker*, Fatima Kanis Nayan**

Abstract

Child labour is an invasive problem throughout the world especially in developing countries. In the last decade, some significant changes occurred in social awareness of the relationship between child labour and the economic growth. Apart from poverty, some other issues are related to child labour, such as low-household income, lack of education of both children and parents, lack of government interest, NGO's and their initiative. Nevertheless, there are different views against compulsory education in different nations. The aim of this research is to critically analyse the elimination strategies of child labour in Bangladesh. This paper focuses on the causes of child labour in Bangladesh. At the same time, it will critically evaluate the affect of education on child labour reduction depending on the news, reports, journals and other relevant academic sources. There is no divergence that child labour is a result of numerous factors.

Keywords: Bangladesh, Child Labour, Compulsory Primary Education, Poverty, Social Awareness.

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Impact of HRM Practices on Job Satisfaction and Organizational Performance in Private Commercial Banking Sector of Bangladesh

Md. Atiqur Rahman Sarker*

Abstract

Private commercial banking in Bangladesh is booming in recent times with higher number of potential customer from the local market. But this sector is facing challenge in achieving management efficiency one of which leads to experience high level of competition. In order to achieve sustainable growth in this competitive market and to achieve higher organizational performance, special emphasis should be given to improve HRM practices. The relationships among HRM practices, Job satisfaction and firm performance have been an integrated issue for business and operational environment. HRM practices are also considered as major contributory factor for higher organizational performance through higher job satisfaction. This study has been conducted to explore the influence of HRM practices on job satisfaction and how job satisfaction brings higher organizational performance. Since, the HRM practices are mostly responsible for the achievements of business strategy and success; this paper has given particular attention to the need of importance of HRM practices.

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CSR & Internal Marketing in Organizations: Employee Job Satisfaction and Organizational Commitment of Export-oriented SMEs in Bangladesh

Saadia Shabnam*, Md. Atiqur Rahman Sarker*

Abstract

The growing awareness of Corporate Social Responsibility (CSR) has become one of the important tools in Human Resource Management (HRM). One of the major issue in corporate accountability is how firms are careful and responsible for employee's well being. The practice helps to develop a distinguished corporate culture and social consciousness which certainly influence employee attitude and behavior. The purpose of this study is to find out an empirical effect of CSR on employee job satisfaction and organizational commitment. Based on the interviews taken both from employers and employees in export oriented SMEs of Bangladesh, it has been found that CSR practices are positively associated with job satisfaction which in result makes the workers more motivated and committed towards the organization. This paper also recommends that corporate responsibility practices, satisfied and committed employees together can create competitive advantage for a business with growth and profitability. Furthermore, the information summarized in this paper also provides the suggestions to utilize the CSR strategies that will improve the employee morale, job satisfaction and organizational commitment thus create an opportunity to capitalize on internal marketing for the organization.

Keywords: Job satisfaction, Commitment, Internal Marketing, HRM, Corporate social Responsibility, SMEs

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The Discursive Construction of (A)moral Names: Religion versus Language

Muhammed Shahriar Haque*, Zainul Abedin**

Abstract

Bangla, as spoken in Bangladesh, is inseparable from the nation itself. The language movement of 21st February 1952, where several people died, played a significant role in the independence and the birth of Bangladesh. In fact, on 17 November 1999, UNESCO immortalized the movement by proclaiming 21st February as the International Mother Language Day. *Bangla*, the national and official language of Bangladesh, is unique to the people of its country because it embodies the spiritual, the cultural and above all, the historical nature of the nation. Despite its significance to the people of Bangladesh, giving a meaningful *Bangla* name to a child may be considered amoral. On the contrary, keeping an Arabic name, irrespective of its meaning, is honourable, ethical, and, as some Mollahs would have it, a moral duty of Muslim parents. The justification is simple, because Arabic is the language of the Quran, any Arabic name or even an (Arabic) alphabet, is acceptable. Anayetullah (2008) suggests that *Bangla* names are meaningless and go against Islamic tradition. The influence of religion when selecting a name in Bangladesh needs to be investigated from a critical discourse analysis (CDA) perspective, because people need to be made aware of why *Bangla* names are considered (a)moral.

Keywords: discursive construction; Bangladesh; critical discourse analysis (CDA); language; religion; (a) moral names.

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A Comparative Study of English and Non-English Major University Students' Motivation to Learn English Oral Communication

Mst. Moriam Quadir*

Abstract

This study examines the differences in motivations of English and non-English major university students in Bangladesh to learn English oral communication. Altogether 355 (184 English and 171 non-English majors) university students participated in this study. To measure learners' motivation a modified version of questionnaire constructed by Schmidt's et al (1996) was administered. In order to figure out the significant differences between the two groups an independent sample t-test was performed on each questionnaire item and on each motivational subscale. Pearson correlations (2-Tailed) were analyzed on motivation data of both groups to understand the interactions among motivational subscales. Some similarities and differences between the groups are found from the analyses. Based on the findings of this study some suggestions are proposed for pedagogical usefulness.

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Compulsory Amnesia' and Individual History: Disgrace, Distress and Healing through Culinary Aroma in Shafak's *The Bastard of Istanbul*

Nabila Huq*

Abstract

When a crime against humanity supersedes the ultimate level of cruelty, both the victim and the sinner choose to forget truth. Expatriate Turkish novelist Elif Shafak terms such intentional memory loss as 'Compulsory Amnesia' in *The Bastard of Istanbul*. How could the Turkish ever forget the Armenian Massacres? The citizens of Kamal Atatürk's modern Turkey would like to directly repudiate any link with their ancestors of the Ottoman Empire. But how do the descendants of the Armenians deal with their distress everyday at home and abroad? And in spite of all differences, can the two nations find a link in their cuisines? This paper approaches *The Bastard of Istanbul* from two angles. Firstly, it examines how Shafak captures a distressful history using a framework of eighteen chapters, each with a subtitle of a different culinary item. Secondly, since Shafak wrote this novel first in Turkish, and then translated it herself in English, this paper tries to trace her effort to reach a foreign audience by using cuisine as a cultural sign. For concluding, this paper would very briefly draw a parallel between the Turkish-Armenian 'Compulsory Amnesia' and the contemporary issue of trying war criminals in Bangladesh.

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The Use of Food for Cultural Orientation in Women's Novels

Nabila Huq*

Abstract

If what we eat reveals our religious identity, how we eat expresses our cultural essence. When a novelist writes about his or her own culture but wants to reach out to a foreign audience, there is a conscious attempt to familiarize the reader with the distinctive cultural setting of the novel. The same attempt however is also taken by a novelist who writes about a foreign culture but aims to tell the story to his or her own people. This paper will inspect six novels by four women novelists: Chitra Banerjee Divakaruni's *The Mistress of Spices*, Elif Shafak's *The Bastard of Istanbul*, Yasmin Crowther's *The Saffron Kitchen*, and Joanne Harris's *Chocolat*, *Blackberry Wine* and *Five Quarters of the Orange* – to find out how they have used 'food' not only to introduce their readers with a foreign culture and life style but also to tell stories of intricate national histories.

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SCIENCES AND ENGINEERING

Application of Zero-Forcing Adaptive Equalization in Compensation of Fading Effect of Two-Hop Wireless Link

Abu Sayed Rahaman*, Md. Imdadul Islam*, **M. R. Amin****

Abstract

Wireless link in mobile cellular communication system is experienced by large and small scale fading. Since the link is non line of sight (NLOS), therefore, severely affected by multipath fading. In a two-hop wireless links, each link is affected by fading and noise degrades the overall performance of the communication system. In this paper, performance of two- hop links is analyzed under Rayleigh and Nakagami-m fading environments separately for QPSK and 8-PSK modulation schemes. In this paper zero-forcing adaptive equalizer is used on two-hop wireless links to enhance the performance of the system. Here we find that zero-forcing adaptive equalizer works better for QPSK scheme and Nakagami-m fading channel compared to 8-PSK scheme and the Rayleigh fading channel.

Index Terms: Probability of symbol error, NLOS, Nakagami-m and Rayleigh fading, coherent demodulator, MMSE and Gaussian Q function.

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MMPP+M/D/1 Traffic Model in Video-Data Integrated Service under ATM System

Anupam Roy*, Md. Imdadul Islam*, **M. R. Amin****

Abstract

With the advent of 3G mobile communication system, the traffic of wired and wireless networks become voice/video - data integrated service. For real time operation of voice and video signals, circuit switch traffic or Markovian traffic is the best fitted but for data traffic where small amount of delay is tolerable, the non-Markovian traffic like service time of general distribution with finite buffer is preferable. In this paper, Markov modulated Poisson process (MMPP) traffic, which is in concise form of Markovian chain, is used for multimedia traffic and M/D/1 traffic of fixed length packet is considered for asynchronous transfer mode (ATM) cell. The combined model becomes MMPP + M/D/1 traffic, which is used to get the probability density function and mean delay of a voice/video-integrated network.

Index Terms: ATM cell, voice-data integrated service, mean delay, moment generating function, non-Markovian traffic.

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Performance Evaluation of a Finite Queue Switching Under Two-Dimensional M/G/1(m) Traffic

Md. Syeful Islam*, Md. Rezaur Rahman*, Anupam Roy*, Md. Imdadul Islam*, **M. R. Amin****

Abstract

In this paper we consider a local area network (LAN) of dual mode service; one is token bus and the other is carrier sense multiple access with collision detection (CSMA/CD) bus. The objective of the paper is to find the overall cell/packet dropping probability of a dual mode LAN for a finite length queue M/G/1(m) traffic. Here, the offered traffic of the LAN is taken to be the equivalent carried traffic of one-millisecond delay. The concept of tabular solution of two-dimensional Poisson's traffic of circuit switching is adapted here to find the cell dropping probability of the dual mode packet service. Although the work is done for the traffic of similar bandwidth, it can be extended for the case of dissimilar bandwidth of the circuit switched network.

Keywords: Carried traffic, LST, two-dimensional traffic, cell dropping probability, M/G/1 model.

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Performance Evaluation of Two-Hop Wireless Link Under Rayleigh and Nakagami-m Fading Channel

Abu Sayed Rahaman*, Md. Imdadul Islam*, **M. R. Amin****

Abstract

One of the major challenges in wireless communications, especially in urban area, is to detect the digital data under different fading environment and additive white Gaussian noise (AWGN). In a two-hop wireless links, each link is affected by fading and noise which degrades the overall performance of the communication system. In this paper performance of two-hop link is analyzed under Rayleigh and Nakagami-m fading environments separately for 8-PSK and 16-QAM modulation schemes. The objective of the paper is to observe the relative impact of two fading environments on the two above mentioned modulation schemes if no combining scheme or error correction measure is taken on repeater station.

Index Terms: Probability of symbol error, AWGN, coherent demodulator, channel state information (CSI), APS and Gaussian Q function.

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Performance Comparison of STFT, WT, LMS and RLS Adaptive Algorithms in Denoising of Speech Signal

Mahbubul Alam*, Md. Imdadul Islam*, **M. R. Amin****

Abstract

Different types of noise cancellation techniques are prevalent in recent literatures. The performance of a particular technique depends on mean, variance and maximum amplitude of error. At the same time the process time of signal and complexity of practical implementation of circuits is also a measuring tool for performance of a technique. The objective of this paper is to compare performance among the short time Fourier transform (STFT), wavelet transform (WT), least mean square (LMS) and recursive least square (RLS) methods in cancellation of noise from a speech signal. The analysis of the paper provides us the way of selection of the best denoising technique based on the statistical parameters of the above four mentioned techniques.

Index Terms: Signal denoising, CPU time, statistical parameters of adaptive filter, wavelet transform, short-time Fourier transform, least mean square and recursive least square.

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Nonplanar Effects on Solitary Waves in Dusty Adiabatic Electronegative Plasma

S. S. Duha*, S. K. Paul**, A. A. Mamun**, **M. R. Amin*****

Abstract

An unmagnetized adiabatic dusty electronegative plasma containing inertialess adiabatic electrons, inertial single charged adiabatic positive and negative ions, and stationary arbitrarily (positively and negatively) charged dust have been theoretically considered in nonplanar (viz. cylindrical and spherical) geometry. The reductive perturbation method has been employed to derive a cylindrical/spherical Korteweg de Vries or modified Korteweg de Vries (mKdV) equation which has been solved numerically. The effects of the nonplanar geometry, which is found to significantly modify the basic features of small but finite-amplitude dust ion-acoustic solitary waves, is explicitly examined. The implications of our results in laboratory dusty electronegative plasmas are briefly discussed.

Index Terms: Dusty plasmas, electronegative plasmas, charge fluctuation, dust-acoustic waves, shock waves.

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Comparison of LMS and FDAF Algorithms in Equalization of Fading Channel

Md. Imdadul Islam*, Md. Ariful Islam*, Nur Mohammad*, Mahbulul Alam*, **M. R. Amin****

Abstract

Wireless link in mobile cellular communication system is experienced by large and small scale fading. Since the link is Non Line of Sight (NLOS), therefore, severely affected by multipath fading. Adaptive equalizer is a widely used technique to neutralize the effect of multipath fading. In this paper, Frequency Domain Adaptive Filter (FDAF) and Least Mean Square (LMS) algorithms are used to combat the effect of multipath fading for 16-QAM and QPSK modulated wave and the results are shown using constellation diagram and bit error rate (BER). Finally, a comparison is made between two algorithms in contexts of process time, mean BER, variance of BER and circuit complexity.

Index Terms: Mobile cellular communications, fading channel, channel equalization, adaptive equalizer.

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Cost Optimization of Alternate Routing Network of M/G/1(m) Traffic

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Abstract

In alternate routing traffic, a compromise or tradeoff is made among cost of alternate routing traffic, the number of high usage circuit and overall blocking probability. Usually, analysis of such traffic model aims on detection of the number of high usage circuit for minimum trunk cost. The optimum cost of alternate routing traffic is best fitted for M/M/n/n traffic. The objective of the paper is to present the relation of optimum number of high usage circuits of Rapp's approximation by queue length of M/G/1(m) traffic. Instead of minima of optimum cost and zero crossing point of Rapp's balance equation, we get turning points of exponential curves in M/G/1(m) traffic.

Keywords: Optimum cost, high usage circuit, M/G/1(m) traffic, peakedness and ERT.

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Analgesic Activity of Extracts of the Whole Plant of *Amaranthus spinosus* Linn.

Md. Abu Taiab Jamaluddin.*, Nazmul Qais *, Mirza Asif Ali **, Md. Amran Howlader*
K. M Shams-Ud-Doha*, Apurba Sarker Apu ***

Abstract

Successive petroleum ether, ethyl acetate and methanol extracts of the whole plant of *Amaranthus spinosus* Linn. were investigated for the analgesic activity. Experiments were carried out with these extracts for their peripheral and central antinociceptive potentials on acetic acid induced writhing and radiant heat tail-flick models in mice, respectively. In both the models, methanolic extract showed significant writhing inhibition as well as the elongation of tail-flick time at a dose of 500 mg/kg body weight. A linear dose response relationship was also observed.

Keywords: *Amaranthus spinosus*, analgesic activity, acetic acid induced writhing, radiant heat tail-flick.

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A Self-Consistent Algorithm to Extract Interface Trap States of MOS Devices on Alternative High-Mobility Substrates

Md. M. Satter*, A. E. Islam**, D. Varghese**, M. A. Alam**, **Anisul Haque*****

Abstract

A new self-consistent technique is proposed to simultaneously extract the density of interface traps (D_{it}) and flatband voltages of MOS structures fabricated on technologically relevant high-mobility semiconductors with arbitrary combination of gate stacks. The technique is based on novel analysis of the low-frequency C-V measurement. The two major problems associated with the existing low-frequency C-V technique for arbitrary substrate/oxide combinations are resolved by (i) accurate calculation of the ideal semiconductor capacitance using a self-consistent, quantum-mechanical model including wave function penetration effect, and (ii) accurate determination of the flatband voltage utilizing an iterative scheme. The proposed technique has been applied to extract D_{it} profiles of a number of MOS structures fabricated on III-V semiconductors like InGaAs (with ALD grown Al_2O_3 gate dielectric) and elemental semiconductors like Ge (with GeON gate dielectric). The advantages of the proposed technique have been demonstrated by comparing with D_{it} profiles extracted from other capacitor-based extraction methods.

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DC and RF Performance of an In_{0.1}Ga_{0.9}N/InN High Electron Mobility Transistor

Sakib M. Muhtadi*, S. M. Sajjad Hossain*, Ashraful G. Bhuiyan**, K. Sugita**, A. Hashimoto**, **M. Mofazzal Hossain*****

Abstract

This paper reports on a theoretical analysis of DC and RF performances of a novel In_{0.1}Ga_{0.9}N/InN HEMT. A very high cut-off frequency and attractive DC characteristics have been predicted. A simple analytical model is used to explain the DC characteristics. The cut-off frequency which has been found more than 0.6 THz for a gate length of 0.1 μm is explained with low-field mobility. The maximum drain current and transconductance have been found around 1000 mA/mm and 625 mS/mm, respectively. Similar analysis have been performed for the conventional AlGa_N/Ga_N HEMT and compared with the proposed InGa_N/InN HEMT. The predicted results are found to be in good agreement with previously published results. The calculated results show that InN-based HEMT has very high cut-off frequency and transconductance when compared with the conventional Ga_N-based HEMT for the same gate length.

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Comparison between the Performance of PUSC and FFR Network

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Abstract

This work is an approach to solve the limitations of WiMax with three operational band frequencies. As the license fee of the frequency band goes higher and not easy to get allotment, it is wise to look for solution to make effective use of the available band. This can be done by several features that will lead to a network to the peak of performance with limited resource. One of the proposed solutions to maximize the capacity and upgrading the performance in this literature is using fractional frequency reuse (FFR) with MIMO (Multiple-Input Multiple-Output) technique. MIMO is a revolutionary technique to overcome the limitations of capacity and coverage of a WiMax network. In this paper, first we discuss about the features which will give a perfect overview of this FFR technology. Then a simulator is used to compare the performance of the FFR technology with partial usage of sub-channels (PUSC) technique. The simulation results are compared to find the best feature to see whether this feature really works in a real RF environment. Finally, the whole approach is discussed with the limitations and future proposals.

Index Terms: WiMax, MIMO (multi-input multi-output), CINR (carrier to interference-plus-noise ratio), RSSI (received signal strength indicator), CAPEX (*capital expenditure*).

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Antimicrobial, Antioxidant and Cytotoxic Effects of Methanolic Extracts of Leaves and Stems of *Glycosmis pentaphylla* (Retz.)

Md. Amran Howlader*, Farhana Rizwan*, Shapna Sultana**, Mohammad Rakibur Rahman **, K. M. Shams-Ud-Doha*, Rumana Mowla*, Apurba Sarker Apu*

Abstract

The aim of the present study was to evaluate and compare the antioxidant, antimicrobial and cytotoxic effects of the methanolic extracts of *Glycosmis pentaphylla* stems and leaves. Efforts have been given to identify the activities by using highest grade solvent for preparing the extracts. A survey of the antioxidant effect was performed using DPPH method. The methanolic extract of *Glycosmis pentaphylla* stems showed moderate antioxidant property (103.35 µg/ml) where the leaves showed very little (337.62 µg/ml). This antioxidant activity may be due to some polyphenolic compounds identified from this plant. Both the extracts showed moderate antimicrobial activity with the highest zone of inhibition for *E. coli* (23.67±0.76 mm) and *Salmonella paratyphi* (15.33±0.76 mm) among the tested micro-organisms. This inhibition may legit the traditional implication of the stems of *G. pentaphylla* as toothbrush. The cytotoxic activity of stems extract of *G. pentaphylla* was found to be highly potent (5.53 µg/ml, 95% CI, 7.27-4.21) where as the leaves also showed significant activity (47.34 µg/ml, 95% CI, 50.77-44.15). Several antitumor alkaloids were identified from this plant in the laboratory. The study results also indicate that *Glycosmis pentaphylla* is a good source of medicinally important compounds.

Keywords: *Glycosmis pentaphylla*, Antioxidant activity, Antimicrobial activity, Cytotoxic activity, DPPH.

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Lattices Whose Finitely Generated n-ideals Form a Generalized Stone Lattice

M. Ayub Ali*, A. S. A Noor**

Abstract

In this paper the authors have studied a lattice L whose set of finitely generated n -ideals $F_n(L)$ form a generalized Stone lattice. They have shown that $F_n(L)$ is generalized Stone if and only if $\langle x \rangle_n^* \vee \langle x \rangle_n^{**} = L$, which is also equivalent to $(\langle x \rangle_n \cap \langle y \rangle_n)^* = \langle x \rangle_n^* \vee \langle y \rangle_n^*$ for all $x, y \in L$. $\langle x \rangle_n$ denotes the principal n -ideal generated by x and $\langle x \rangle_n^*$ is the pseudo complement of $\langle x \rangle_n$ in the lattice of n -ideals of L . They have also shown that $F_n(L)$ is generalized Stone if and only if $P \vee Q = L$ for any two minimal prime n -ideals P and Q of L .

Keywords: pseudo complementation, n -ideals, Stone lattice, Generalized Stone lattice

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On Finitely Generated N-Ideals Which Form Relatively Stone Lattices

M. Ayub Ali*, A. S. A. Noor**

Abstract

Set of all finitely generated n-ideals of a lattice L is a lattice, denoted by $F_n(L)$. In this paper the authors have characterized those $F_n(L)$ which form relatively Stone lattices. It has been shown that $F_n(L)$ is relatively Stone if and only if $P \vee Q = L$ for any two incomparable prime n-ideals P and Q of L .

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Nearlattices Whose Sets of Principal n-ideals Form Relatively Normal Nearlattices

M. S. Raihan*, A. S. A. Noor**

Abstract

We generalize several results of relatively normal nearlattices in terms of n-ideals. We introduce the notion of relative n-annihilators in a nearlattice and include some interesting results on this. Several characterizations of the set of principal n-ideals $P_n(s)$ are given which forms a relatively normal nearlattice in terms of relative n-annihilators. It is shown that $P_n(s)$ is relatively normal if and only if for any two incomparable prime n-ideals P and Q, $P \vee Q=L$.

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Characterizations of Some Special Elements in Nearlattice by Relative Annihilators

A. S. A. Noor*, Md.Zaidur Rahman**

Abstract

In this paper the authors have characterized different types of elements in a non distributive nearlattice, such as Strongly distributive element, Modular element, Standard element and Neutral element by using the relative annihilators. An element s in a nearlattice S is called an upper element if $s \vee x$ exists for all $x \in S$. Using the property of upper element the authors have introduced the notion of a special distributive element and included a characterization of it. At the end, using these relative annihilators they have given a nice characterization of central elements of a nearlattice.

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Congruence Kernels of Distributive PJP-Semilattices

S. N. Begum*, A. S. A. Noor**

Abstract

A meet semilattice with a partial join operation satisfying certain axioms is a JP-semilattice. A PJP-semilattice is a pseudocomplemented JP-semilattice. In this paper we describe the smallest PJP-congruence containing a kernel ideal as a class. Also we describe the largest PJP-congruence containing a filter as a class. Then we give several characterizations of congruence kernels and cokernels for distributive PJP-semilattices.

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Effects of Nonthermal Ions on Dust-Ion-Acoustic Shock Waves in Dusty Electronegative Plasma

A. Paul*, **G. Mandal***, **A. A. Mamun****, **M. R. Amin***

Abstract

The nonlinear propagation of dust-ion-acoustic (DIA) waves in dusty electronegative plasma (consisting of inertialess electrons, nonthermal positive ions, inertial negative ions and extremely massive charge fluctuating dust) has been investigated by employing the reductive perturbation technique. It has been shown that the effects of nonthermal ions and dust charge fluctuation (associated with Maxwellian electrons and nonthermal positive ions) has significantly modified the basic features of nonlinear dust-ion-acoustic waves. The results of the present work would be useful in understanding the basic nonlinear feature of DIA wave propagation in laboratory and space dusty electronegative plasmas.

Keywords: Dusty plasma, dust-ion-acoustic wave, shock waves, multi-ion plasma.

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Thermal Treatment of Granulated Particles by Induction Thermal Plasma

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Abstract

In this book chapter we shall narrate briefly the literature of power treatment using thermal plasma, describe the numerical and experimental aspects of thermal treatments of granulated and porous powders in induction thermal plasma. The description of our developed plasma-particle interaction flow model to investigate the effects of plasma and particle parameters on the energy transfer to particles, and thermal treatment of soda-lime-silica glass powders will be discuss in detail. In this chapter attention will be given to the effects of individual particle diameter, size distribution, and average diameter, which govern the plasma-particle energy transfer to a large extent. To investigate the size distributions, computations have been carried out for two size distributions: flat and Maxwellian. Computations have also been performed for Maxwellian size distribution with three different average diameter (51, 58 and 84 μm) powders. It is found that the energy transfer to particles is higher with flat diameter distribution than that of with Maxwellian distribution; however individual particle temperature becomes lower with flat distribution. On the other hand, smaller average diameter of powders leads much heat transfer to powders, but individual particle temperature becomes lower. Both the effects come from the intense cooling of plasma due to the large heat transfer to large number of particles with flat distribution as well as small average diameter powders. From this book chapter, the readers may have an insight of the mechanism of thermal treatment of porous granulated powders treated by induction thermal plasma.

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Impact of Quantum Mechanical Correction in Surface Potential Based Compact Model on the Drain Current of Nanoscale MOSFETs

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Abstract

Impact of the Quantum Mechanical (QM) correction in surface potential (ψ_s) based compact model on the drain current of nanoscale MOSFETs is studied. Comparison has been made between a QM model which accounts for wave function penetration effect and the QM models PSP and Prégaldiny et al., both of which incorporate bandgap widening approach and neglects wave function penetration effect. Results show that the wave function penetration effect into the gate dielectric plays an important role in modeling the drain current of nanoscale MOSFETs. Models which neglect this effect tend to overestimate the ψ_s and hence underestimate the drain current. The impact is more pronounced in the moderate inversion region.

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A New Generalized Finite Difference Equation for one Dimensional Heat Equation

Md. Sahidul Islam*

Abstract

In this paper a new finite difference formula is presented for one dimensional heat equation. The generalized finite difference formula combined five formulas (two explicit and three implicit). Actually it is the improvement of generalize θ formula which is given by Samarskii in 1971. The generalize θ formula combined three formula (one explicit and two implicit). Our new generalize formula combines five formula (two explicit and three implicit).

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Quaternary Quantum Algorithm for Determining Properties of Quaternary Logic Function

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Abstract

A multiple-valued (d -dimensional with $d > 2$) quantum system enables a much more compact and efficient information encoding than for binary ($d = 2$) quantum system. As multiple-valued quantum system is physically realizable, it is worth to explore multiple-valued quantum algorithm. In this paper, we propose quaternary (4-dimensional) quantum algorithm for testing whether a quaternary logic function is either constant or balanced. In classical computer, this test would require at least $4^{n-1} + 1$ function evaluations, where n is the number of inputs of the function. But the proposed quantum algorithm requires only one function evaluation.

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Minimized Reversible/Quantum Synthesis of Non-Reversible Quinary Logic Function

Mozammel H A Khan*, Raqibul Hasan**

Abstract

Reversible/quantum multiple-valued logic circuit has several advantages over reversible/quantum binary logic circuit. Galois field sum of products (GFSOP) based synthesis of multiple-valued logic function is more promising and practical than other approaches. In this paper, we have developed 196 Galois field expansions (GFE) and have proposed a method of minimization of GFSOP expression for non-reversible quinary logic function using the application of these GFEs. We have also proposed a method of realization of quinary GFSOP expression as cascade of quinary reversible/quantum gates. Experimental results with 26 functions having up to six inputs and two outputs show that a significant minimization can be achieved using the proposed minimization method.

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Synthesis of Reversible Synchronous Counters

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Abstract

Reversible logic is very important in low-power circuit design and quantum computing. Though a significant number of works has been done on reversible combinational logic synthesis, only few papers have been published on reversible sequential logic synthesis and permutative quantum automata. The reported works on reversible sequential logic discuss designs of reversible flip-flops and suggest synthesizing reversible sequential circuits by replacing the flip-flops and combinational parts of traditional sequential circuit designs by their reversible counterparts. In this paper, we discuss direct design of reversible synchronous counters based on positive polarity Reed-Muller expressions. Design results show that the direct design method is more efficient than the replacement method. The method can be also applied to permutative quantum automata that have quantum memories external to the circuit.

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α -Ideals in a Distributive Nearlattice

A. S. A Noor*, M. Ayub Ali**, A. K. M. S. Islam***

Abstract

In this paper, the authors give the concept of α -ideals in a distributive nearlattice. They provide a number of characterizations of α -ideals in a nearlattice. They prove that a nearlattice S with 0 is disjunctive if and only if its every ideal is an α -ideal. They also show that S is sectionally quasi-complemented if and only if each prime α -ideal is a minimal prime ideal. Finally S is generalized Stone if and only if each prime ideal contains a unique prime α -ideal.

Keywords: Ideal, Annulets, Disjunctive Nearlattice, Quasi-Complemented Nearlattice, Generalized Stone Nearlattice

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Some Characterization of n-Distributive Lattices

Jahanara Begum*, M. Ayub Ali**, A. S. A. Noor***

Abstract

The concept of 0-distributive lattices was given by J.C.Varlet to study a larger class of non-distributive lattices. These lattices are also generalized form of pseudocomplemented lattices. For a neutral element $n \in L$, recently Podder and Noor have introduced the concept of n-distributive lattices which is a generalization of both 0-distributive and 1-distributive lattices. Lattice of n-ideals $I_n(L)$ is 0-distributive if and only if L is n-distributive. In this paper, we have included several characterizations of n-distributive lattices. We have studied congruence around the element n which is similar to the Glivenko congruence. Then we have generalized the prime Separation Theorem for n-ideals in a n-distributive lattice.

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Annulets in a Distributive Nearlattice

A. S. A. Noor*, M. Ayub Ali**, A. K. M. S. Islam***

Abstract

Here the authors show that in a distributive near lattice S with 0 , set of all ideals of the form $(x]^*$, denoted by $A_0(S)$ is a join semi lattice with lower bound property. It is a sub semi lattice of lattice of ideals if and only if S is normal. They show that $A_0(S)$ is relatively complemented if and only if S sectionally quasi-complemented. Moreover, $A_0(S)$ is Boolean when S is quasi-complemented.

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0-Distributive Nearlattice

Md. Zaidur Rahman*, A. S. A. Noor**

Abstract

J.C.Varlet gave the notion of 0-distributive lattices to generalize the concept of pseudocomplemented lattices. In this paper, the authors extended the concept for nearlattices. They include several characterizations of these nearlattices and prove some interesting results related to separation theorem. They also provide a separation theorem in a 0-distributive nearlattice S for annihilator ideals of finite subsets of S . Some characterizations of weakly complemented nearlattices are given by using a special congruence. Finally they prove that a 0-distributive nearlattice which is both sectionally and weakly complemented is a semi Boolean nearlattice.

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Modular Ideals of a Nearlattice

Md. Zaidur Rahman*, A. S. A. Noor**

Abstract

In this paper we include several characterizations of modular ideals in a nearlattice. For a modular ideal M of a nearlattice S and a general ideal J , we have given a description of $M \vee J$. We prove that $x \leq m \vee j$ for some $m \in M, j \in J$ imply that $x \vee j = m_1 \vee j$ for some $m_1 \in M$. We also prove that for a modular ideal M of a nearlattice S , if both $I \cap M$ and $I \vee M$ are principal for any ideal I , then I itself is a principal ideal.

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On Semiprime Ideals in Lattices

R.M. Hafizur Rahman*, A. S. A. Noor**

Abstract

Recently Yehuda Rav has given the concept of Semi-prime ideals in a general lattice by generalizing the notation of 0-distributive lattices. In this paper we study several properties of these ideals and include some of their characterizations. We give some results regarding maximal filters and include a number of Separation properties in a general lattice with respect to the annihilator ideals containing a semi-prime ideal.

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n- Distributive Lattice

Sompa Rani Podder*, A. S. A. Noor*

Abstract

J.C.Varlet has given the concept of 0-distributive and 1-distributive lattices. In this paper the authors have generalized the whole concept and introduced the notion of n-distributive lattices. They show that for a neutral element of a lattice L, the n-annihilator of any subset of L is an n-ideal if and only if L is n-distributive. Then the authors study different properties of these lattices. Finally, using the Glivenko congruence, they generalize the well known prime Separation theorem of distributive lattices with respect to annihilator n-ideal in a general lattice and produce an interesting characterization of n-distributive lattice.

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Performance Comparison of Uplink Cognitive Cellular Network under Rayleigh and Nakagami- m Fading Environments

M. Nazimuzzaman*, Himadri S. Saha*, Md. Imdadul Islam**, M. R. Amin*

Abstract

In this paper we consider a mobile cellular network where two types of users: primary user (PU) and cognitive user (CU) share the entire spectrum of the base station (BS). Opportunistic scheduling scheme of CU is widely used to alleviate interference between CU and PU users. Recent literature deals with such networks under Rayleigh fading environment. The objective of this paper is to determine the performance of such networks under Nakagami- m fading environment and to compare the results with the results for the Rayleigh fading model. The paper shows the comparison of average bit error rate (BER) and mean channel capacity of target transmission rate taking outage probability as a parameter. It is found that for comparatively lower value of the outage probability the Nakagami- m fading has higher BER than the corresponding Rayleigh fading case whereas for higher values of the outage probability the situation becomes reverse. It is further observed that the channel capacity under Nakagami- m fading environment is better than the Rayleigh fading environment. The paper depicts the real-time performance with some explanations.

Index Terms: PU, CU, average BER, mean channel capacity, opportunistic spectrum access, target transmission rate.

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Performance Evaluation of Full Rate Space-Time Block Code for Multiple Input Single Output (MISO) Wireless Communication System

Fahima Tabasum*, Mahbubul Alam*, Md. Imdadul Islam*, **M.R. Amin****

Abstract

In wireless communications, to enhance the capacity of a multiple input single output (MISO) system, the most widely used channel coding technique is space time block coding. The outstanding orthogonal full rate space time block code proposed by Alamouti is the most successful one and also very simple where only two transmit antennas are used. As the number of antennas is increased beyond two, the orthogonality of the space time block code is lost. Recent literatures propose a scheme known as quasi-orthogonal space time block code for full rate communication. Of course, for $\frac{1}{2}$ and $\frac{3}{4}$ rate, the orthogonality can be maintained. In this paper we have proposed a system with a full rate orthogonal space time block code for four symbols and eight antenna case. After comparing the performance of the proposed system with other existing models, we have found that the proposed scheme is the best in context of probability of bit error consideration.

Keywords: Walsh matrix, quasi orthogonality, AOD, SNIR, Kronecker product.

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