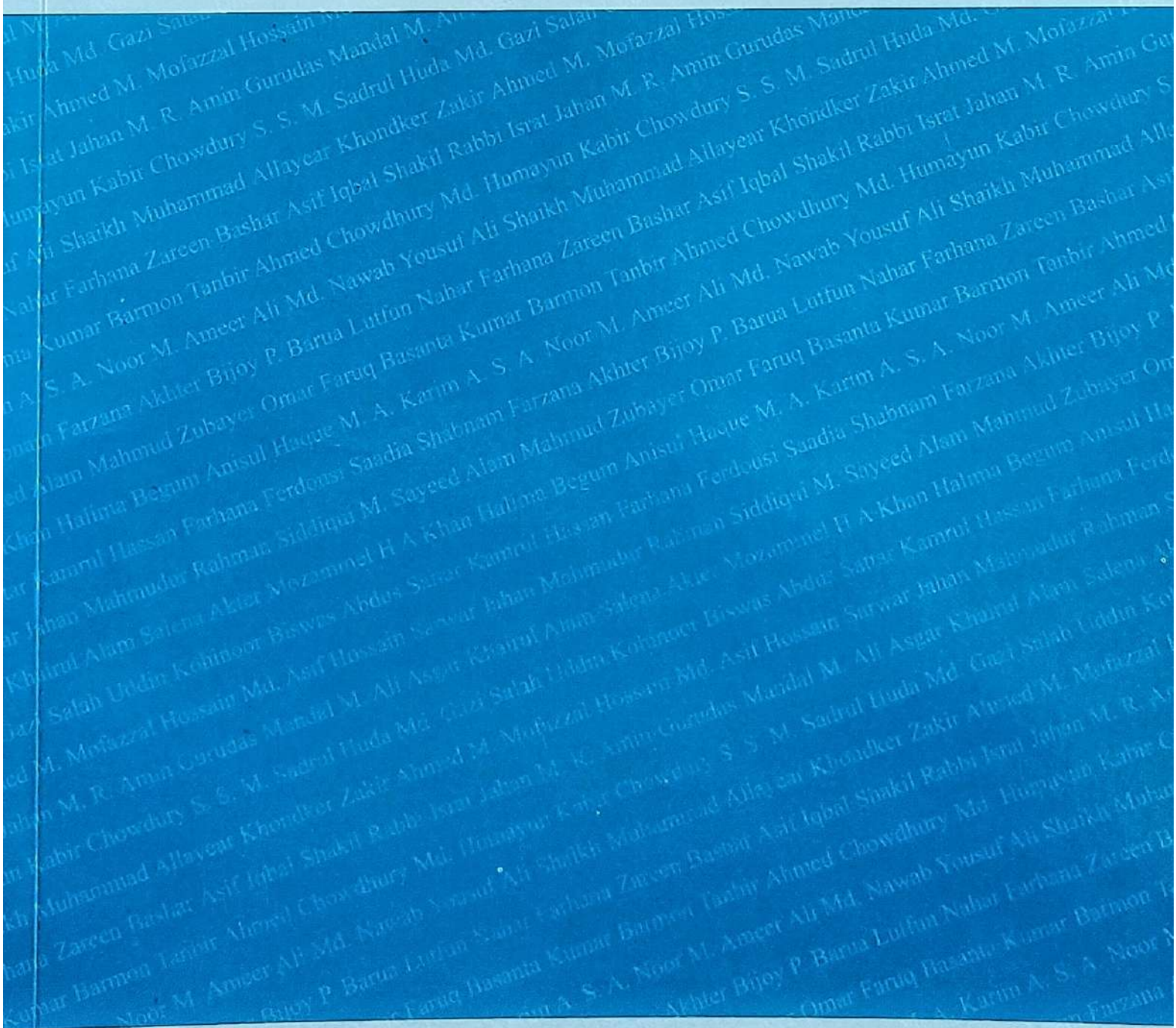
Abstract of Published Papers 2010



East West University

CENTER FOR RESEARCH AND TRAINING

2011

PRELUDE

It is indeed a matter of pride for the East West University Center for Research and Training (EWUCRT) in publishing the fifth volume of the *Abstract of Published Papers 2010*. In fact, 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-eight research articles, book chapters, and conference presentations have been included.

Remarkably, thirty-three research papers authored by our eminent faculty have been published in international journals, three articles appeared in national journals, and three book chapters are included in volumes published abroad. It is noteworthy to mention that our faculty members presented a total of thirty-two papers both at national and international conferences in 2010. Considering their academic contributions, 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. The Center also acknowledges the assistance and cooperation of Dr. Mohammed Farashuddin, President, Board of Trustees, Professor Mohammed Sharif, Vice-Chancellor, and Professor Muniruddin Ahmed, Pro-Vice Chancellor of the University in accomplishing this task.

Finally, the Center is thankful to Professor Mozammel Huq Azad Khan, Professor Humayan Kabir Chowdhury, Mr. Shafiqur Rahman, Assistant Professor and Mr. Md. Samdad Tanveer, Systems Manager for their valuable inputs and views. Last, but not the least, Ms. Farha Naz, Secretary, EWUCRT deserves appreciation for technical support.

April 20, 2011

Bijoy P. Barua, PhD (Toronto)
Executive Director
EWUCRT

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BUSINESS AND ECONOMICS

International Journal of Economics and Finance, Vol. 2, No. 3, pp. 114-121, August, 2010 (ISSN: 1916-971X). www.ccsenet.org/ijef

Intra Regional Foreign Direct Investment (FDI) Prospect in South Asian Association of Regional Cooperation (SAARC) Region

M. Sayeed Alam*, Mahmud Zubayer*

Abstract

The empirical literature offers regional integration arrangements reduce trade costs among partner countries this reduction in cost not only increase trade but also act as a stimulus to increase FDI flow. South Asian Association for Regional Cooperation (SAARC) was established in 8th December 1985 with the seven South Asian countries (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) but after 25 years of its establishment very low level of intra regional trade (less than 5%) and in case of FDI the major source is outward flow than intra regional flow. Despite the major difference among the member countries in different macro economic parameter there is a scope of potential for intra regional FDI inflow. In this study different research papers was presented with respect to regional trade and integration was studies. The major focus is on SAARC economic integration and FDI status. The study one other economic integration areas and FDI inflow was suggested for future research.

Keywords: Foreign direct investment, Intra regional FDI, SAARC

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International Journal of Marketing and Management Research (IJMMR), Srikrishna International Research & Educational Consortium, Vol. 1, Issue No. 1, December, 2010. (ISSN 2229-6883), http//: www.skirec.com

Evaluation of Brand Extension (Similar and Distance Product Category) with Respect to Degree of Fit and Quality of the Core Brand

M. Sayeed Alam*, Omar Faruq*, Sabina Sharmin**

Abstract

Introducing new product is the growth strategy of the companies. Brand extension strategy is most popular and most used method of introducing new products. This strategy is popular because it reduces risk of failure of new products. Most of literatures on brand extension is based on western culture. The study is focused on low involvement products and opinion of consumers of Dhaka city. A very well known brand its extension is chosen for this study. It is found from the study that consumers think that similarity between core and extension is successful if there is a good fit between core and the extension products. On the other hand quality core products is not the guarantee to successful brand extension to a product category which is not similar to the core brand (distance brand extension). One the other hand there is no significant difference between the opinion between gender based on the opinion that extension is successful if there is a good fit between core and the extension products. This product is limited only to one brand and limited to students. So more successful brand extension and diverse consumer categories are considered for future research is suggested.

Keywords: Brand Extension, Degree of fit, Quality, Dhaka

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Aquaculture International (AquacultInt), Vol. 18, accepted October 01, published online: October 20, 2010. [DOI 10.1007/s10499-010-9382-z]

Diversification Economies and Efficiencies in a 'Blue-Green Revolution' Combination: A Case Study of Prawn-carp-rice Farming in the 'Gher' System in Bangladesh

Sanzidur Rahman*, **Basanta Kumar Barmon****, Nesar Ahmed*****

Abstract

'Gher' farming is a unique system that incorporates the joint operation of three enterprises: freshwater prawn, fish and HYV rice and is expanding rapidly in the coastal regions of Bangladesh. In this paper we evaluate the performance of this unique system in terms of the existence of diversification economies (amongst the three integrated enterprises), scale economies and technical efficiency using a stochastic input distance function approach on a sample of gher farmers. The results reveal evidence of a diversification economy in the rice–carp combination. Economies of scale exist in the 'gher' farming system. The level of technical efficiency is estimated at 68% implying that a substantial 47% [(100-68)/68] of potential output can be recovered by removing inefficiency. Significant efficiency gains are made from diversification amongst these enterprises. Also, the education of farmers and the female labour input significantly improve efficiency whilst larger operation size reduces efficiency. The key policy implication is that the diversification of enterprises, particularly the rice–carp combination, is beneficial and should be promoted. Also investment in education and creation of a hired labour market for females would improve technical efficiency.

Keywords: Diversification economies, Technical efficiency, Gher, Blue-green revolution, Bangladesh

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International Journal of Economics and Finance, (Canadian Center of Science and Education), Vol. 2, No. 4, November, Toronto, 2010.

Effect of Dividend on Stock Price in Emerging Stock Market: A Study on the Listed Private Commercial Banks in DSE

Mohammad Bayezid Ali*, **Tanbir Ahmed Chowdhury****

Abstract

Stock price reactions to the announcement of dividend of the banking industry of Bangladesh are empirically analyzed. This study examines stock price reactions of listed Private Commercial Banks (PCBs) in Bangladesh surrounding 44 days of the dividend announcement dates. The major objective of this study is to identify whether dividend announcement convey any information to the market that results a price reaction for adjusting the dividend announcement information. The empirical part of this study employs a standard event study methodology to analyze the stock price reaction for dividend announcement. Out of 25 listed sample banks in the observation period, market adjusted stock price declines for 11 banks, rises for 6 banks and no changes for 8 banks and statistical pooled t-test also reveals that stock price reaction to dividend announcement are not statistically significant. Finally, dividend announcement does not convey any information due to strong contribution of the insider trading as well as some other influencing factors in the capital market.

Keywords: Dividend, Cumulative Abnormal Return (CAR), Commercial Bank, Free Cash Flow, Price Adjustment Period, Insider Trading.

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International Journal of Marketing Studies, Vol. 2, No. 2, pp. 258, November, 2010

The Cognitive Foundations of Partitioned Country-Of-Origin: A Casual Path Analysis

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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 brand image in evaluating consumer perceptions of product quality. Data were analyzed via structural equations models using AMOS 5.0. Results from structural equation analysis reveal a broader conceptualization of consumer perceived quality in Bangladesh as reflected in the model. In particular it was found that for high involvement products like television, perceived country-of-origin association instead of brand image significantly influence in shaping perceptions of quality in the country.

Keywords: Country-of-design, consumer brand image, country-of-assembly, perceived product design, country of parts, perceived product sophistication, perceived product quality, perceived manufacturing excellence.

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International Journal of E-Politics, Vol. 1, No. 4, pp. 77-95, October-December, 2010
[DOI:10.4818/jep.2010100105]

E-Government: Expectations Among People in Bangladesh

S. S. M. Sadrul Huda*, Rumana Parveen **, Masud Ibn Rahman***

Abstract

E-government can be used as an effective tool to create a relationship of trust and confidence between government and people as well as to generate greater efficiency and responsiveness of government. This empirical study observes people's opinions and expectation about positive outcomes of e-Government. The researchers have identified the expectation level among urban people in Bangladesh concerning outcomes of e-Government and the variability in these expectations in terms of their demographic characteristic. In this regard, the authors emphasize the application of e-government to improve government's performance as well as locating the critical factors to succeed in such application.

Keywords: Demographic Characteristics, E-Government, Efficiency, Expectations, Responsiveness.

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Indian Development Review: An International Journal of Development Economics, Vol. 8 No. 1-2, pp. 95-104, January-December, 2010. (ISSN: 0972-9437)

An Empirical Study on Export, Import and Economic Growth in Bhutan

Md. Gazi Salah Uddin*, Shibli A. Khan**, Md. Mahmudul Alam***

Abstract

This paper focuses on the casual relationship between export, import and Gross Domestic Product (GDP) for Bhutanusing annual data from 1980 to 2005.The Granger causality test and Co-integration Models are employed taking care of stochastic properties of the variables. The co-integration analysis suggests that there is a long-run equilibrium relationship. The results of Granger causality test shows that there is a causal relationship between the examined variables. Here both export led growth and import led growth is empirically proven inBhutan. Moreover, Import also leads to the growth of export and vice versa.

Keywords: Co-integration, Granger Causality, Export, Import, Economic Growth
JEL Classification: C22, F14, F43

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Ideas, Insights and Innovations on Management Research, An International Perspective (*ed.* by P. David Jawahar), Macmillan publishers, India ltd, pp. 17-25, India, 2010. (ISBN 10- 0230-32889-X)

Small Business in the Informal Sector: Evidence from the Single Person Organisation in the Metropolis of Dhaka

M. Sayeed Alam*, M. M. Sulphey****

Abstract

The concept of the informal sector began in the year 1970. It is said that informal economy is unregistered or hidden from the state. The main assumption behind informal economy is survival, rather than wealth, employment generation, etc. In developing countries it is found that most of the business in the informal sector is single person operations. The objective of the present study is to identify the demographic profile of this informal sector, particularly single person business operations. A total of 99 street traders of one person operations - both from food and non food sectors are surveyed in Dhaka. The main variables studied are: the entry age in to the business, academic status and the fathers' profession, the source of working capital and the amount of working capital. The study found that the people enter the business within mostly 20-30 years of age. It is at this age that they get married, and the family pressure is the prime variable that makes them to enter the business field. A strong correlation was found between the age of starting business and the marital status (0.621, at 0.01 level). It was also found that those who are not having any formal educational qualification (attend the school only - no formal degree) requires less working capital. Most of the respondents (near to 60 per cent) had no clear vision about their business after five years. The present research is focused only on the single person operation, particularly the street traders. For a generalized observation, studies on other forms of single person (for example, taxi drivers, home workers, Rickshaw pullers, waste collectors, etc) informal business are suggested.

Keywords: Single person organisation, Small Business, Informal sector in Bangladesh

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Proc .of the International Conference on Knowledge Globalization (ICKG), (jointly organized by North South University, Dhaka, Knowledge Globalization Institute and Suffolk University), May 8-10, 2010

Impact of Confidence on Transforming Women Entrepreneurs from Informal to Formal Sector: A Snapshot from Metropolis Dhaka

M. Sayeed Alam*, Kohinoor Biswas*, Abdus Sattar**

Abstract

There has been around five-fold increase in women-owned business in 2001-2007 compared to before 1990 in Bangladesh, one-third of which operate from home having a status of informal business. A slice from this cluster of home based, informal, woman-run businesses transform in to formal sector. This paper defines 'confidence' as the degree of freedom to take risk, make decisions independently, and puts it as the cornerstone in the transformation of a business. Then association is checked between confidence and four independent variables: education, experience, institutional support and size. A small sample of 20 women entrepreneurs who changed their status from informal to formal sector was used for the purpose using snowball sampling technique, as no official data was available on this particular cluster. The major findings are: education is a dominant variable, which substantially influences in building of confidence, experience does matter in building confidence, size of business has moderate correlation with confidence, institutional help matters little to the entrepreneurs.

Keywords: Informal sector, Formal Sector, Women entrepreneur, Dhaka

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Proc. of the 2nd International Conference on the role of Social Sciences and Humanities in Engineering (ICoHSE), November 12-14, Bayview Beach Resort Hotel, Penang, pp. 1014, 2010

Can Women Owned Small Business Avail Branding Opportunity for Market Development?

M Sayeed Alam*, Md. Aminul Islam****

Abstract

Women owned businesses are typically characterized by some unique set of features; smallness in size, low barrier of entry with less capital requirement, and hence yield slower growth and low returns. Most of the women entrepreneurs are driven towards the choice of entrepreneurship primarily motivated by their obligation to satisfy home maker roles. Therefore women entrepreneurship is found to be more of a result of family orientation than profit orientation. Women entrepreneurs are found to be less diversified with predominant presence in boutique and food industry. The characteristics of women owned businesses closely mimic to micro enterprise; such as: operated from own home, fewer than five employees. Because of size and slow growth financial institutions are not interested in funding them- one of the major problems of advancement for the women business owners. Size also hinders branding opportunity. As branding ensures reliability and consistency to the consumers mind, the author in this proposal attempts to test if branding opportunity exists for women owned small businesses and how branding can add to market development leading to business growth.

Keywords: Women entrepreneur, Brand, Small business, market development

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3rd International Conference on Business Competencies in a Changing Global Environment, jointly organized by Global Business and Management Forum (GBMF), December 23, USA and Southeast University, Bangladesh, 2010

Evaluation of Extension and Parent Brand: How Parent Brand Quality Matter for Extension Success

M. Sayeed Alam*, Kamrul Hassan*

Abstract

Brand extension strategy is most popular and most used method of introducing new products. Launching new product with Brand extension ensures less risk. There are many researches are conducted research to identify the potential determinants of extension success. Research findings suggests that brand extension is affected by the perceived fit between core and the extension brand. But it is not unusual if there are example where brand extension success based on distant product categories. The objective of this study to evaluate of extension based on quality of the core/parent brand, perceived fit and consumer knowledge about the product. Fifty respondents are chosen randomly. All of them are students of undergraduate and graduate level and well conversant about brand extension. A structured questionnaire is used to collect information based on perceived fit, consumer knowledge and quality of the core brand. From this small knowledgeable group it is revealed that perceived fit is more important than quality of the core brand. Knowledgeable customers are more concern about core and extension fit. For Extension success attitude towards core brand is very vital. This study is concentrated within Dhaka only and within small number of respondents , this is the limitation of this study. Extended area and more sample is suggested for generalizing the findings.

Key words: Brand extension, Bangladesh, Quality, perceived fit

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12th Annual Conference of National Academy of Psychology (NAOP) (Oral Session), December 12-15, Jawaharlal Nehru University, New Delhi, India 2010

A Conceptual Model on Chronic Poverty: An Extrapolation from Dhaka to India

Kohinoor Biswas*, M. Sayeed Alam*

Abstract

Chronic poor are the group remaining in the dire straights of poverty for an extended period of time as defined by the chronic poverty research center of India. India, with her stable democracy, 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 capture a snap of chronic poverty through the development of a conceptual model taking a sample of chronic poor from Dhaka. Authors believe an in-depth understanding of chronic poverty from Dhaka's perspective can be extrapolated to add some meaningful policy guideline to the context of Indian chronic poverty. A sample size of 100 chronic poor, consisting of unskilled day-laborers and rickshaw pullers, Security guards and home servants is chosen conveniently for an in-depth interview with each. The respondents chosen are male, at their early or mid 30s, who 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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3rd International Conference on Business Competencies in a Changing Global Environment, jointly organized by Global Business and Management Forum (GBMF),USA and Southeast University, Bangladesh, December 23, 2010

Enabling Environmental Factors of Lean Production Philosophy: A Bangladeshi Case

Farhana Ferdousi*, Amir Ahmed**, **Kamrul Hassan***

Abstract

In order to generate improvements in performance and remain competitive, an increasing number of organizations in developing countries are practicing lean production. A sample of nine garment companies (from the Export Processing Zone, EPZ) of Bangladesh was chosen to conduct the study. A semi-structured questionnaire, interviews and site-visits were conducted to gather necessary information from the selected companies. These companies were selected purposely to ensure the best possible scenario of lean practices in Bangladesh. The main objective of this research is to examine the practices of various lean tools in Bangladesh Garment Industry and to identify the existence of an environment for practicing lean successfully. The research findings indicate that the selected companies have adopted a wide variety of lean tools and techniques and have enabling environment for implementing lean. It concludes with recommendation for further works on the subject.

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3rd International Conference on Business Competencies in a Changing Global Environment jointly organized by Global Business and Management Forum (GBMF),USA and Southeast University, Bangladesh, December 23, 2010

Corporate Social Responsibility Practices in Private Garments Manufacturing Units of Bangladesh: Study on Perception & Performance

Saadia Shabnam*, Farhana Ferdousi*, Kamrul Hassan*

Abstract

The dynamic readymade garments sector has made crucial contribution to the transformation of the economy of Bangladesh. The issue of Corporate Social Responsibility (CSR) is popularly addressed as the compliance issue in the garments sector which is gaining immense importance now-a-days since the global sourcing criteria embrace this as one of the major non-tariff issue to import internationally sourced products. This paper explores the perception of the managerial positions, their philosophies and mindset about the status and implementation of CSR activities in their enterprises. Again, there was a study on the real practices about the performance of CSR programs. The paper concludes with significant findings on the relevant areas of CSR perceptions and performance in the readymade garments sector of Bangladesh.

Keywords: CSR, Readymade Garments Sector, Perception, Performance

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52nd Conference of the Indian Society of Labor Economics (ISLE), December 17-19, Karnatak University, Dharwad, Karnataka, India, 2010

Trade Liberalization Wage Inequality and Labor Market Discrimination: A Review of Theory and Evidence

Md. Gazi Salah Uddin*

Abstract

Neoclassical theory of labor market discrimination implies that increased competition from international trade will reduce the wage gap. The international trade could be a source of a reduction in wage inequality. The impact of international trade on wage inequality between high-skilled and low-skilled workers is still controversial issue. However, the limited numbers of studies that do employ econometric techniques to identify the impact of competition and international trade on the gender wage gaps have found conflicting results. Labour market institutions, however, may affect the degree to which firm wage policies can influence the gender earnings gap. The degree to which legal minimum wages in developing countries have an impact on actual wages is of substantial interest to analysts and policy makers in both developing and developed countries

Keywords: Trade Liberalization, Wage Inequality and labor market discrimination

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Proc. of the International Conference on Knowledge Globalization (ICKG), (jointly organized by North South University, Bangladesh and Knowledge Globalization Institute, USA and Suffolk University, Boston, USA), May 9-10, pp. 71-77, 2010

Causality between Energy Consumption and Income in South Asian Countries

Md. Gazi Salah Uddin*

Abstract

The paper investigates the long run Granger Causality relationship between economic growth and energy consumption in South Asian countries. The paper tries to access the impact of a change in energy consumption on income or vice versa in South Asian countries, namely Bangladesh, India, Pakistanand Sri Lanka. The ADF, DF–GLS, PP and KPSS test Granger Causality test and Co–integration Models are employed taking care of stochastic properties of the variables. The most interesting result is that there is long–run bidirectional causality between energy consumption to income growth in India, Pakistanand Sri Lanka. In Bangladesh, there is long–run unidirectional causality from energy consumption to growth. The estimated bivariate causality electricity consumption function for South Asian countries implies that South Asiais an energy-dependent country; thus, energy-saving policies may have an inverse effect on current and future economic development in South Asia.

Keywords: Energy Consumption, Co-integration, Granger Causality, Error-correction Model, Economic Growth.
JEL Classification: Q43; Q53; Q56

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GMSTEC: International Conference for a Sustainable Greater Mekong Subregion, (Oral Session) August 26-27, Bangkok, Thailand, 2010
www.kmutt.ac.th/gmstec2010/images/OralProgram.pdf

Causality between Electricity Consumption and Economic Growth in Bangladesh: A Time Series Approach

Md. Gazi Salah Uddin*, Kohinoor Biswas*

Abstract

This paper investigates the causality between electricity consumption and GDP growth for Bangladesh with special emphasis on the direction of causality and its impact on the short as well as long run. This study employs the co-integration and Granger causality tests to investigate long-run equilibrium relationship and the direction of causality between energy consumption and real income growth in Bangladesh. The estimation procedure also passes a battery of diagnostic tests indicating stability of the long and short run estimates. Analyses of 30 years' data since 1975 up to 2005 reveal some striking facts: the role of energy with respect to growth of Bangladesh is not 'neutral' rather' limiting'; unidirectional causality exists and directs from electricity generated from gas to growth in the long run where as bi-directional causality exists between them but only in the short run.

Keywords: Cointegration, Granger Causality, Electricity Consumption, Economic Growth
JEL Classification: C22, F51

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LIBERAL ARTS AND SOCIAL SCIENCES

Literary Paritantra (Systems): An International Journal on Literature and Theory, Vol. 2 Nos. 1 & 2, Basant (Spring), pp. 65-71, India, 2010. (ISSN 0974-7923)

Shattering the Shackles: Brecht's Plays and the Language of Political Protest in Bangladesh

Farzana Akhter*

Abstract

Brecht has been one of the more popular playwrights in Bangladesh ever since a new wave of modern theatre movement began in the country in the early 1970s. Even today, many aspiring writers are adapting his plays, while many others are translating his works. Brecht's aesthetics has influenced political playwrights and the theatre activists throughout the world, especially in the third world countries like India and Bangladesh. Politically aware theatre activists of our country were inspired by the German playwright Bertolt Brecht's plays as they are a form of social and political instruction. Brecht's plays have inspired the theatre practitioners of Bangladesh to use theatre as a means of social and political change. Through theatre the theatre activists wanted to bring a change in the socio-political milieu of the country. Brecht's didactic theatre had a strong political impetus and the clear purpose of educating the audience in a revolutionary sense. In this paper I propose to show how his plays *The Life of Galileo,* and *Mother Courage and her Children* are still relevant in our country and how they have helped the people to be socially and politically conscious so that they can resist the dominance of the upper class or the autocratic rulers and take part in building the country. I intend also to account for their success in terms of their political context and the political situation of our country.

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Journal of Alternative Perspectives in the Social Sciences, Vol. 2, Special Issue No. 1, pp. 372-400, 2010. (ISSN1944-1088)

Development Intervention and Ethnic Communities in Bangladesh and Thailand: A Critique

Bijoy P. Barua*

Abstract

This paper critically examines development interventions and their implications for ethnic communities within the framework of people-centered development in specific contexts of southeastern Bangladesh and northern Thailand. The development interventions did not contribute to poverty alleviation and they undermined viable alternative approaches to the livelihoods of the ethnic communities. Moreover, these development interventions failed to or did not recognize the psychological, social, cultural, and spiritual aspects of the concerned communities. It is suggested that development needs to be embedded in and based on local knowledge, culture and bio-physical environments.

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Development Review, Vol. 20, Silver Jubilee Issue, pp. 23-30, 2010. (ISSN1607-8373)

Participatory Research and Rural Development in Bangladesh: A Critical Reflection

Bijoy P. Barua*

Abstract

This paper examines the issues of participatory research, rural development and the role of non-governmental organizations (NGOs) in Bangladesh. The process of participatory research was initiated by the NGOs in the late 1970s. Over the years, this research has taken different forms and shapes in the country. Since NGOs have become more concerned about extension of microfinance program, they have less time to practice participatory research process in the villages for the empowerment of the disadvantaged people in Bangladesh.

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Asia-Pacific Journal of Public Health, Vol. 20, No. 10, pp. 1-9, 2010

Socio Demographic Differentials of Selected Non Communicable Diseases Risk Factors Among Adults in Matlab, Bangladesh: Findings From a WHOSTEPS Survey

A. Razzaque*, **Lutfun Nahar****, Abu Haider Mohammad Golam Mustafa*, Karar Zunaid Ahsan***, Mohammad Shafiqul Islam****, Mohammad Yunus*

Abstract

The study examined non communicable diseases risk factors among adults 25 to 64 years old of the Matlab Health and Demographic Surveillance System using World Health Organization STEP-wise methodology. The prevalence of smoking was found to be very high for males (53.9%) and it increased initially with age, whereas smoking was almost nil for females (0.8%). About 30% each of males and females used smokeless tobacco and its consumption increased with age. Consumption of vegetable/fruit is very low in this population (90% below recommended level), whereas one third of males and two thirds of female have low levels of physical activities. The raised blood pressure was more prevalent among females than in males (21.0% vs 12.5%, respectively) and the same was true for being overweight (13.9% vs 10.3%, respectively). Raised blood pressure increased with age but overweight did not vary by age for males, whereas it increased initially for females. Smoking (males) and use of smokeless tobacco decreased with increase in education, but both blood pressure and overweight increased.

Keywords: No communicable disease (NCD), NCD risk factor, STEPS, Matlab, Bangladesh

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Harvest: Jahangirnagar Studies in Language and Literature (Department of English, Jahangirnagar University), Vol. 25, pp. 17-29, Savar, Dhaka-1342, 2009-2010. (ISSN: 1729-8326)

A. S. Byatt's Possession: A "Postmodern Victorian" Experience

Farhana Zareen Bashar*

Abstract

A.S. Byatt applies almost all the postmodern tropes in the structure of her novel Possession: A Romance.Byatt's novel is a literary hybrid with the various literary devices used in the narration. A.S.Byatt has the 19th century Victorian world and plays it alongside the contemporary world. A.S.Byatt creates the 'other plot', which is the Victorian plot, and this is seen to possess everything in the modern world. A.S. Byatt, in a way recreates the Victorian age and crosses the line between the two different worlds. The action of the book takes place in the two ages. The author also inserts myths and fairy tales into her novel. There is an acceptance of the supernatural in her modern society. Byatt constructs two parallel platforms -a world of 'magic and myth' and the contemporary world. Byatt shows that the 20th century characters finally achieve harmony and escape from the chaotic and decadent condition into the Victorian plot. My paper examines how A.S. Byatt's Novel Possession: A Romance ultimately takes a huge leap back towards the past. My paper shows that the postmodern plot coil is loosened into a simple story in the end. This paper analyzes how the Victorian world is embedded into the postmodern scene and the way these two plots merge into a whole new reality.

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Harvest: Jahangirnagar Studies in Language and Literature (Department of English, Jahangirnagar University), Vol. 25, pp. 205, Savar, Dhaka-1342, 2009-2010. (ISSN: 1729-8326)

Tracing Post-Colonialism: Ambivalence and Allegory in *Bend in the River* and *Disgrace*

Asif Iqbal*, Shakil Rabbi*

Abstract

J. M Coetzee and V. S. Naipaul are two of the most celebrated writers of the twentieth century. Both have won the Nobel Prize for Literature and both are recognized as masters of prose fiction. They also have another similarity: both have written stories set in and dealing with ambivalence as a key characteristic of individuals constituted within the post-colonial African states. Many noted theorists such as Homi Bhabha and Fanon explain that ambivalence is typical for the post-colonial identity, both on a personal and a societal level. And many have also argued that the tension such an existence creates in the person and in a culture give rise to a ubiquitous sense of uncertainty. The two novels, Disgrace and A Bend in the River, draw out a picture that is nervous and febrile. In the newly emerging society of the two stories, ambivalence and the uncertainty it creates are palpable, sometimes erupting in violence, but always substantial and elementa

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Harvest: Jahangirnagar Studies in Language and Literature (Department of English, Jahangirnagar University), Vol. 25, pp. 99-109, Savar, Dhaka-1342, 2009-2010. (ISSN: 1729-8326)

The Failure of the Real and the Symbolic to Bridge the Gap between the World and Wright

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Abstract

This paper demonstrates the understanding of Frantz Fanon to locate the physical and mental changes that a black person goes through vis-à-vis a white man. It also deals with the role that family, church, and political party play in the formation of the so called 'good negro'. Focusing on the Jim Crow restriction, the paper projects a black child's difficulties ingrowing up in the South of the United States. It traces the life of Richard Wright, an exemplary surviving black child, who grew up there and represents a postmodern subject who can insert himself into the 'Symbolic' without forgetting that there is a lack in it, the lack that arises from the ultimate incompatibility of the 'Symbolic' and the 'Real'. The paper argues that ideology has its role in constructing a subject's notion of reality and that fantasy often hides the inconsistency in the big 'Other'. In short, the paper, instead of subverting the stereotypes imposed on the black, enquires the root causes of the fiction and nonfiction that project the black as angry, violent, and inferior to the white.

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Indigenous knowledge and learning in Asia/Pacific and Africa: Perspectives on Development, Education, and Culture (*ed.* by D. Kapoor and E, Shiza), Palgrave Macmillan, New York, pp. 63-79, 2010. (ISBN: 978-0-230-62101-5)

Ethnic Minorities, Indigenous knowledge, and Livelihoods: Struggle for Survival in Southeastern Bangladesh

Bijoy P. Barua*

Abstract

This chapter critically examines the socio-cultural resistance movement of ethnic minorities of the Chittagong hill tracts within the framework of indigenous knowledge, culture, development, and movements. The chapter specifically focuses on the colonial policies, forests and livelihoods, development interventions, role of developments actors, and resistance. The research revealed that the western development model has disregarded the diversity of indigenous knowledge and culture in order to promote monoculture in the southeastern part of Bangladesh.

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Proc. of The Asian Conference on Arts and Humanities (ACAH), International Academic Forum (IAFOR) & The IAFOR International Advisory Board, Ramada Hotel, Osaka, Japan June 18-21, pp. 826-856, 2010. www.acah.iafor.org

Subversion or Subservience? The Remains of the Empire in Nigeria: The Postcolonial elite, Linguistic Domination, and Native Missionary Moments

Farhana Zareen Bashar*

Abstract

Postcolonial literature is supposed to be a battleground on which an active pursuit of decolonisation should continue to be played out in every possible way. African literature written in the language of the Empire does not appear to be completely anticolonial.Ngugi Wa Thiongo feels a need for linguistic decolonization of African literature. According to him, African literature manifests the dominance of the Empire by using their language. He classifies the works of Chinua Achebe and Wole Soyinka as Afro-European literature. But is taking up the language the same as accepting the standards of the colonizer? The language question has many factors, especially when it comes to African literature. We see that Achebe attempts to decentralize control over language by extensively modifying it. My paper examines how the Nigerian authors,Chinua Achebe and Wole Soyinka have developed their own written English vernacular codes and the way they Nigerianize the texts using pidgin English in their dialogue-the English that is actually used by some Nigerians. My paper also shows that there are other manifestations of imperial domination apart from the linguistic hegemony in African literature. The English of the Empire has been domesticated by Achebe and it has effectively become the language of literary expression, but a preference for the White Man's codes and customs is seen in socio-cultural settings. Nigeria faced a threat not only from ethnic particularism, but also from neo-imperialism in cultural matters. There was cultural domination in the country, which is still at work in present day Nigeria. In Africa, the native African missionary figures add an entire new layer to the inevitable complications of cultural imperialsm. The embrace of Christianity by indigenous Africans inevitably comes with complications of cultural identity. Soyinka's Ake raises questions on the ambiguous place of native missionaries. In Soyinka's Ake, we see that foreign imposition was able to operate at least in part because of the collaboration of elements of indigenous structures of privilege. The invasive colonial gaze is still felt in Nigeria in the form of the postcolonial elite. The native Christian missionaries and the Christians in the southern part of Nigeria, that is, the Igbos and the Yorubas in the South continue to hold on to the British Empire's value system. My paper shows that the domestication of the English Language is able to carry the weight of the African culture, but these authors point out that the internal indigenous structures are flawed and these deficiencies allow the dead seeds of hegemony to germinate all over again in native soil. So in Ngugi Wa Thiongo's words, the decolonization of the mind has not yet taken place. In this paper I will include my personal experiences and interaction with the westernized Nigerian and their apparent Afro-European lifestyle. The years I have spent in Nigeria have brought me in contact with the westernized educated Igbos and Yorubas of the South and my description of their day-to-day tendencies will explicitly show that there is a serious Imperial effect deeply rooted in the Nigerians.

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SCIENCES AND ENGINEERING

Journal of Information Processing Systems , Vol. 6, No. 4, pp. 511-520, December , Korea, 2010. [DOI: 10.3745/JIPS.2010.6.4.511]

Fingerprint Detection Using Canny Filter and DWT, a New Approach

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

Abstract

This paper proposes two new methods to detect the fingerprints of different persons based on one-dimensional and two-dimensional discrete wavelet transformations (DWTs). Recent literatures show that fingerprint detection based on DWT requires less amount of memory space compared to pattern recognition and moment-based image recognition technique. Here four statistical parameters - cross correlation co-efficient, skewness, kurtosis and convolution of approximate coefficient of one dimensional DWT are used to evaluate the two methods in case of fingerprints of same person and those of different persons. Our second method shows better results than that of first method, in context of all statistical parameters in detection of fingerprints.

Keywords: Canny Filter, Color Inversion, Skewness, Kurtosis and Convolution

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IEEE Transactions on Plasma Science, Vol. 38, No. 6, pp. 1527-1534, June 09, USA, 2010

Decay Instability of Dust-Acoustic Wave in Magnetized Dusty Plasma

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Abstract

The three-wave nonlinear decay instability of a dustacoustic wave (DAW) into a dust-lower-hybrid wave (DLHW) and a low-frequency electromagnetic wave in a homogeneous, magnetized and collisionless dusty plasma has been investigated analytically. The fluid equations coupled with the Maxwell's equations have been employed to find the nonlinear response of the plasma particles. An expression for the undamped growth rate of the three-wave parametric instability is derived. It is found that a large amplitude DAW undergoes a considerable decay instability in the magnetized dusty plasma. The growth rate of the wave instability is found to be highly sensitive to some plasma parameters, like external static magnetic field, ion number density, electron/ ion temperature etc. The importance of the present work to space dusty plasma environments is also pointed out.

Index Terms: Decay instability, dust-acoustic wave (DAW), dust-lower-hybrids wave (DLHW), dust-modified shear Alfven wave, dusty plasma

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Journal of Applied Physics, Vol. 107, No. 2, pp. 023307-7, February, USA, 2010
[DOI:10.1063/1.3295917]

Quantum Effect on Modulational Instability of a Laser Radiation in a Semiconductor Plasma

M. R. Amin*

Abstract

Modulational instability of a high power laser radiation in a homogeneous unmagnetized piezoelectric semiconductor plasma has been investigated analytically. The fluid equations of quantum hydrodynamics coupled with the Maxwell's equations have been employed to find the nonlinear response of electrons in the piezoelectric semiconductor. The analysis is carried out through the derivation of the nonlinear dispersion relation for the four-wave modulational instability. An expression for the growth rate of the instability including the quantum effect due to Bohm potential has been obtained from the nonlinear dispersion relation. The quantum effect is observed to play a vital role in the four-wave scattering process. For a particular set of parameters, the quantum effect enhances the growth rate of the modulational instability by 37% compared to the growth rate predicted by the classical theory.

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Journal Plasma Physics, Vol. 76, No. 3&4, pp. 477-485 (Cambridge University Press), January, 2010. [DOI 10.1017/8002237780999075]

Effects of Vortex-like (trapped) Electron Distribution on Nonlinear Dust-Acoustic Waves with Positive Dust Charge Fluctuation

M. R. Amin*, Sanjit K. Paul**, **Gurudas Mandal***, A. A. Mamun**

Abstract

The nonlinear propagation of dust-acoustic (DA) waves in a dusty plasma consisting of Boltzmann-distributed ions, vortex-like distributed electrons and mobile charge fluctuating positive dust has been investigated by employing the reductive perturbation method. The effects of dust grain charge fluctuation and the vortex-like electron distribution are found to modify the properties of the DA solitary waves significantly. The implications of these results for some space and astrophysical dusty plasma systems are briefly mentioned.

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Journal of Convergence Information Technology (JCIT), Vol. 5, No. 8, pp. 137-145, Korea, 2010

Call Admission Control Strategy for System Throughput Maximization Using DOVE

Tanzilah Noor Shabnam*, Md. Imdadul Islam**, **M. R. Amin***

Abstract

In this paper we propose a signal-to-interference (SIR)-based distributed Call Admission Control (CAC) strategy that considers the combined effect of both call and packet level quality of service (QoS) in wireless uplink. Blocking probability and outage probability are considered as call level and packet level QoS parameters respectively. These two QoS parameters are then investigated as functions of relative traffic load. A queuing model based on the delay of voice end-user (DOVE) protocol is used to derive state transition probabilities. The paper deals with the impact of amount of delay of end user on throughput for a particular offered traffic per user. It shows that throughput increases with increase in the amount of delay of end user for a given threshold blocking probability. At the same time, in the underload region, the rate of decrement of the throughput with decrease in the number of channels is less rapid than that of the overload condition. It is the application of DOVE that restricts the rapid fall in system throughput in the underload region even though the number of channels decreases.

Keywords: Call admission control, DOVE, Blocking probability, Relative traffic load.

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Journal of Agriculture Technology, Vol. 6 No. 4, pp. 615-630, 2010

Energy Intensity and Productivity in Relation to Agriculture-Bangladesh Perspective

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Abstract

The energy intensity and overall energetic efficiency of agricultural practices as exists in Bangladesh was determined. Results showed that total energy output increased from 69.87GJha-1 to 82.08 Gjha-1, with increasing commercial energy input from 17.94 Gjha-1 to 27.10 Gjha-1 in the study period of 1990 to 2005.The corresponding increase in energy intensity was 45.67MJ/US$(2000).Energetic efficiency, calculated as the ratio of total output to input for different crops, using weight factor, decreased from 3.97 to 3.03 in the study period. The energetic efficiency declines with increasing energy input, and the result indicates that input energy increases faster compared to energy output. The mechanization index increased from 64% to 78% in the study period. However, our main goal being maximization of the output per unit agricultural land, the estimated change in efficiency with increasing input can play an important role in choosing the appropriate input for optimum output.

Keywords: Energy intensity, productivity, agriculture, Bangladesh.

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Research Journal of Applied Sciences, Vol. 5, Issue. 2, pp. 78-84, Medwell Journals, 2010. (ISSN: 1815-932X), [DOI: 10.3923/rjasci.2010.78.84]

A Futuristic View of Change in Energy Consumption and Related Energy Intensity in Bangladesh Using Complete Decomposition Model (CDM)

Shaikh Khosruzzaman*, **M. Ali Asgar****, Naimul Karim*, Shawkat Akbar****

Abstract

The decomposition technique has enabled us to identify the factors that influence the total energy use and structural change of economy. In the present study, a complete decomposition model is employed for analyzing the correlation between energy consumption and economic development of Bangladesh for the period of 2007-2030.The activity effects, intensity and structural effects of energy use on aggregative economy were discussed through intensifying the use of energy in individual economic sectors. The trends in energy use in low and high energy intensive groups of the country's economy are also evaluated to provide a basis of assessments of sustainability.

Keywords: Complete decomposition model, energy consumption, energy intensity, activity effect, structural effect, Bangladesh.

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IEEE Transactions on Electron Devices, Vol. 57, No. 11, pp. 2880, November 2010

Electronic Properties and Orientation-Dependent Performance of InAs Nanowire Transistors

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Abstract

The electronic properties, namely, the band structures, the band gaps, and the electron effective masses of hydrogen-passivated InAs nanowires grown in <100>, <110>, and <111> crystallographic directions are studied using $sp^3d^5s^*$ orbital-basis tight-binding model. We then parameterize the band gaps and electron effective masses to facilitate device simulation and to study the orientation-dependent performance of n-channel InAs nanowire transistors using a top-of-the-barrier model. The <111> and <110> wire transistors have better performance metrics. The quantum-confinement effect is largest in the <100> wire, which results in a higher band gap and a heavier effective mass for relatively smaller diameter wires. The consequence is lower current, higher density of states, higher quantum capacitance, and longer delay in the <100> wire transistors. The <110> and <111> wires have a very similar quantum-confinement effect, even for the smaller diameters, which results in similar band gaps, similar effective masses, and similar performance metrics.

Index Terms: InAs nanowire transistors, orientation dependent electronic properties, orientation dependent performance metrics, parametrization of effective mass and band gap.

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Japanese Journal of Applied Physics, Vol. 49, pp. 025101, February 22, 2010

Performance of Zero-Schottky-Barrier and Doped Contacts Single and Double Walled Carbon Nanotube Transistors

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Abstract

Atomistic quantum simulation is performed to compare the performance of single walled (SW) and double walled (DW) carbon nanotube field effect transistors (CNTFETs) with two different types of contacts: zero-Schottky-barrier (SB) contacts and doped (DP) contacts. Both the DW and SW CNTFETs have better performance with doped contacts. The conduction band under the gate region is pushed down below the source Fermi level when the applied gate bias is $\geq$ Eg/2. Beyond this gate voltage, the current in SB CNTFETs becomes almost constant. This does not happen to the doped contacts devices and they have better on-state performance. With the same type of contacts, the SW and DW CNTFETs exhibit similar I–V characteristics. However, the switching delay and the unity current gain frequency are much better in DW CNTFETs for both types of contacts. The better switching performance of DW CNTFETs results from the smaller gate capacitance.

Keywords: Silicon nanowire; Insulator transistors; Source-drain

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Nano-Micro Lett. Vol. 2, pp. 83, China, 2010

Effects of Source-Drain Underlaps on the Performance of Silicon Nanowire on Insulator Transistors

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Abstract

The effects of source-drain underlaps on the performance of a top gate silicon nanowire on insulator transistor are studied using a three dimensional (3D) self-consistent Poisson-Schrodinger quantum simulation. Voltage-controlled tunnel barrier is the device transport physics. The off current, the on/off current ratio, and the inverse subthreshold slope are improved while the on current is degraded with underlap. The physics behind this behavior is the modulation of a tunnel barrier with underlap. The underlap primarily affects the tunneling component of drain current. About 50% contribution to the gate capacitance comes from the fringing electric fields emanating from the gate metal to the source and drain. The gate capacitance reduces with underlap, which should reduce the intrinsic switching delay and increase the intrinsic cut-off frequency. However, both the on current and the transconductance reduce with underlap, and the consequence is the increase of delay and the reduction of cut-off frequency.

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Nano-Micro Lett. Vol. 2, pp. 126, China 2010

Performance Comparison of Zero-Schottky-Barrier and Doped Contacts Carbon Nanotube Transistors with Strain Applied

Md. Abdul Wahab*, **Khairul Alam****

Abstract

Atomistic quantum simulation is performed to compare the performance of zero-chottky-barrier and doped source-drain contacts carbon nanotube field effect transistors (CNTFETs) with strain applied. The doped source-drain contact CNTFETs outperform the Schottky contact devices with and without strain applied. The off-state current in both types of contact is similar with and without strain applied. This is because both types of contact offer very similar potential barrier in off-state. However, the on-state current in doped contact devices is much higher due to better modulation of on-state potential profile, and its variation with strain is sensitive to the device contact type. The on/off current ratio and the inverse subthreshold slope are better with doped source-drain contact, and their variations with strain are relatively less sensitive to the device contact type. The channel transconductance and device switching performance are much better with doped source-drain contact, and their variations with strain are sensitive to device contact type.

Keywords: Zero-Schottky-barrier; Doped contact; Strain; Inverse subthreshold slope; Intrinsic cut-off frequency

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Journal of Computers, Vol. 5, No. 12, pp. 1779-1788, 2010

Multiple-Case Outlier Detection in Multiple Linear Regression Model Using Quantum-Inspired Evolutionary Algorithm

Salena Akter*, Mozammel H A Khan*

Abstract

In ordinary statistical methods, multiple outliers in multiple linear regression model are detected sequentially one after another, where smearing and masking effects give misleading results. If the potential multiple outliers can be detected simultaneously, smearing and masking effects can be avoided. Such multiple-case outlier detection is of combinatorial nature and $2^N - N - 1$ sets of possible outliers need to be tested, where N is the number of data points. This exhaustive search is practically impossible. In this paper, we have used quantum-inspired evolutionary algorithm (QEA) for multiple-case outlier detection in multiple linear regression model. A Bayesian information criterion based fitness function incorporating extra penalty for number of potential outliers has been used for identifying the most appropriate set of potential outliers. Experimental results with 10 widely referred datasets from statistical literature show that the QEA overcomes the effect of smearing and masking and effectively detects the most appropriate set of outliers.

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SICE Journal of Control, Measurement, and System Integration (SICE, JCMSI), (The Society of Instrument and Control Engineers), Vol. 3, No. 5, pp. 330-335, September, 2010. (ISSN: 1882-4889).

Measurement of the Diameters of Deformed Bars in Concrete Using an Electromagnetic Wave Radar (in the Presence of Cross Bars)

Shogo Tanaka*, **Halima Begum****

Abstract

The authors previously proposed a method to measure the diameter of the deformed reinforcing bars in concrete structures nondestructively using an electromagnetic wave radar. The method estimates the periodicity of the knots of the inspected bar and utilized the standard relationship between the knot's pitch and the diameter of the bar to measure the diameter indirectly. The effectiveness of the method was verified using test specimens where the bars were placed parallel to each other. However, in practical case, where other reinforcing bars cross the inspected bar perpendicularly, the stronger reflections from the cross bars influence the reflection from the inspected bar. The paper thus proposes a general method which eliminates such unwanted influences from the cross bars and measures the diameter accurately even in practical environment.

Keywords: Electromagnetic Wave Radar, Knot's Pitch, Diameter, Cross Bar, Propagation Time Variation, Kalman Filter, Maximum Likelihood Method.

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Solid-State Electronics, Vol. 54, No. 6, pp. 621-627, 2010

Modeling Effects of Interface Traps on the Gate C-V Characteristics of MOS Devices on Alternative High-Mobility Substrates

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Abstract

A physically based, quantum mechanical (QM) model is presented for simulating low frequency gate C-V characteristics of MOS devices on arbitrary substrates including interface trap (Dit) effects. MOS electrostatics is determined from the self-consistent solution of one-dimensional Schrödinger's and Poisson's equations considering wave function penetration into the gate dielectric. The effects of strain and/or the variation of material composition in each layer of MOS structures on non-conventional substrates are also included in the model. The proposed model can support arbitrary Dit distributions (both donor and acceptor types) within the entire bandgap as well as within the conduction and the valence bands. Comparisons with two other existing C-V models are also made. Numerical results show that for accurate simulation of the low frequency C-V characteristics, the energy distributions of the Dit over the entire bias range and a model that considers QM effects with wave function penetration are necessary. Excellent agreement with published experimental data for MOS structures on Si, Ge and III-V substrates is achieved through appropriate selection of the Dit distributions. The proposed model can be used to extract Dit profiles of MOS structures on alternative substrates by comparing with measured low frequency C-V characteristics and to verify the accuracy of Dit profiles extracted using other techniques.

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IEEE Transactions on Electron Devices, Vol. 57, No. 2, pp. 496-502, 2010

A Physically Based, Accurate Model for Quantum Mechanical Correction to the Surface Potential of Nano-Scale MOSFETs

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Abstract

We present a physically based, explicit, analytical model for the quantum mechanical (QM) correction to the surface potential of nano-scale MOS devices. Effect of wave function penetration into the gate dielectric is taken into account. Instead of using the bandgap widening approach which includes QM correction indirectly, the proposed correction term is directly added to the semiclassical surface potential. Under accumulation bias, charges in extended states and in quantized states contribute to the surface potential in different ways. The proposed QM correction considers this difference in contributions. Comparison with two existing analytical QM correction models and with two self-consistent, QM numerical models show that the proposed correction is more accurate than the existing analytical models. The improvement achieved under the accumulation bias is particularly significant. Gate C-V characteristics of a number of different MOS devices have been simulated using the proposed correction. Excellent agreement with published experimental data has been observed.

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International Journal of Artificial Intelligence and Soft Computing, Vol. 2, No. 3, pp. 174-185, 2010

Multiple-Case Outlier Detection in Least-Squares Regression Model Using Quantum-Inspired Evolutionary Algorithm

Mozammel H. A. Khan*

Abstract

In ordinary statistical methods, multiple outliers in least-squares regression model are detected sequentially one after another, where smearing and masking effects give misleading results. If the potential multiple outliers can be detected simultaneously, smearing and masking effects can be avoided. Such multiple-case outlier detection is of combinatorial nature and $2^N - 1$ sets of possible outliers need to be tested, where N is the number of data points. This exhaustive search is practically impossible. Like other combinatorial applications, evolutionary algorithms may play a vital role in multiple-case outlier detection problem. In this paper, we have used quantum-inspired evolutionary algorithm (QEA) for multiple-case outlier detection in least-squares regression model. An information criterion based fitness function incorporating extra penalty for number of potential outliers has been used for identifying the most appropriate set of potential outliers. Experimental results with four datasets from statistical literature show that the QEA effectively detects the most appropriate set of outliers.

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The Open Artificial Intelligence Journal, Vol. 4, pp. 37-48, 2010

Influence of Probability of Variation Operator on the Performance of Quantum-Inspired Evolutionary Algorithm for 0/1 Knapsack Problem

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Abstract

Quantum-Inspired Evolutionary Algorithm (QEA) has been shown to be better performing than classical Genetic Algorithm based evolutionary techniques for combinatorial optimization problems like 0/1 knapsack problem. QEA uses quantum computing-inspired representation of solution called Q-bit individual consisting of Q-bits. The probability amplitudes of the Q-bits are changed by application of Q-gate operator, which is classical analogous of quantum rotation operator. The Q-gate operator is the only variation operator used in QEA, which along with some problem specific heuristic provides exploitation of the properties of the best solutions. In this paper, we analyzed the characteristics of the QEA for 0/1 knapsack problem and showed that a probability in the range 0.3 to 0.4 for the application of the Q-gate variation operator has the greatest likelihood of making a good balance between exploration and exploitation. Experimental results agree with the analytical finding.

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Atlantic Electronic (Journal of Mathematics), Vol. 4, No. 1, pp. 56-69, winter, 2010
http://aejm.ca/rema, http://aejm.ca

Some Characterization of Modular and Distributive JP-Semilattices

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

Abstract

A meet semilattice with a partial join operation satisfying some axioms is a JP-semilattice. In this paper we study the modular and distributive JP-semilattice. We give several characterizations of modular and distributive JP-semilattice. We also prove the Separation Theorem and its extension for minimal prime ideal of distributive JP-semilattice. JP- congruences, have also been studied.

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Journal of Physical Sciences, Vol. 14, pp. 173-180, received March 4; accepted October 25; published December 24, 2010 (ISSN: 0972-8791). www.vidyasagar.ac.in/journal

Some Properties of Modular n-Ideals of a Lattice

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

An ideal M of a lattice L is called a modular ideal if for all ideals $I, J \in I(L)$ with $J \subseteq I$, the relation $I \cap (M \vee J) = (I \cap M) \vee J$ is satisfied. In this paper the authors have introduced the notion of modular n-ideals of a lattice. They have given several characterizations and properties of modular n-ideals when n is a neutral element in lattice L. They proved that the principal n-ideal $< s >_n$ is a modular n-ideal if and only if $s \wedge n$ and $s \vee n$ are modular elements in (n] and [n) respectively. Finally, they have characterized modular n-ideals with the help of relative n-annihilators.

Keywords: Modular n-ideal, Neutral element, Principal n-ideal, Relative annihilators, Relative n-annihilators.

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Computer Science Research and the Internet (*ed.* by J. E. Morries), Nova Science Publishers, Inc., NY, USA, 2010.

Galois Field Sum of Products Approach to Multiple-Valued Quantum Logic Circuit Synthesis

Mozammel H. A. Khan*

Abstract

A quantum algorithm is implemented using a quantum logic circuit that uses quantum mechanical phenomena to solve the problem. The quantum logic circuit is constructed with quantum gates using reversible logic synthesis techniques. Most of the quantum algorithms are binary algorithms. However, there are ample possibilities to develop multiple-valued quantum algorithms. The reasons are (i) multiple-valued quantum gates are realizable using existing quantum technologies, (ii) multiple-valued reversible logic synthesis is now possible, and (iii) multiple-valued quantum logic circuit is more compact and manageable than binary quantum logic circuit. The quaternary quantum logic circuit has additional advantage that qubits can be very easily encoded into quaternary qudits by grouping two qubits together. This advantage opens an avenue for using quaternary quantum logic circuit internally in binary quantum algorithms. Though there are other approaches of multiple-valued reversible/quantum logic circuit synthesis, the most promising and practical approach is to synthesize multiple-valued reversible/quantum logic circuit as Galois field sum of products (GFSOP) circuit. The advantage of this approach is that any multiple-valued non-reversible logic function with many input variables can be expressed as minimized GFSOP expression and the GFSOP expression can be realized as cascade of 1-qudit, M-S, Feynman, and Toffoli gates. Moreover, macro-level Feynman and Toffoli gates can be realized on the top of 1-qudit and M-S gates without using any ancilla input constant. In this chapter we have developed effective method for synthesis of ternary and quaternary multiple-output logic functions as GFSOP circuit. For this purpose, we have introduced the concept of Galois filed (GF) with example of GF(3) and GF(4) and discussed the notion of GFSOP expression. We have developed Galois field expansions (GFE) for ternary and quaternary cases and have proposed heuristic algorithm for GFSOP minimization by application of these GFEs. For synthesizing quantum logic circuits with lesser width, we have developed method of realizing macro-level ternary and quaternary Feynman and Toffoli gates on the top of 1-qudit and M-S gates without use of any ancilla input. Finally, we have proposed method for multiple-output GFSOP realization as cascade of 1-qudit, M-S, Feynman, and Toffoli gates, which minimizes both the gate count and the width of the synthesized quantum circuit. We have established effectiveness of the GFSOP minimization algorithm with sufficient experimental results. The very important feature of the proposed synthesis method is that the method inherently converts a non-reversible function into a reversible one for GFSOP based realization using quantum gates.

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13th International Conference on Computer and Information Technology (ICCIT), December 23-25, Dhaka, Bangladesh, (IEEE Digital Library, (USA)), 2010

Performance Evaluation of Alternate Routing Network Based on MMPP Traffic Model

Md. Rifat Hossain Khan*, Sadia Ahmed*, Md. Imdadul Islam**, **M. R. Amin***

Abstract

To enhance performance of a network, in context of throughput, the overflow traffic between two nodes needs to be passed through one or more alternate paths. In recent literatures, alternate path is mostly analyzed based on Equivalent Random Theory (ERT), extended ERT and cost optimization technique. In this paper, we apply the concept of Automatic Repeat Request (ARQ) scheme of wireless communications in alternate routing traffic to get four-state Markov chain. Finally the Markov chain is converted to a two-state Markov Modulated Poison Process (MMPP) to determine performance of the network in terms of MMPP traffic parameters.

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Proc. of 13th International Conference on Computer and Information Technology, December 23-25, Dhaka, pp. 108-113, 2010

Conversion of Bangla Sentence for Universal Networking Language

Md. Nawab Yousuf Ali*, Abu Mohammad Nurannabi**, **M. Ameer Ali***, Jugal Krishna Das***, Ghulam Farooque Ahmed****

Abstract

Conversion from Bangla language to another native language using Universal Networking Language (UNL) is highly demanding due to increasing the usage of Internet based application. Since Bangla case structure plays a fundamental role in Bangla grammartical structures, this paper presents some rules for Bangla case structures that will be used to convert Bangla sentence to UNL expression. The theoretical analysis shows that the defined rules can be used successful conversion of Bangla sentence.

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Proc. of the International Conference on Asian Language Processing (IALP), December 28-30, Harbin, China, pp. 118-121, 2010

Algorithm for Conversion of Bangla Sentence to Universal Networking Language

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Abstract

Conversion from another language to native language is highly demanding due to increasing the usage of web based application. Firstly, the respective sentence of a native language is converted to Universal Networking Language (UNL) expressions and then UNL expressions can be converted to any native language. Already UNL system is developed for most of the languages, but there are no algorithms to convert Bangla sentence to UNL expressions. This paper presents newly developed algorithms for conversion of Bangla sentence into UNL expressions. Theoretically it proves its ability to convert from Bangla sentence to UNL expression.

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Proc. of the International Conference on Asian Language Processing (IALP),
December 28-30, Harbin, China, pp. 43-46, 2010

Development of Templates for Dictionary Entries of Bangla Roots and Primary Suffixes for Universal Networking Language

Md. Zakir Hossain*, **Md. Nawab Yousuf Ali****, **Shaikh Muhammad Allayear****, Jugal Krishna Das*****

Abstract

The Universal Networking Language (UNL) is a world wide generalizes form of human interactive language in a machine independent digital platform for defining, recapitulating, amending, storing and dissipating knowledge or information among people of different affiliations. The theoretical and applied research associated with this interdisciplinary endeavor facilitates in a number of practical applications in most domains of human activities such as creating globalization trends of markets or geopolitical interdependence among nations. In our research work we have tried to develop templates for dictionary entries of Bangla roots, krit prottoy (primary suffix) and kria bivokti (verbal inflexion) which will help to create a doorway for converting the Bangla sentence to UNL and vice versa and subside the barrier between Bangla to other languages

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Proc. of the International Conference on Asian Language Processing (IALP), December 28-30, Harbin, China, pp. 31-34, 2010

Rules for Morphological Analysis of Bangla Verbs for Universal Networking Language

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Abstract

The Universal Networking Language (UNL) deals with the communication across nations of different languages and involves with many different related discipline such as linguistics, epistemology, computer science etc. It helps to overcome the language barrier among people of different nations to solve problems emerging from current globalization trends and geopolitical interdependence. Morphological analysis is applied to Bangla verbs in this paper and based on that some rules have been developed. These rules would be useful for converting Bangla sentences into universal networking language (UNL).

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Proc. of the International Conference on Asian Language Processing (IALP), December 28-30, Harbin, China, pp. 15-18, 2010

Development of Analysis Rules for Bangla Root and Primary Suffix for Universal Networking Language

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Abstract

This paper describes a method for the development of Bangla enconversion within the framework of the Universal Networking Language (UNL). We also discuss some issues and problems related to the UNL representation that affect the quality of generation. Additionally, the lingware engineering is introduced as a technique to enhance the quality and increase the development efficiency. In this paper a pioneer work is proposed that analyzes the Bangla words morphologically from which we obtain roots and primary suffixes (krit prottoy) and develops some rules for Bangla root, and primary suffix for the UNL. This paper also describes grammatical attributes for Bangla root and primary suffixes and use of morphological analysis. UNL expression of the Bangla attributes is also thoroughly discussed in this paper.

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Proc. of the 4th International Conference on Software, Knowledge and Information Management and Applications, August 25-27, Paro, Bhutan 2010

Formation of Bangla Word Dictionary Compatible with UNL Structure

Muhammad Firoz Mridha*, Manoj Banik**, **Md. Nawab Yousuf Ali*****, Mohammad Nurul Huda******, Chowdhury Mofizur Rahman******, Jugal Krishna Das*******

Abstract

The usage of native language through Internet is highly demanding now a day due to rapidly increase of Internet based application in daily needs. Universal Networking Language (UNL) addressed this issue in most of languages. But the UNL is unable to convert from any native language to Bangla. Addressing this issue, this paper presents a structure namely, "Formation of Bangla Word Dictionary compatible with UNL Structure" by integrating Bangla Word Dictionary along with grammatical attributes of Bangla words into the framework of UNL. The proposed work is theoretically able to format any kinds of Bangla Words with prefixes and suffixes that is compatible with UNL.

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Asia-Pacific Conference on Circuits and Systems (APCCAS), Kuala Lumpur, Malaysia, December 06-09, pp. 863-866, 2010. (IEEE)

Design of a Linearly Increasing Inrush Current Limit Circuit for DC-DC Boost Regulators

Khondker Zakir Ahmed*, Muhammad Shahidul Islam**, Syed Mustafa Khelat Bari***, Mohammad Riazur Rahman Mazumder****, A. B. M Harun-ur Rashid****

Abstract

This paper presents a CMOS circuit, designed for smoothing out the inrush current of DC-DC boost regulator. A current-on-capacitor based clamped reference is designed along with common source amplifier and high speed comparator. The linearly varying reference is clamped using a MOSFET connected in diode configuration, ensuring a smooth transition from ramp mode to normal mode, which is a unique feature of this proposed circuit. The input inductor current is sensed using a small resistance connected at the source of the NMOS power transistor producing a sense voltage. The sense voltage is then compared with the linearly increasing reference. The circuit produces smoothed out inductor current envelop compared to conventional discrete step start up current shapes. The smoothed out inductor current increases the reliability and performance of the boost regulator. The circuit is simulated in HSPICE with 0.5μm CMOS process technology model.

Keywords: Inrush current, Inductive Boost regulator, Start-up circuit, WLED driver, Current limit circuit, Soft start circuit.

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Asia-Pacific Conference on Circuits and Systems (APCCAS), Kuala Lumpur, Malaysia, December 06-09, pp. 863-866, 2010. (IEEE)

Implementation of Highly Accurate NMOS Vt Based Clamping Technique in Low Current Comparator

Syed Mustafa Khelat Bari*, Didar Islam*, **Khondker Zakir Ahmed****

Abstract

This paper presents a circuit implementation of a simple but accurate NMOS Vt based clamping technique to decrease the logic transition delay in an ultra low ground current comparator. In a very low current comparator the output logic delay is predominantly set by the speed of slew limited decision making nodes and hence limiting their wide swing by clamping them around the decision point is one of the ways to reduce that delay. In this paper an innovative NMOS threshold based clamping technique is proposed to clamp the gate of the NMOS of output logic stage in both going high and going low which ensures high speed logic transition along with very accurate clamping threshold without using too much bias current. Simulation results with analysis and the layout of the comparator with the proposed clamping network in 0.5μm CMOS process has also been presented in the paper.

Keywords: comparator, propagation delay, clamping.

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International Conference on Electrical and Computer Engineering (ICECE), Dhaka, Bangladesh, December 18-20, pp. 454-457, 2010

Design and Implementation of Ultra Low Bias Current High Efficiency PFM Mode DC-DC Boost Regulator

Khondker Zakir Ahmed*, Syed Mustafa Khelat Bari**, Didar Islam**, A. B. M. Harun-ur Rashid***

Abstract

This paper presents the design and implementation of a low voltage DC-DC asynchronous boost regulator that works in PFM (Pulse Frequency Modulation) mode. The booster is designed to supply low load condition (up to 20 mA) with high efficiency. The total bias current of the chip is only 5 μA when operating with 1 mA load and the number goes to maximum of 18 μA with maximum load condition (20 mA). The ultra low bias current enables the chip to maximize its efficiency in the entire load range. The chip features on-chip over current protection scheme and thermal protection scheme. The boost regulator is implemented in 0.5 μm BiCMOS process technology. The maximum measured efficiency of the fabricated chip is 86%.

Keywords: BiCMOS process technology, booster, current protection scheme , low voltage DC-DC asynchronous boost regulator , pulse frequency modulation mode, thermal protection scheme.

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International Conference on Electrical and Computer Engineering (ICECE), December 18-20, Dhaka, Bangladesh, pp. 594-597, 2010.

A Theoretical Model of GSM Network Based Vehicle Tracking System

Md. Zaved Parvez*, **Khondker Zakir Ahmed****, Q. Raguib Mahfuz*, Md. Saifur Rahman***

Abstract

This paper presents a novel idea of vehicle tracking system based on the existing GSM cellular networks. A software based system is proposed that sends specialized request to the GSM cellular networks to call any particular vehicle ID. The vehicle ID is actually a particular SIM kept in a special kit inside the vehicle that is capable of receiving a phone call automatically. As soon as the call is established, the particular cell information is available to the BSC which is then passed to the software. Based on the information collected, the software will initiate a forced handover of the call to another suitable cell and then receive the information of that cell too. Upon completion of two consecutive forced handovers, i.e., receiving cell information of the vehicle ID from three different cells and sending them to the software, it will automatically disconnect the call. The software will analyze the cell info and extract three timing advances (TA) data along with the GPS locations of the individual cells. An algorithm has been developed for this system, which then calculates the exact location of the vehicle. The accuracy of the vehicle right at the moment of the call establishment is expected to be within a circle of 200 meters radius.

Keywords: BSC, GPS, GSM cellular network, SEM, base station controller, call establishment, cell information, forced handover, global positioning system, software based system, timing advances, vehicle ID, vehicle tracking system.

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6th International Conference on Electrical and Computer Engineering (ICECE), December 18-20, Dhaka, Bangladesh, pp. 29-32, 2010

A Physically Based Compact Model for Eigenenergy in In rich $In_{1-x}Ga_xAs$ MOSFETs Using Modified Airy Function Approximation

Raisul Islam*, **Anisul Haque****

Abstract

We propose a compact model for calculating the quantized energy levels in InGaAs MOSFETs with Al_2O_3 gate dielectric. The model is based on the modified Airy function approximation, originally developed for Si nano-MOSFETs. The parameters of the model are extracted from numerical results calculated by self-consistent solution of one-dimensional Schrodinger and Poisson equation including the effect of wave function penetration into the gate dielectric. It is found that the compact model parameters are not sensitive to the variations in the In content in the channel layer and to the substrate doping density. Therefore, constant values of the parameters are proposed for both electrons and holes.

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Proc of the International Forum on Strategic Technologies (IFOST), (organized by University of Ulsan), October 13-15, Ulsan, South Korea, 2010

Effects of Carrier Gas Flow-Rate and Oxygen Admixture Ratio on Particle Parameters in Ar-O2 Plasma

M. Rafiqul Alam*, P. K. Shadhu Khan*, M. A Matin**, **M. Mofazzal Hossain*****

Abstract

Taking into account the strong plasma-particle interactions and particle loading effects, a model of plasmaparticle interaction of argon-oxygen plasma has been developed for the numerical predict the particle temperature, velocity, trajectory and plasma temperature isotherm during the in-flight treatment. In this model the conservative equations solves the conservative equations to predict the plasma trajectories under local thermal equilibrium condition. It is found that the carrier gas flow-rate strongly affects the particle temperature and the admixture ratio of oxygen to argon affects the plasma temperature isotherm as well as the particle temperature

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Proc. TENCON (Fukuoka International Congress Center), November 21-24 Nov, Fukuoka, Japan, 2010

An Advanced Ship Guidance System Using Grid Mapping Technique

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Abstract

A ship guidance system is helpful for the detection of location and movement of ships in the river or near at the port. In this research, we have developed a ship guidance system using grid mapping method to help to locate and control the movement of ships properly. The system is designed to generate a grid map of different color which represents different depth. By comparing the accepted information from the server with the current water level and needed depth for ship, we can get a specific map for every ship. As the ship moves forward, the map also gets update due to the change of the ship's location on the grid. This creates a moving real time grid map, which could be used to navigate the vassal. The location of ship is calculated using delay of signal (which travels at the speed of light) and simple rectangle theories. The depth of channel is stored as a 2 dimensional matrix in the database. This information is sent to the ship through Omni directional antenna using Frequency Shift Keying (FSK) modulation technique. The ship crosslinks this information with the information of its depth and angle to generate a real time map.

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Proc. TENCON (Fukuoka International Congress Center), November 21-24 Nov, Fukuoka, Japan, 2010

Effect of Gate Voltage on the Performance of a Novel InmGa1-mN/InN HEMT: A Quantum Mechanical Self Consistent Study

Sakib M. Muhtadi*, S. M. Sajjad Hossain*, Md. Sherajul Islam*, Ashraful G. Bhuiyan*, **M. Mofazzal Hossain****

Abstract

This paper reports the effect of gate voltage on the performance of a novel InmGa1-mN/InN high electron mobility transistor (HEMT) for optimizing the device performance based on self-consistent solution of one dimensional Schrödinger-Poisson equation. The full account of quantum mechanical effect along with polarization effect ensures the accurate estimation of two-dimensional electron gas (2DEG) density. The maximum equilibrium 2DEG concentration has been found 1.05×1014 cm-2 which is higher than the conventional GaN-based HEMT for the same structure. The capacitance-voltage (C-V) characteristic is used to investigate the gate voltage dependent tranconductance and cut-off frequency. The calculated transconductance and cutoff frequency has been found as 615 mS/mm and 502 GHz respectively, which are higher than the conventional GaN-based HEMT. Close proximity of the 2DEG concentration and gate capacitance dependence on gate voltage with the theoretically and experimentally obtained values for GaN-based HEMTs confirms the validity of our calculation.

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2nd International Conference on Computer Research & Development (ICCRD), Kuala Lumpur, Malaysia, May 7-10, (IEEE Xplore), 2010. [DOI: 10.1109/ICCRD. 2010.152]

Performance Comparison of Bow-Tie and Slot Antenna Based on RWG Edge Elements

Md. Asif Hossain*, Mushlah Uddin Sarkar*, **M.R. Amin***, Md. Imdadul Islam**

Abstract

One of the most convenient way of analyzing antenna parameters using Rao-Wilton-Glisson (RWG) edge elements where the antenna surface is divided into a two dimensional array of very small triangle of alternately charged in continuous fashion. In this paper, the concept of RWG edge elements and method of moment (MoM) have been explored to determine distribution of surface current density, profile of magnetic field intensity and current density along the horizontal dimension of the antenna. In this paper, we have made a comparison between bow-tie and slot antennas in selecting appropriate antenna for a particular wireless link based on RWG edge elements.

Keywords: Green function, incident EM signal and impedance matrix, Method of moments (MoM), surface current diversity.

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2nd International Conference on Electronic Computer Technology (ICECT), Kuala Lumpur, Malaysia, May 7-10, (IEEE Xplore), 2010

The Impact of Frequency on Radiation Pattern of Bowtie and Spiral Antenna Based on RWG Elements

Mushlah Uddin Sarkar*, **Md. Asif Hossain***, **M. R. Amin***, Md. Imdadul Islam**

Abstract

Some antennas like bowtie, spiral, log-periodic array and conical spiral are known as frequency independent in context of antenna parameters like input impedance, reflection coefficient, gain and radiation pattern. In this paper, the work is done on bowtie and spiral antenna due to their easy construction and implementation. Although both the antennas are considered as frequency independent but shows some variation in their patterns with wide variation of frequency. Objective of this paper is to find the variation of two and three dimensional radiation pattern of both type of antenna based on RWG (Rao-Wilton-Glisson) element.

Keywords: Methods of Moments (MoM), surface current diversity, Green function, incident EM signal and impedance matrix.

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13th International Conference on Computer and Information Technology (ICCIT), (organized by Ahsanullah University of Science & Technology) December 23-25, Dhaka, Bangladesh, (IEEE Digital Library (USA)), 2010

Performance Evaluation of Multidimensional Traffic in Micro-Macro Cellular System

Sarwar Jahan*, Md. Imdadul Islam**, **M. R. Amin***

Abstract

We evaluate performance of hierarchical network (overlay-underlay cellular system) based on convolution method under mixed offered traffic. In most of the cases, different offered traffic of a network follows different probability density functions and they are correlated in sharing channel environment and cannot be analyzed by equivalent random theory (ERT) model. Here, three different types of offered traffic are considered for determining the blocking probability in the higher-tier cells.

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Optics and Photonics for Information Processing IV (SPIE Conference 7797), August 2-5, San Diego, CA, USA, 2010

GFSOP Based Ternary Quantum Logic Synthesis

Mozammel H. A. Khan*

Abstract

Quantum technology is one of the most promising technologies for future computing systems, since quantum algorithms solve problems much more efficiently than classical algorithms. All quantum algorithms are made up of quantum logic circuits. A quantum logic circuit is made up of quantum gates (reversible in nature) and is designed using reversible logic synthesis methods. For a given Hilbert space, ternary quantum system requires 0.63 times qutrits than the corresponding number of qubits. Thus, the ternary quantum system provides a much more compact and efficient information encoding. Beside other technologies, ternary quantum logic system can be realized using photon polarization. These advantages of ternary quantum system open avenue for developing ternary quantum algorithms. Galois field sum of products (GFSOP) based synthesis of ternary quantum logic circuit is the most practical approach, since any ternary logic function with many inputs can be represented as GFSOP expression and the GFSOP expression can be implemented as cascade of ternary quantum gates. Here we discuss minimization of ternary logic function as GFSOP expression using quantum-inspired evolutionary algorithm. We also discuss a method of realization of ternary GFSOP expression using ternary quantum gates. Experimental results are given to show the effectiveness of the ternary GFSOP minimization technique.

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International Conference on Electrical and Computer Engineering (ICECE), December 18-20, Dhaka, Bangladesh, 2010

Detection Ability of Parametric Faults in Analog Circuits Using CBT Concept and its Test Limitations

Md. Delowar Hossain*, Tanay Kumar Ganguly**, Md. Shariful Islam**, **Sarwar Jahan*****, **M. Mofazzal Hossain*****

Abstract

This paper represents the CBT (Co-efficient-based Test) technique to determine parametric faults mainly for a higher order low pass filter. We found that by varying signal to noise ratio as well as considering noise generated by all the elements, results a different transfer function. And from the coefficient value of that deviated transfer function, it is easy to detect faults also in practical cases. Noise generated by capacitances is also considered in the present work.

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International Conference on Electrical and Computer Engineering (ICECE), December Dhaka, Bangladesh, 2010. www.buet.ac.bd/eee/icece/

A Double Gate MOS SItructure for Solar Photovoltaic Application

Mahmudur Rahman Siddiqui*, Md. Ryyan Khan **, Md. Rezwan Khan ***

Abstract

A new double gate MOS structure that uses intrinsic Si as the active material is proposed in this paper for photovoltaic application. In this device recombination of optically generated charge carriers will be low as the active region is intrinsic in nature and the carriers will travel at high velocity under the effect of external electric field. The open circuit voltage (VOC), short circuit current (ISC) and efficiency of the device is calculated and compared with those of a typical p-n junction solar cell. It is found that the proposed device shows higher efficiency and VOC compared to the typical p-n junction solar cells.

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6th International Conference on Electrical and Computer Engineering (ICECE), December 18-20, Dhaka, Bangladesh, pp. 582-585, 2010.

Ballistic Current in In Rich In GaAs Surface Channel MOSFETs

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Abstract

Ballistic drain current of III-V surface channel MOSFETs has been investigated using over-the-barrier transport model. Inversion biased electrostatic properties are determined by 1D self-consistent solution of Schr¨ondinger's and Poisson's equations. Inversion carrier density (N_{inv}), injection velocity (V_{inj}) and drain current (I_D) are calculated for different In compositions in the channel region. Effect of variation of In composition on drain current is investigated in the ballistic regime and is compared to that of the reported long channel devices. Numerical results show that the increase in In composition in channel region results in increase in drain current. However, compared to the enhancements observed experimentally in long channel In rich devices, the enhancements are insignificant in the ballistic transport regime.

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