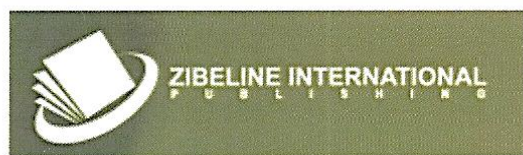
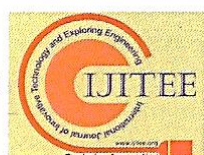




SOCIETY
FOR RESEARCH DEVELOPMENT

Proceedings of the
4th International Conference on
Management, Engineering, Science, Social Science and
Humanities (iCon-MESSSH'19)

In Association with



July 26-27, 2019

Phuket, Thailand

Editors

R. C. Singh

Rohit Khokher

Rajendra Kumar

The Proceedings of the 4th International Conference

on

Management, Engineering, Science, Social Science

and

Humanities

(iCon-MESSSH'19)

The Proceedings of the 4th International Conference
on
Management, Engineering, Science, Social Science
and
Humanities
(iCon-MESSSH'19)

26-27 July, 2019

Phuket, Thailand

Editors

R. C. Singh

Sharda University, Greater Noida, India

Rohit Khokher

Vidya Prakashan Mandir (P) Ltd., Meerut, India

Rajendra Kumar

Vidya College of Engineering, Meerut, India

Organized by





Published by Society for Research Development

Copyright © 2019, by Society for Research Development

The Proceedings of the 4th International Conference on Management, Engineering, Science, Social Science and Humanities (iCon-MESSSH'19)

Without limiting the rights under the copyright reserved above, no part of this publication may be reproduced, stored in, or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) without prior written permission.

First Edition

ISBN: 978-93-5361-944-2

Disclaimer

The information contained in this proceeding has been obtained from sources reliable to research by academia and industry. The Society for Research Development would be grateful for any omissions brought to their notice for acknowledgements in future editions of the book. The material in this publication is copyrighted. This work is published with the understanding that SRD and contributed authors have supplied information but are not attempting to rendering science, technology, management, humanities or other professional services. If such services are required, the assistance of an appropriate professional should be sought.

Cover printer, Typeset and printed at Balaji Creations, Meerut, India

The Society for Research Development (SRD)

After long deliberations, it was decided by a group of academicians and philanthropists to establish the Society for Research Development in 2015. A draft of the constitution was framed in consultation with the founder members, to enroll members and to get the Society registered. During the first meeting, Dr. R C Singh was elected unanimously as President of the Society. The first event of the Society was International Conference on Science, Technology, Humanities and Business Management (ICSTHBM-16) in Bangkok, Thailand on 29-30 July 2016. The Proceedings of this Conference was published with McGraw Hill Education, India. The Society organized its second international conference on the topic International Conference on Recent Developments in Science, Technology, Humanities and Management (ICRDSTHM-17) on 28-29 April 2017 in Kuala Lumpur, Malaysia. The third international conference organized by society was on the topic International Conference on Recent Trends in Science, Technology, Management and Social Development (ICRTSTMSD-18) in Bali, Indonesia on 04-05 August 2018.

With great success and huge response from the participants, this year the Society is organizing the fourth International Conference on Management, Engineering, Science, Social Science and Humanities (iCon-MESSSH'19) in Phuket, Thailand on 26-27 July 2019.

The objective of the Society is Scientific, Technical, Managerial, Literary, and Educational in nature. The Society strives to advance the theory, practice, and application of Science, Technology, Social Sciences, Humanities, Education and Management and maintains a high professional standing among its members. The basic purpose of the Society is to bring together academicians and experts from different parts of the country and abroad to exchange the knowledge and ideas at a common platform by organizing National and International Conferences, Seminars and Workshops that unite the Science, Social Sciences, Language, Emerging Technologies, Management, Financial Engineering, Humanities, Literary, Cultural, Education and topics which are not mentioned here for the empowerment of research and development. The Society promotes the original, innovative ideas for betterment of the world and seeks to propagate the results of the interdisciplinary field across research communities and to the general public.

To know more about the activities and forthcoming events of the Society, the readers are advised to visit the official home page of the Society (<http://socrd.org>).

Prof. Rajendra Kumar
Vice President

TECHNICAL COMMITTEE

Prof. (Dr.) Mansi El-Mansi, Director at Bio-Ed UK, Edinburgh, United Kingdom.
Prof. (Dr.) G G Senaratne, Dean- Faculty of Engineering & Technology, GISM Campus, Sri Lanka
Dr. Shahanawaj Ahamad, Hail University, Kingdom of Saudi Arabia
Dr. Shamimul Qamar, King Khalid University, ABHA, Kingdom of Saudi Arabia
Dr. Parmanand Astya, Sharda University, Greater Noida, India
Dr. Prateek Bhanti, Modi University of Science & Technology, Sikar, India
Prof. Himanshu Sharma, Nizwa College of Technology, Nizwa, Oman
Dr. K. Anitha, S. A. Engineering College, Chennai, Tamil Nadu, India
Dr. Shaik Shakeel Ahmad, Majmaah University, Al-Majmaah, Kingdom of Saudi Arabia
Prof. (Dr.) Baki Koyuncu, Ankara University, Turkey
Dr. Rajeevnath Ramnath, Assumption University, Bangkok, Thailand
Dr. Namita Rath, Sri Sri University, Cuttack, India
Dr. Tosaporn Mahamud, Kasem Bundit University, Bangkok, Thailand
Dr. K. Srinivasan, Higher College of Muscat, Muscat, Oman
Dr. Nitul Dutta, MEF Group of Institutions, Rajkot, Gujarat, India
Dr. Hiren Kumar Deva Sarma, Sikkim Manipal Institute of Technology, Sikkim, India
Dr. William Lau, The Chinese University of Hongkong, Hongkong
Dr. Ling Ling Tan, Universiti Kebangsaan Malaysia, Malaysia
Dr. Lay Yoon Fah, Universiti Malaysia Sabah (UMS), Malaysia
Dr. Tan Saw Fen, Wawasan Open University, George Town, Malaysia
Dr. R. B. Patel, Chandigarh College of Engineering & Technology, Chandigarh, India
Dr. Natthasurachet Promsing, RAKMAE SCHOOL, Thailand
Dr. Anna Christina bt Abdullah, Wawasan Open University, George Town, Malaysia
Dr. Tan Saw Fen – Lecturer, Wawasan Open University, George Town, Malaysia
Dr. Por Fei Ping, Wawasan Open University, George Town, Malaysia
Dr. Kamisah Osman, Universiti Kebangsaan Malaysia, Selangor, Malaysia
Mr. Amar Faiz Zainal Abidin, Universiti Teknikal Malaysia, Melaka, Malaysia
Dr. Anita Sahoo, JSS Academy of Technical Education, NOIDA, India
Dr. Gunjan Singh, RBS Management Technical Campus, Agra, India
Dr. Ravi Shankar Singh, IIT, BHU, Varanasi, India

ORGANIZING COMMITTEE

Prof. R. C. Singh, Sharda University, India
Prof. R. Kumar, Vidya College of Engineering, India
Prof. Rohit Khokher, Vidya Prakashan Mandir (P) Ltd., India

SESSION CO-CHAIRS

Dr. Sunantha Prime Teyarachakul, California State University, Fresno, CA, USA
Dr. M. P. Singh, Dr. B. R. Ambedkar University, Khandari, Agra, Uttar Pradesh, India
Dr. Venus C. Ibarra, San Pablo Colleges, Ateneo de Manila University, Philippines
Dr. J. C. Patni, University of Petroleum and Energy Sciences, Dehradun, India
Dr. Gunjan Jain, Vidya College of Engineering, India
Dr. Portia R. Marasigan, Laguna State Polytechnic University, Philippines
Dr. P. K. Paul, Raiganj University, West Bengal, India

PREFACE

We are very pleased to introduce the proceedings of the 4th International Conference on Management, Engineering, Science, Social Science and Humanities (iCon-MESSSH'19), held in Phuket, Thailand during 26-27 July 2019. This volume of proceedings from the conference provides an opportunity for readers to engage with a selection of refereed papers that were presented during iCon-MESSSH'19.

Out of 90 papers submitted for publication, 36 have been selected in this proceeding after two-tier peer review. The conference received a huge response and the researchers from USA, Philippines, Taiwan, UAE, Sri Lanka, Russia, Hong Kong, Nigeria, Bangladesh, Germany, Iran, Oman, India, Indonesia, Malaysia, China, Korea, Thailand, Australia, Japan, etc. who submitted and presented their papers in the conference. Based on the subject matter of the selected papers, we have divided them into three parts: Part A contains the papers related to Science and Technology by national and international experts who have made valuable contributions in their fields of research; Part B comprises of the papers related to Management and Humanities by scholars who are actively engaged in the areas of their research interests at national and international level by the researchers who have made significant contribution in this area.

One of the unique and valuable dimensions to the iCon-MESSSH'19 was the way the conference brought educators together from around the globe to discuss ways to serve learners better. All in all, the iCon-MESSSH'19 was very successful. The deliberations provided a better understanding of the development in science, technology, management and humanities, making it possible for non-experts in a given area to gain insight into new areas. Also, included among the speakers were several young scientists, namely, postdocs and students, who brought new perspectives to their fields.

We would like to thank all participants for their contributions to the Conference and for their contributions to this proceeding. We take this opportunity to thank the efforts of all the reviewers whose efforts enabled us to achieve a high scientific standard in this proceeding. We also thank the members of the Technical Committee for extending their help and co-operation from time to time in organizing this conference. The success of this conference means that planning can now proceed with confidence for the next event. We would also like to thank all the Co-Chairs and invited speakers for their support and hard work to make this conference a huge success.

R. C. Singh
Rohit Khokher
Rajendra Kumar

Keynote Address

STEM Research in 21st Century

R. C. Singh

Sharda University, Greater Noida

rcsingh_physics@yahoo.com

It is an honour to address this year's iCon-MESSSH-19 organised by the Society for Research Development (SRD). At the outset, I wish to note my appreciation to organizing committee and their kind invitation to this important event. I get the sense that this Research Conference is a kind of family reunion, and I am gratified to be part of this family. There is much that the SRD and the sustainable goals have in common –their missions for promoting interdisciplinary research around the globe.

However, it is also a rather solemn honour, given the conference theme of “Management, Engineering, Science, Social Science and Humanities”. What I would like to do, briefly, is connect this important theme to the knowledge creation mission of the SRD and other research councils, and to the Science, Technology, Engineering, Mathematics (STEM) portfolio. My purpose is to initiate a line of questioning, and I look in particular to the SRD to help find answers. I would also like to offer my special thanks to all the professors, researchers and attendee who have taken time out of their busy schedule to be here today. It is a measure of your commitment to the research cause and underscores the pivotal role you play in driving research.

Today, I would like to firstly discuss how important STEM is in a modern research, and talk a little about the jobs of the future, and what this means for young researchers looking at choosing further research options. Secondly, I will talk a little about what many countries' Government are doing to ensure science is at the centre of industry policy. And in conclusion, I will talk about industry and the research sector and how researchers need to boost the commercial returns from research, and get industry more involved in inspiring the minds of our future STEM professionals.

The world of science has changed substantially over the last 50 years. The research in science and engineering is growing and becoming more diverse. Many research scholars are not doing their Ph.D.'s into core academic areas but they are working in interdisciplinary areas. The cutting edge in today's research is multidisciplinary. The modern world runs on STEM. It is hard to imagine how researchers can make further progress in their field of study without STEM playing a leading role. A STEM acronym reveals particular agenda and seems just a euphemism for the integrated curriculum. And it is certainly not an argument for prioritizing STEM. One approach is to consider the nature of the truth claims characteristic of each discipline i.e. Science (empirical consistency), Technology (tool utility), Engineering (built viability), Mathematics (logical coherence). This approach seems much more interesting and also demonstrates how fundamentals are connected between disciplines. At the risk of saying the obvious, much of what we use in our daily lives and the living standards enjoy today are a product of STEM or interdisciplinary. At home, at work, in public places, we are surrounded by STEM products. With the flick of a switch or the click of a button rooms light up, screens beam images and voices from around the world to our homes and offices, meals are cooked within minutes or the critically ill receive lifesaving treatments.

STEM encourages the idea of educating students in the four specific disciplines in an interdisciplinary and applied approach. Rather than the four disciplines being taught as separate subjects, STEM integrates them that gets students ready for real-world applications. In USA there are 415 degree courses based on STEM. STEM approach has been widely applied in developed and developing countries. Application of STEM approach in each country is different according to the needs of the State itself.

Today, researchers are users of these and other innovations—email, mobile phones, text messages, Facebook and so on—the Government also wants them to become the makers of tomorrow's innovations. As a need of an hour younger researchers to get the STEM foundation that will enable them to become agents of future scientific and technological breakthroughs. Therefore institutes, laboratories, research and development societies must make sure to have the support and resources to nurture the present and next generation of the STEM workforce.

We must remind our fellow colleagues and young people that those who invented and produced many technologies were once students. They may have done nothing out of the ordinary while studying STEM subjects, but by applying their STEM

skills, they were able to come up with some brilliant ideas. Ideas that were later turned into highly sought-after innovative global products or solutions to problems faced by humanity. It is also important for students, parents and the community to understand that the future job prospects of young people lie in STEM. Most of the fastest growing occupations in USA, Europe and Australia—some 75 per cent—require STEM skills. In the past decade, the bulk of research growth has occurred in industries such as health care, scientific and technical services, biotechnology, information and communication technology, and advanced manufacturing. The students who pursue a STEM career don't have to work for someone else because STEM skills inspire not only innovation, but also entrepreneurship.

The aim to promote STEM education around the globe is to make it very clear to institutes, universities and laboratories as to what they need to include in each course to ensure new teachers have the knowledge and skills to succeed in the classroom and lab.

The work SRD and other research promoting societies are doing is also very important. It will strengthen interdisciplinary research, initial training to researchers to present their work, improve STEM workforce data, and ensure the future developments in 21st century. As part of teacher education reform, universities will be required to make sure school teachers graduate with a subject specialization, with a focus on Science, Mathematics and a language. This will boost the number of school teachers with a STEM specialization and improve the skills available in all schools for teaching Science and Mathematics. Some governments have begun looking at their own STEM strategies to ensure there's adequate STEM teaching capacity.

Research adds to our understanding of the world and to our competitiveness as a country. Through its higher education and research funding programs, the Government of many countries provides support for strengthening STEM capability. A research funding and policy to ensure can boost the links between universities and industries and encourage the applications of STEM research. This will help in improving living standards, prosperity and create the jobs of the future, including in research. The latest set of research priorities are food, soil and water, transport, cybersecurity, energy, resources, advanced manufacturing, environmental change and health.

So many STEM research organizations are active now a days for ensuring sustainable industrialization and foster innovation and ensuring sustainable development and resources consumption. So, the ultimate focus is humanity centered research to be tested by industry for commercialization. As mentioned in sustainable development goals, the urgent actions are to be taken to combat climate change and its impacts.

These priorities will help world-class science and research efforts to reflect the needs of industry, the national economy and the community. The new potential researcher problem areas are mapping aforesaid areas with STEM and coming with solutions. Tackling the STEM skills challenge is not for government alone; the contribution of industry is essential. Industry needs to become more engaged in the promotion of STEM skills at all levels of research, education and training. It's one thing that can develop or promote STEM skills and knowledge; it is another converting that knowledge into practical, real-world outcomes. Despite strong research performance, ability to translate that research into commercial outcomes lags in every segment of industry. Because of this, many research bodies are implementing its boosting the Commercial Returns from Research strategy, which will ensure the benefits from investment in science, research and innovation.

Not only do we want to increase our STEM researcher's population, we also want to make sure that after doing genuine researches, STEM students can work with industry to boost business growth, productivity and competitiveness. If world is going to use STEM capacity to build a stronger and competitive economy, we must ensure science and industry work hand in hand. It's why the Government's Industry Innovation and Competitiveness Agenda is so important. It places science and research at the centre of industry policy.

Teachers are one of the key influencers in a young person's life. They can give many young people their STEM 'light bulb' moment. I know you have a busy time ahead over the next two days and I hope you enjoy the diverse topics that have been lined up for discussion in this conference.

I look forward to knowing what everyone has to say.

Happy Learning!!!

References

- [1] Peter Charles Taylor, "Enriching STEM with the arts to better prepare 21st century citizens", AIP Conference Proceedings 1923, 020002 (2018).

- [2] Infosys. Amplifying human potential: Education and skills for the fourth industrial revolution. Retrieved from <http://www.experienceinfosys.com>. (2016).
- [3] Bailey, A., Kaufman, abd E., Subotic, S. (2015). Education, technology, and the 21st century skills gap. Retrieved from https://www.bcgperspectives.com/content/articles/public_sector_education_technology_twenty_first_century_skills_gap_wef/
- [4] Colleen A. Lopez, Jon Rocha, Matthew Chapman, Kathleen Rocha, Stephanie Wallace, Steven Baum, Brian R. Lawler, and Bianca R. Mothé, “Strengthening STEM Education through Community Partnerships”, *Sci Educ Civ Engagem*, 8(2), pp. 20–33, (2016).
- [5] Bevan, B., Petrich, M., & Wilkinson, K., “Tinkering is serious play”, *STEM for All*, 72(4), 28–33, (2015).
- [6] Y Rahmawati, A Ridwan, T Hadinugrahaningsih and Soeprijanto, “Developing critical and creative thinking skills through STEAM integration in chemistry learning” *Journal of Physics: Conference Series* 1156 (2019).
- [7] S. Enrico P. Indiojine, “The Achievement Gaps in Mathematics and Science: A Practice-based Model of STEM Teaching”, Sense Publishers, pp. 15-28 (2015)
- [8] Hyewon JangHyewon Jang, “Identifying 21st Century STEM Competencies Using Workplace Data”, *Journal of Science Education and Technology* 25(2):284-301 (2016).
- [9] Ron Germaine Jan Richards Marilyn Koeller Cynthia Schubert-Irastorza, “Purposeful Use of 21st Century Skills in Higher Education”, *Journal of Research in Innovative Teaching* Volume 9, Issue 1, pp. 19-27, (2016)
- [10] A Report “Charting a Course for Success: America’s Strategy for STEM Education”, Committee on STEM Education of the National Science & Technology Council, (2018).

CONTENTS

The Society for Research Development (SRD)	v
Technical and Organizing Committee	vi
Preface	vii
Keynote address by Dr. R. C. Singh	viii-x
Session Talks	xiv-xxxii
The Optimal Models with Social Media, Supply Chain, Pricing, Advertising, and Business Dimensions <i>Sunantha Prime Teyarachakul</i>	xiv-xv
Sustainability Management on Environment, Services and Products <i>Venus C. Ibarra</i>	xvi-xvii
Advancement on High Performance Computing for Artificial Intelligence and Machine Learning Applications <i>Jagdish Chandra Patni</i>	xviii-xix
Trends and Innovation in Teaching and Learning English Language <i>Gunjan Jain</i>	xx-xxi
Issues, challenges, impact and future of positive psychology <i>Portia R. Marasigan</i>	xxii-xxiii
Green Computing for the Sustainability - The Issues, Challenges and Potentialities <i>P. K. Paul</i>	xxiv-xxvi
Multi Objective optimization with Soft computing techniques <i>Manu Pratap Singh</i>	xxvii-xxxii
Part A: Science and Technology	1-44
1. Performance of Sophomore Information Technology Students in Assembly Language Subject Based on Different Teaching Methods <i>Joanna A. Erlano</i>	1-5
2. Relation and Processing of Ad-Hoc-Data with Cloud Computing in Finance Sector <i>Subhendu Chatterjee</i>	6-13
3. Sustainable Computing Technology: with Reference to Future Potentiality for Eco-Friendly System <i>Debasish Kumar Chaki</i>	14-18
4. Snoring Characteristics Inventory and Blood Pressure: Window Assessment Tool for Obstructive Sleep Apnea and Cardiovascular Risk <i>Rose Ann Z. Masa</i>	19-28
5. Transformation of Dependency and Association in UML Design Class <i>Ngamsantivong Thavatchai and Ratanavilisagul Chiabwoot</i>	29
6. Fractal Antenna- Wireless Communication New Beginning Breakthrough in Digital Era <i>Anand Mohan and M. Sundararajan</i>	30
7. Critical Success Factors of Hospital Management Information System (HMIS) Implementation in Developing Countries <i>Dionisius Alvian Ariwibowo and Dumilah Ayuningtyas</i>	31
8. Effectiveness of Tax Incentives of Hard-To-Recover Oil Reserve Development <i>I. V. Sharf, M.P. Ivanova, I. V. Filimonova</i>	32

9.	Manufacturing Learning and Forgetting: Steady State Optimal Batch Size for Constant Demand Case <i>Sunantha Prime Teyarachakul</i>	33
10.	Electronic Commerce Adoption by Manufacturing Companies in Laguna <i>Adoree A. Ramos</i>	34
11.	The Consumers' Acceptance of E- Commerce in the Province of Laguna <i>John Matthew M. Macalinao</i>	35
12.	A Keyword based Educational and Non-Educational Site Recognition Tool <i>Sangita Modi and Sudhir B. Jagtap</i>	36
13.	Multi Performance Optimization of Shoulder Milling Process Parameters of AA6063 T6 Aluminium Alloy by Taguchi Based GRA <i>Om Prakash Singh, Gaurav Kumar and Mukesh Kumar</i>	37
14.	A Fuzzy Logic Based Personalized Result Analysis Support for Student Performance Up-Gradation <i>Sangita A. Jaju, Sudhir B. Jagtap and Rohini B. Shinde</i>	38
15.	Organizing Duplicate Spatio-Temporal Data in Location Intelligence <i>Sumeet Gill and Meenakshi</i>	39
16.	Prediction of Heart Disease using Name Entity Recognition Based on Back Propagation and Whale Optimization Algorithms <i>T. Velmurugan and U Latha</i>	40
17.	Quality Based Analysis of Clustering Algorithms using Diabetes Data for the Prediction of Disease <i>K. Saravananathan and T. Velmurugan</i>	41
18.	Rule Based Machine Translation of English Text to Indian Sign Language <i>Gouri Sankar Mishra, Parmanand Asteya, Pooja</i>	42
19.	An Algorithm to Determining SIFT Matching Score for Dorsal Vein Recognition System <i>Tarshi Jain, Rajendra Kumar</i>	42
20.	SIFT based Dorsal Vein Recognition System for Cashless Treatment through Medical Insurance <i>Rajendra Kumar, Ram Chandra Singh</i>	43
21.	Biometric Traits verification using Deep learning <i>Aashish Jain, Rohit Khokher, Ram Chandra Singh</i>	44
Part B: Management and Humanities		45-114
22.	Spend Analysis and Budget Stability of Employed Solo Parents in San Pablo City Laguna <i>Elaine Joy Cidamon Apat</i>	45-52
23.	Sustaining the Supply Chain Management System of a Multi-Purpose Cooperative in Tiaong, Quezon <i>Janzene L. Aguilar</i>	53-61
24.	Employment of Unskilled Craft Workers in the UAE Construction Projects: Explicating the Reasons <i>Mohammed Albattah, Adejumo Saheed and Muhammed Tariq Shafiq</i>	62-67
25.	Inclusive Employment Opportunity: The Stem of inclusive growth in India <i>Jyoti Kumari Sharma and Anil Bhumali</i>	68-88
26.	Mindfulness and Life Satisfaction of Selected Faculty Members of Laguna State Polytechnic University <i>Rowena Alinea Reyes</i>	89-98
27.	Non-technical Skills of the Bachelor of Science in Business Administration: Input to their Employability <i>Elaine Joy C. Apat and Julieta A. Sumague</i>	99-104

28.	Competency-Based Skills and Training Needs of Hotel and Restaurant Employees Towards Key Position in Muscat, Oman: An Inquiry to the Customer <i>Roland Getaruelas</i>	105
29.	A Comparative Study of Culinary Practices of Homegrown Cooks and Chefs in Contemporary Philippine Cuisine of Heirloom Recipes of CALABARZON <i>Ninevetch Grace O. Marco</i>	106
30.	Using Brief Cognitive Restructuring and Cognitive Diffusion Techniques to Cope with Negative Thoughts <i>Portia R. Marasigan</i>	107
31.	Exploratory Analysis of Sustaining Organic Farming in Laguna Province <i>Marivic B. Abinsav</i>	108
32.	Sustaining Ecotourism Environment at MTS Banahaw-San Cristobal Protected Landscape: Alignment to Global Climate Change <i>Maria Donnalyn E. Briñas</i>	109
33.	Financial Inclusion, Women Empowerment and Entrepreneurship: A Special Emphasis to India <i>Gargi Banerjee</i>	110
34.	Assessment of Service Quality in Selected Branches of Bangko Kabayan, Inc. <i>Nelda A. Rosima</i>	111
35.	The Competitiveness of the Philippines Local Pharmaceutical Company Using Porter's Five Forces Analysis <i>Mac Gene Kevin S. Dela Cruz, Adoree A. Ramos, Jane Marie P. Marcelo</i>	112
36.	Risk Communication Management Towards Disaster Resiliency in Davao City, Southern Philippines <i>Karen Joyce G. Cayamanda, Merlyne M. Pagnolgui, Rowena D. T. Baconguis and Maira Ana T. Quimbo</i>	113
37.	The Implementation of The Russian Model of the World in the Way Social Existence <i>N. S. Dureeva and S. P. Dureev</i>	114

Session Theme: The Optimal Models with Social Media, Supply Chain, Pricing, Advertising, and Business Dimensions

Dr. Sunantha Prime Teyarachakul
California State University at Fresno, USA
steyarachakul@csufresno.edu

1. AN OVERVIEW

Living in a quickly changing digital exploration we witness advancing information technology. The 2000's have created a new power of social media applications resulting in innovative consumer purchasing power, it has become a primary sales channel for business income generation. Social media tools such as Facebook and twitters are useful to spread business messages. Entrepreneur investor use social media to advertise new products, services, offer discounts, enhance product awareness and most important generate new sales. Therefore, the emerging research areas integrate the power of social media advertisements on sales; with the parallel of marketing and operations interface decisions.

The focus of this session is to attract both academic and industry researchers in optimal models with applications in the cross-disciplinary business functions. The impacts of social media that results in business decisions are the central dialog. Another focus is to exchange, update and advance the knowledge in the optimal models in all these areas in business applications (Teyarachakul, Chand, Tzur, 2016).

2. CURRENT ISSUES AND CHALLENGES SOCIAL MEDIA AND SUPPLY CHAIN

In 1996, many companies were treading very carefully and slowly toward the Internet era. The company feared that employee productivity would drop significantly if everyone were given access to the Web. The concern was hours would be wasted surfing the Internet instead of working. Four years later we welcomed the new millennium, at the height of the "dot-com era" that transformed the way people and companies worked.

Social media has similarity to the dot-com today with the arrival of "social" technologies. Companies are cautiously treading toward the "Social Era" with the same fears and concerns they had years ago about the Internet. In fact, an industry survey, supply chain professionals reported that their companies currently block access to social media sites. At the same time, 45 percent of the respondents stated, "social networks will make supply chain processes more efficient, responsive, and cost effective". Another 30 percent said that "social networks will transform supply chain processes in ways we can't imagine today" (Robinson, 2019). Therefore, we know social networks will transform supply chain processes, we just don't know how exactly, and where to start, and why.

When supply chain professional think of use of social media, they immediately consider Facebook, LinkedIn, and Twitter. In consideration the platforms lack any supply chain and logistics context we can't see how these social networks will help. The term "social media" has an image problem in supply chain. But the biggest obstacle of all is the inability for companies to quantify the business value of using social networking technologies. How much money will we save? How much more productive will we be? If deployed and used correctly, social networking will result in less work, and introduce a new source of big data for supply chain to venture forward into the future.

3. CURRENT TRENDS ON SOCIAL MEDIA AND SUPPLY CHAIN

Social networking enables people to communicate and collaborate in new ways, social networking also applies to companies and how they work together. Over the past decade we've seen the rise of Supply Chain Operating Networks - such as Ariba, Descartes, GT Nexus, Elemica, E2open, LeanLogistics, One Network, and others - that are the Facebook equivalents in the supply chain and logistics world. While Facebook connects people and maps their relationships to one another via a "social graph," these business networks connect companies together and map their relationships to one another via a "commerce graph." The Supply Chain Operating Network (SCON) model has its roots in the industry marketplaces and exchanges that emerged during the dot-com era; the model further evolved as software-as-a-service (SaaS) solutions gained traction in the market. Supply chain operating networks bring together trading partner connectivity with SaaS applications, (Oliverira, Martins, Sarker, Thomas, Popovic, 2019).

We're still in the early stages of Supply Chain Operating Networks enabling social capabilities. Which capabilities have the greatest potential to improve supply chain and logistics processes? The ability to discover and establish new business connections, either company-to-company or person-to-person, is another key value proposition of social business network.

4. THE FUTURE OF SOCIAL MEDIA AND SUPPLY CHAIN

With the internet and social media has created an environment for us to easily connect. A massive mobile network allows us to connect quickly to people and information, see Teyarachakul, 2018. This is a direct result challenging our minds constantly having to consume all the streaming live data interpreting it as quickly as the next data stream comes. Therefore, in this era that is dominated by constant information and a new way to be socially connect, it naturally makes sense that we would change the way we interact within business. This is, after all said, at the core center of this cultural shift.

Social networking can help companies generate more - and better - ideas for improving supply chain processes and solving existing problems by tapping the collective insights, knowledge, and expertise of employees across all levels of the enterprise (and beyond). If companies are already using "crowdsourcing" to drive innovation in product development, why not apply the same concept to drive innovation in supply chain management? In short, social networking can have a positive impact on metrics related to continuous improvement and the ongoing development and sharing of best practices.

REFERENCES

- [1] Oliverira T, Martins R., Sarker A., Thomas M., Popovic A., "Understanding SaaS adoption: The moderating impact of the environment context." *International Journal of Information Management*, 2019, vol 29, pp 1-12.
- [2] Robinson, A., "TMS Study shows 25% of shippers still using manual methods." 2019, June 25, *Supply Chain 247*. [Online]. Available: www.supplychain247.com.
- [3] Teyarachakul S., "An optimal model at the interface of operations with social media marketing." *Operations and Supply Chain Management*, 2018, Vol. 11, No. 4., pp 226 – 236.
- [4] Teyarachakul S, Chand S and Tzur M., "Lot sizing with learning and forgetting in setups: Analytical results and insights." *Naval Research Logistics*, 2016, Vol 63, No. 2, pp. 93-108.
- [5] Yeboah-Ofori A., and Islam S., "Cyber Security Threat Modeling for Supply Chain Organizational Environments" *Future Internet*, Vol. 11, No. 3, pp 63.

Session Theme: Sustainability Management on Environment, Services and Products

Venus C. Ibarra

San Pablo Colleges, Ateneo de Manila University, Philippines
vibarra@ateneo.edu

1. AN OVERVIEW

Sustainable management is defined as the application of sustainable practices in the categories of business, agriculture, society, environment, and personal life by managing them in a way that will benefit current generations and future generations. Sustainable management can be applied to all aspects of our lives depending on what they are applied to and on what it can change. Sustainable management provides plans that can improve multiple parts of people lives, environment, and future generations. If a community sets goals, then people are more likely to reduce energy, water, and waste, but a community cannot set goals unless they have the management in place to set goals (Mckenzie-Mohr, 1999).

This session focuses on topics pertaining to adopting risk communication management to attain disaster resiliency, sustaining organic farming, sustaining eco-tourism environment, sustaining the supply chain management of a multi-purpose cooperative, assessment of quality of services of a rural bank and competitiveness of a Philippines local pharmaceutical company. E-commerce is an environment-friendly service; its adoption is an essential tool in achieving sustainability of services and products.

2. CURRENT ISSUES AND CHALLENGES ON SUSTAINABILITY MANAGEMENT

As early as 2013, the United Nations survey focused on all three dimensions of sustainable development—economic, social and environmental. The survey results show that more than 1 billion people are still living in extreme poverty, and income inequality within and among many countries has been rising; at the same time, unsustainable consumption and production patterns have resulted in huge economic and social costs and may endanger life on the planet. Achieving sustainable development will require global actions to deliver on the legitimate aspiration towards further economic and social progress, requiring growth and employment, and at the same time strengthening environmental protection. Sustainable development will need to be inclusive and take special care of the needs of the poorest and most vulnerable. Strategies need to be ambitious, action-oriented and collaborative, and to adapt to different levels of development. They will need to systemically change consumption and production patterns, and might entail, significant price corrections; encourage the preservation of natural endowments; reduce inequality; and strengthen economic governance.

In agriculture, organic agriculture is becoming more popular because consumers are demanding healthful and environmentally friendly food. This shift in consumer behavior is good news, but unfortunately, increased demand for organic foods has attracted large agribusiness corporations that intend to profit from the trend. However, while organic agriculture may produce lower yields when compared to conventional agriculture especially at the start, organic farming is often more profitable, delivers more environmental benefits, and is healthier in terms of increased nutritional benefit and reduced dietary pesticide exposure. It is now being viewed as an additional option to conventional or ‘chemical’ agriculture and not just for the niche market (Maghirang, et al 2011).

3. CURRENT TRENDS ON SUSTAINABILITY MANAGEMENT

Recognizing the need to tackle the environment issues as well as the need to sustain development and growth, the Philippines came up with the Sustainable Development Strategy (*PA 21 PSDN*). The nation for the Sustainable Development Strategy includes assimilating environmental considerations in administration, apposite pricing of natural resources, conservation of biodiversity, rehabilitation of ecosystems, control of population growth and human resources development, inducing growth in rural areas, promotion of environmental education, strengthening citizens’ participation, and promoting small to medium-sized enterprises and sustainable agricultural and forestry practices (*Belinda Yuen*).

As a trend, organic farming is the subject of extensive research in northern countries, especially in Europe (Kilcher, 2007). As cited by Kilcher (2007) a wide range of studies have demonstrated the advantageous aspects of this system in terms of ecosystem functioning, soil fertility conservation and economic impact. NGOs and farmers’ groups are increasingly adopting organic techniques as a method of improving productivity and food security in these systems.

According to Rouse (u/d) product lifecycle sustainability is an approach to managing the stages of a product's existence so that any negative impact on the environment is minimized. The degree of sustainability is largely determined during the beginning of life (BOL) stage of the product lifecycle, in which the product is designed and developed. At this stage, decisions about materials and processes required to create the product can have a significant impact on the product's environmental footprint.

4. FUTURE SCOPE OF SUSTAINABILITY MANAGEMENT

Citizens demand for a more sustainable, equitable world from companies and institutions. There is a need for deeper analysis of food and agriculture, technology, pharmaceuticals and healthcare, energy and utilities, and services. Severe weather events (hurricane, fires) continue to show the economic costs of climate change. These events affect industry's ability to help people recover, disrupting supply chains and adding to food insecurity (Littan, 2018). With increasingly global supply chains running across multiple borders, improving resilience to extreme weather is not only important, but urgent. This should include the sustainability of supply chains – from transportation to water and energy conservation

Consumers demand for organic food is growing universally, partly due to consumers concerns about safety. Increased domestic and international demand for organic products, along with environmental and safety issues have stimulated policymakers and governments in some parts of the world to provide incentives for converting from conventional to organic farming. Future researches should focus on this topic not only as a need but as a necessity. Another interesting topic is the economic and environmental potential of new technology from artificial intelligence to autonomous vehicles and renewable energy. The scope is enormous. But unless it is properly managed and regulated, it will create risk, unintended and adverse impacts, such as unemployment and growing inequality (Day, 2018). Sustainability management will continue to face and solve climate change, energy, food production, water scarcity, biodiversity, changing demographics, geopolitical instability, inequality and global equity.

REFERENCE

- [1] Day, Will, Chairman of Water and Sanitation for Urban Poor, Sustainability Advisor to PWC, UK, (Excepts from 2018 Business and sustainability Trends Briefing, March 7, 2018).
- [2] Kilcher, L. (2007). How organic agriculture contributes to sustainable development. *Journal of Agriculture and Rural Development in the Tropics and Subtropics* 89(2007): 31-49 Archived at <http://orgprints.org/10680/>
- [3] Littan, Shari, Editor and Author for Thomson Reuters and CISL US Ambassador, (Excepts from 2018 Business and sustainability Trends Briefing, March 7, 2018).
- [4] Maghirang, R.G., R. De La Cruz, R.L. Villareal. (2011). How Sustainable is Organic Agriculture in the Philippines? *Trans. Nat. Acad. Sci. & Tech. (Philippines)* Vol. 33 (No. 2) ISSN 0115-8848. pp. 289-321.
- [5] Mckenzie-Mohr, Doug. *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*. Gabriola Island: New Society Publishers, 1999.
- [6] Philippine Strategy for Sustainable Development: A Conceptual Framework". PA 21 PSDN. Retrieved 6/23/19
- [7] Rouse, Margaret; WhatIs.com, TechTarget's IT encyclopedia and learning center (u/d)
- [8] Sustainable Development Challenges, World Economics and social Survey, United Nations Publication, Copyright @ United Nations, 2013.
- [9] Wikipedia, the free encyclopedia, retrieved 6/23/19
- [10] <http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1256566800920/6505269-1268260567624/Yuen.pdf>. Retrieved 6/23/19

Theme: Advancement on High Performance Computing for Artificial Intelligence and Machine Learning Applications

Dr. Jagdish Chandra Patni
Assistant Professor, School of Computer Science
University of Petroleum and Energy Studies, Dehradun
patnijack@gmail.com

1. AN OVERVIEW

Artificial Intelligence and Machine Learning are the latest areas of research in current years. Researches going in academia as well as in Industry to strengthen the field of AI and Machine learning. A huge amount of research scope in this field, for example, deep learning has achieved superhuman performance in image classification. Artificial Intelligence and Machine Learning have been used to game playing like Chess, Go, Atari and Jeopardy very successfully.

Artificial Intelligence and Machine Learning is also being using in areas such as health care, natural resource management and advertisement. Artificial Intelligence and Machine Learning technologies and applications require high computational power with time efficient manner. Clusters of computers and accelerators (e.g. GPUs) are routinely used to train and run models, both in research and production. On the other hand, ML and AI have also become a “killer application” for HPC. For example, tailored computer architecture has been devised and new parallel programming frameworks developed to accelerate AI/ML models.

The objective of this is to bring together the High Performance Computing and Artificial Intelligence/Machine Learning to provide the high-end solutions for Industry as well as academia. High performance computing will provide be the effective solution for AI applications to facilitate the research in academia and fulfillment of Industry requirements.

For years, companies have been collecting data, but now, with the help of artificial intelligence (AI) and powerful analytics capabilities, they have the opportunity to get more out of it. However, with this opportunity, AI and analytics also have become big-data challenges that are changing how organizations and industries handle their data. *“Many organizations are turning to high-performance computing as the solution, resulting in a wave of new ways to leverage HPC, new skill set requirements and new approaches for an era defined by volumes of data.”*



Fig. 1: High performance computing

2. THE RELATIONSHIP BETWEEN AI AND HPC

Analytics and AI, with their range of uses, require immensely powerful processes across compute, networking and storage, and organizations benefit most when compute is closest to the origin of data — wherever it resides. AI workloads, such as machine learning and deep learning, are being built top HPC infrastructure to best support this demanding compute and data-intensive nature. As a result, more companies are increasingly using HPC solutions for AI-enabled innovation and productivity. For example, HPC technologies are being used to enable high-performance data analytics for training machine learning models, enabling researchers and organizations alike to gain insights and understanding from the vast influx of digital data.

ZEFF, Inc.’s AI database is a great example of what AI and HPC can achieve together. ZEFF pioneered the development of a groundbreaking AI database for unstructured image, audio and video data. It needs a highly reliable, enterprise-class infrastructure to train algorithms for artificial intelligence. With HPC, ZEFF has been able to solve tens of millions of image problems for people in a day or less instead of what previously took weeks or months to accomplish. Organizations, such as Mastercard, also are leveraging AI on HPC systems in new ways—processing large data sets at lightning speed to identify and prevent fraudulent transactions.

Today, HPC workloads are becoming more data centric, adding AI technologies, advancing the capabilities of traditional HPC modeling and simulation. In the next few years, HPC technologies, such as HPC-enabled machine learning training, will go from experimentation models to production models.

3. PREPARING THE MARKET AND WORKFORCES FOR HPC

This new confluence of data analytics and AI in research and enterprise, enabled by HPC solutions, creates entirely new possibilities and demands of IT. Providers need to be ready for the wave of people, who want to take advantage of technology to gain new insights, create new lines of business, and automate for speed and efficiency. Training and support for collecting and curating data, developing and training AI models, and deploying trained models will be key.

Users also need to develop the comprehensive set of skills needed to make this all work together in harmony. Applications and infrastructure must quickly and easily scale as data scales, meaning jobs are going to change as data grows and AI algorithms and tools evolve rapidly. We need to create a community that enables HPC to grow with people that understand its value. The good news is that data science is hot, and HPC experts are seen as critical members of the IT community, but we’ll need to have businesses collaborate more closely with universities to ensure the future IT workforce is prepared for these ongoing changes as well as the additional trends that will push the boundaries of AI and HPC.

4. PUSHING THE BOUNDARIES OF HPC

The technologies and trends that will push the boundaries of HPC potential are right around the corner and with them will come greater demand for HPC technologies. For example, the Internet of Things (IoT) is ushering in the new era of connected data at volume. With the advent of 5G, there will be infinite streaming possibilities from IoT devices—from watches to autonomous cars—that require HPC technologies to process vast amounts of data. This will be a goldmine for AI and the organizations leveraging those systems.

In addition, in the past few years, we have seen smart living become increasingly popular, but with IoT and AI, smart living will hit new highs. We will see smart buildings, schools, factories, hospitals and venues to become the norm. Institutions and industries of all types will need to tap into HPC technologies to handle the evolving landscape, which is becoming overwhelmingly inundated with analysis and automation.

This increasing demand for HPC technologies, new trends in AI, and new use cases for both, will trigger an abundance of insights to be gained. HPC is clearly no longer reserved for large companies or research organizations. It is meant for those who want to achieve more innovation, discoveries, and the elusive competitive edge. With HPC available to organizations for every field and for every workload that needs performance, we’ll be able to accelerate innovation and achieve new levels of understanding through AI and analytics.

REFERENCES

- [1] Abhishek Gupta, “Efficient High-Performance Computing in the Cloud”, ACM International Workshop on Virtualization Technologies in Distributed Computing (VTDC) 2015.
- [2] Abhishek Gupta, Laxmikant Kale, Filippo Gioachin, Verdi March, Chun Hui Suen, Bu-Sung Lee, Paolo Faraboschi, Richard Kaufmann, Dejan Milojicic, “The Who, What, Why and How of High Performance Computing Applications in the Cloud”, HP Labs Technical Reports (HPL) 2013.
- [3] Sanjay P. Ahuja, Sindhu Mani, “The State of High Performance Computing in the Cloud”, Journal of Emerging Trends in Computing and Information Sciences, Vol. 3, No. 2, February 2012, ISSN 2079-8407.
- [4] Andrea Borghesi, Andrea Bartolini, Michela Milano, Luca Benini, “Pricing schemes for energy-efficient HPC systems: Design and exploration”, The International Journal of High Performance Computing Applications, Vol. 33, No. 4, 2019

Theme: Trends and Innovation in Teaching and Learning English Language

Dr. Gunjan Jain

Vidya College of Engineering, Meerut, India

drgunjan.virgo@gmail.com

1. AN OVERVIEW

Innovation as a word can be literally defined as, “the process of making changes to something established by introducing something new, or something new which is accepted when successfully implemented”. *Innovation in teaching is the medium of finding way to reach students. This means being willing and flexible to adjust what is taught and how it is taught. It is important to keep the students engaged and excited to learn. It is essential to create a safe place for learners to make mistakes, take risks, and ask questions*”. The present education system [1] is facing confusion and disturbance globally. The traditional educational system is being challenged by the new age learners to pave way to the advanced learning methods. Since their childhood the young generation is exposed to the technology and social resources, reason being they look for the use of technology to update conventional approach of learning. It is essential to implement innovative methodologies in teaching and learning because the set pattern and pedagogies does not work all time, it is difficult to engage learners and teachers in classroom activities. “Innovation in education is about more than just technology. It’s about using technology to empower students to become lifelong learners who are agents of change,” Combination of technology and tool is the most urgently required methods of making the students capable to meet the requirements of the global world.

2. CURRENT TREND, ISSUE & CHALLENGE

Change is normal part of teaching profession. Innovation in teaching is a significant step to transform teachers as true designers of learning environment. Technological innovation is a part of education and English Language Learning but it can be partially relied on as in teaching learning process natural learning inclinations like play emotions, creativity, collaboration promote the engagement of learners. The following innovative cluster of pedagogies enable leap frogging in education through the teaching of new and crosscutting skills, along with the new content.

1. English as lingua franca
2. Embodied learning (body, emotion, creativity)
3. Experiential Learning (Inquiry in a complex world)
4. Computation Thinking (ICTs and Digital Literacy)
5. Blended Learning (Online and group dynamics)
6. Gamification (Play)
7. Multiliteracies & Discussions (Linguistic Diversities & questions)
8. Digital Platform (FB, Edmodo, Moodle Cloud, Google Classroom)
9. Communicating Online with people (Skype, Zoom)
10. Online Corpora (Linguer, Vocabulary Profiles, TOEIC Word) (2)

The emergence of new communication and information technology have a great impact on the development of English language teaching and learning but the true value of innovations lies only when they can help learners to become better communicators in English, and the extent to which they can help teachers encourage learners in the most efficient, motivating ways. The advantages of Language Learning Technologies are:[3]

1. Engagement
2. Improvement in Academic Ability
3. A Paradigm Shift in Teaching and Learning
4. An Assessment Shift
5. Collaborative Learning Enhancement
6. Lower Learning Anxiety Level

In the present time teachers are facing challenge of coping with the technological advancement with the students to complement and support instructional methods and practice. The opportunities are immense, but there are also

technological limitations in many parts of developing countries that obstructs the technological innovations for supporting education:

1. Lack of trained support staff
2. Teachers leaving the profession
3. Infrastructure not appropriate
4. Inadequate telecommunication bandwidth
5. High Cost resources

It is the high time to implement innovative teaching despite the various challenges faced by the educational institution, teachers and learners, innovation offers a path forward.

3. ITS IMPACT ON EDUCATION, INDUSTRY AND SOCIETY

Technology is very much part of language learning throughout the world at all different levels. The learning of language through ICT,CBL has become the perfect complement of mastering language, and English courses accompanied by technological support is the most effective and attractive for students who want to be successful in their learning as they can use Internet technology to communicate with other students or instructors across a city or around the world. Teachers and students can access information through virtual libraries and the World Wide Web, and use software to master technical as well as academic skills.

1. Technology makes learning interesting and engaging
2. Best complimentary tool for teachers in classroom
3. Promote collaboration of student, teacher and parents easy and effective
4. Allows fast and efficient delivery of lesson
5. Supports in monitoring student's progress
6. Reduces the use of text books and printed material
7. Develops technological skills, that allows students to learn, to embrace and take advantages of the technology tool. [4]

4. FUTURE SCOPE

In present era education as the medium for developing the next generation of innovators and creative thinkers. The traditional method of teaching create gap between potential of modern education and what students are being taught, due to lack of innovative ideas in teaching and learning. According to great poet William Butler Yeats, "Education should not be filling of pail, but the lighting of fire".

The advancement of electronic gadgets assists individuals and communities to be updated with the latest advancement and innovative educational design can be used for students as distance learning mode. Use of innovative teaching learning techniques ignite the passion of learning and provide students with the tools they need to meet the need of the globalized era. Using technology as an educational tool makes student more creative and participative in class and enriches teaching learning process where all students are given equal opportunities and teachers are provided with the attractive resources to make their class more sociable.

REFERENCES

- [1] <https://education.cu-portland.edu/blog/classroom-resources/educational-innovations-roundup/>
- [2] <https://www.britishcouncil.org/voices-magazine/ten-trends-innovations-english-language-teaching-2018>
- [3] <https://philmckinney.com/innovation-classroom-education-needs-innovative/>
- [4] <https://www.cae.net/5-benefits-using-new-techonology-language-learning/>

Session Theme: Issues, Challenges, Impact and Future of Positive Psychology

Portia R. Marasigan
Laguna State Polytechnic University, Philippines
bing_marasigan2001@yahoo.com

1. AN OVERVIEW

Traditionally in psychology, the focus has been on identifying and treating mental health problems such as depression. This is critically important for those facing mental illness however, it provides an incomplete picture of mental health. Positive psychology is a relatively new branch of psychology that shifts the focus from what is clinically wrong, to the promotion of wellbeing and the creation of a satisfying life filled with meaning, pleasure, engagement, positive relationships and accomplishment.

Hence, positive psychology is “the scientific study of what makes life most worth living”, or “the scientific study of positive human functioning and flourishing on multiple levels that include the biological, personal, relational, institutional, cultural, and global dimensions of life”. Positive psychology is concerned with eudaimonia, “the good life”, reflection about what holds the greatest value in life – the factors that contribute the most to a well-lived and fulfilling life. Furthermore, it deals with different concepts of happiness such as optimism, happiness, personal growth, character strengths, psychological well-being, wisdom and creativity and studies what is it that enables optimal functioning of people and how good social relationships affect the good psychological state of an individual.

In addition to focusing on positive thinking and positive emotions, positive psychology especially tries to recognize the factors that enable individuals and groups to succeed and flourish and of course to be happy. This session focuses on contemporary issues and challenges that are faced by both the education and society, in general. This includes education, business, management and health related topics that are relevant to the needs of the society for the promotion of psychological well-being of the members of the society. Finally, with the presentation of the selected papers, it will pave the way to the promotion of the optimism and happiness to become an optimal functioning individual.

2. CURRENT TRENDS, ISSUES AND CHALLENGES IN POSITIVE PSYCHOLOGY

Positive psychology, as a field, set out with the agenda of inspiring organized, systematic research and practice on creating, sustaining and enhancing a meaningful life. Over the years, its approach has been growing towards a more holistic perspective; contrasting and integrating the life-enhancing as well as life-depleting aspects of human existence to create deeper understanding and facilitate real flourishing. However, it still has a long way to go in contrasting and integrating diverse voices and needs, particularly of those who find themselves in the margins. It is hoped that the second wave of positive psychology is able to more fully engage this agenda (Rao as cited by Wong, 2016).

According to Joseph (2015), three issues stood out with regards to positive psychology. The first was whether the goal of positive psychology is to integrate with mainstream psychology or to be a separate branch of psychology. The second was how positive psychology relates to negative states and the need for new theoretical developments that dissolve boundaries between the positive and the negative. And third, the need for greater attention to the theoretical and philosophical underpinnings of practice.

The challenges faced by the field of positive psychology as it approaches its second decade of existence, among these is the lack of clarity on which research topics constitute “positive psychology”; the one-sided focus on desirable-sounding constructs and topics, with new, exotic terms like *self-compassion* or *state cheerfulness proliferating*; and researchers’ failure to consider the yin and yang of positive and negative, the dialectical tension between stress and growth (Kashdan, T. B. and Steger, M. F., 2011).

3. IMPACT ON EDUCATION, INDUSTRY AND SOCIETY

If positive psychology is applied to higher education, it increases the likelihood of seeing students working to their potential, understanding their individual strengths, engaging in healthy social and emotional campus cultures, and fostering enduring relationships between administration, faculty, and other students. Fostering student thriving and increasing

engagement through student strengths-based initiatives are advantages colleges and universities need to remain innovative and competitive (Williams, Horrell, Edmiston, and Brady, 2018).

Positive psychology is all about embracing people's strengths rather than focusing on their weaknesses. It's based on the premise that all people want to live purposeful and fulfilling lives, desire to be their best selves and strive for happiness in every aspect of their work and personal lives. When leaders approach their management style from this perspective - when they believe in the power of their own people - it can have a transformative effect on how the organization performs (Fridman, 2017).

The aim of positive psychology is to help individuals and groups to prosper by magnifying human vigor and moral excellence to make life worth living (Froh, 2004 as cited by Essays, UK, 2018). Positive psychology was brought about in order to produce positive phenomena in an individual such as happiness, courage and love (Froh, 2004 as cited by Essays, UK, 2018). This is because these positive phenomena are much needed for a human being to overcome their adversities. In other words positive psychology is a method that is used to introduce or promote the positive phenomena in you to you. To help you unleash the inner moral excellence in you so that you can live a pleasant life, engaged life, meaningful life or an achieving life (Seligman, 2002 as cited by Essays, UK, 2018). This variation of approaches is essential in order to promote well-being (Slade, 2010 as cited by Essays, UK, 2018).

4. FUTURE OF POSITIVE PSYCHOLOGY

According to Pidgeon (2017), she states that the future of positive psychology will expand into an integrated applied science, which is used through lives, businesses, and communities without it necessarily being labelled as "positive psychology". Having an evidence based framework has opened up positive psychology to hold regard from those who might not necessarily have taken the nature of the constructs so seriously had it not been supported by research. Meditation is no longer something weird that's practiced by hippies hugging trees, physical activity is no longer just about the physical health and gratitude is not just about those warm and fuzzy feeling. People now know, that all of these things can help them shift their psychological state into the positive, and for that they have scientific proof (Pidgeon, 2017).

REFERENCES

- [1] Essays, UK. (November 2018). Positive Psychology Impact. Retrieved from <https://www.ukessays.com/essays/psychology/the-effects-of-positive-psychology-in-society-psychology-essay.php?vref=1>
- [2] Fridman, Adam. (2017). Retrieved from <https://www.inc.com/adam-fridman/three-ways-positive-psychology-impacts-leadership-performance.html>
- [3] Joseph, S. (2015). Looking to the Future of Positive Psychology: Can positive psychology integrate the positive with the negative? Retrieved from <https://www.psychologytoday.com/intl/blog/what-doesnt-kill-us/201505/looking-the-future-positive-psychology>
- [4] Kashdan, T. B. and Steger, M. F. (2011). Challenges, Pitfalls, and Aspirations for Positive Psychology, DOI:10.1093/acprof:oso/9780195373585.003.0002, Retrieved from <https://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780195373585.001.0001/acprof-9780195373585-chapter-2>
- [5] Pidgeon, N. MSc. (2017). The Future of Positive Psychology. Retrieved from <https://www.linkedin.com/pulse/future-positive-psychology-niyc-pidgeon/>
- [6] Williams, Noël; Horrell, Leah; Edmiston, Dawn; and Brady, Mackenzie (2018) "The Impact of Positive Psychology on Higher Education,"The William & Mary Educational Review: Vol. 5, No. 1 , Article 12. Available at: <https://scholarworks.wm.edu/wmer/vol5/iss1/12>
- [7] Wong, P. (2016). The Current State of Positive Psychology and Implications for the Study of a Meaningful Life. Retrieved from <http://www.drpaulwong.com/the-current-state-of-positive-psychology-and-implications-for-the-study-of-a-meaningful-life/>

Theme: Green Computing for the Sustainability - The Issues, Challenges and Potentialities

P. K. Paul

Executive Director, MCIS, Raiganj University (RGU), West Bengal, India
pkpaul.infotech@gmail.com

ABSTRACT

Green Technologies play a leading role for solid and sustainable development. Green Technologies is a broad field that incorporates different areas viz. Green Computing, Green Information Technology, Green Information and Communication Technology, Green Marketing, Green Energy, Green Accounting and so on. Green Computing is about the design and development of green and energy efficient computer systems; it includes the analysis and management of Green Computers. Today, most of the organizations and institutions are using different kind of Computers and allied electronics gadgets. Hence proper and healthy sustainability is highly desired and organizations are also doing well in this context. Different awareness programs, workshops, symposiums are regularly need to organize to make sustainable technologies and systems. India holds large number of educational institutions and only a few are offered programs related to the Green Computing and Technologies. This Chapter highlights the basics of Green Computing and Allied technologies including their issues and opportunities. Chapter also noted about the possible academic programs in this field.

Keywords -Green Computing, Green ICT, Green Systems, Higher Education, Sustainable Technologies, Information Systems, India

1. INTRODUCTION

Green computing is dedicated for the use of computing assets more effectively and efficiently with goal of reducing environment pollution [5], [10],[11]. It is important that IT administrations should bring the reconciliation of green figuring practices with different practices viz.

- Control the board and systems.
- Virtualization and Cloud Systems.
- Improving the cooling systems and innovation,
- Reusing the electronic systems.
- Electronic waste management and transfer
- Improvement of the IT framework to meet supportability necessities.

There are different reasons for introducing Green Computing and Information Technologies and among these few important are include but not limited to the following—

Climate Change lead the reason of environmental harm and introducing Green Computing and Technologies may solve the problems related to the climate change.

Saving is another reason for Green Computing and Systems introduction and here servers, cooling, and lighting etc are most important and valuable.

Power Management is also another reason for the Green Computing and ICT move. Different organizations and institutions thus moving for go green [7], [10].

2. OBJECTIVE

The current paper is theoretical and review based paper and mainly applicable in following areas viz.—

- To learn about the basics of Green Computing its subfields in general context.
- To learn about the challenges and issues of Green Computing and Information Technologies.
- To know about the opportunities of Green Computing in simple and basic sense.
- To learn the potentialities to offer the Green Computing and Technologies in India context.

3.1 GREEN COMPUTING AND POTENTIALITIES

Green Computing has many opportunities and possibilities and among these few important are include

- Green Computing is responsible for the extra energy consumption with standard algorithm design; uses of centralized computing uses are also important for Green Computing practice.
- Green Computing is also responsible for the environment, eco friendly and carbon emission.
- Green Computing and technology preserves Green Information Infrastructure and overall Information Transfer Cycle chain [5], [6].
- Green Computing and Informatics practice keeps Green Organization, institutions and Governance which includes better E-Administration, E-Governance and E- Services to bring a Green Society.
- Green Computing and Informatics practice is helpful for healthy economical and social development [1], [4].
- Green Computing and Informatics practice helps in better Eco Systems and average temperature monitoring.
- Green Computing and Informatics practice directly and indirectly saves money of the concerned organizations and personal management as well.

3. 2 GREEN IT AND INFORMATION SCIENCE

There are other branches and allied field in Green Computing; for example the area *Green Algorithm* may deal with the better and sophisticated and energy efficient algorithm designing and development [2], [3].

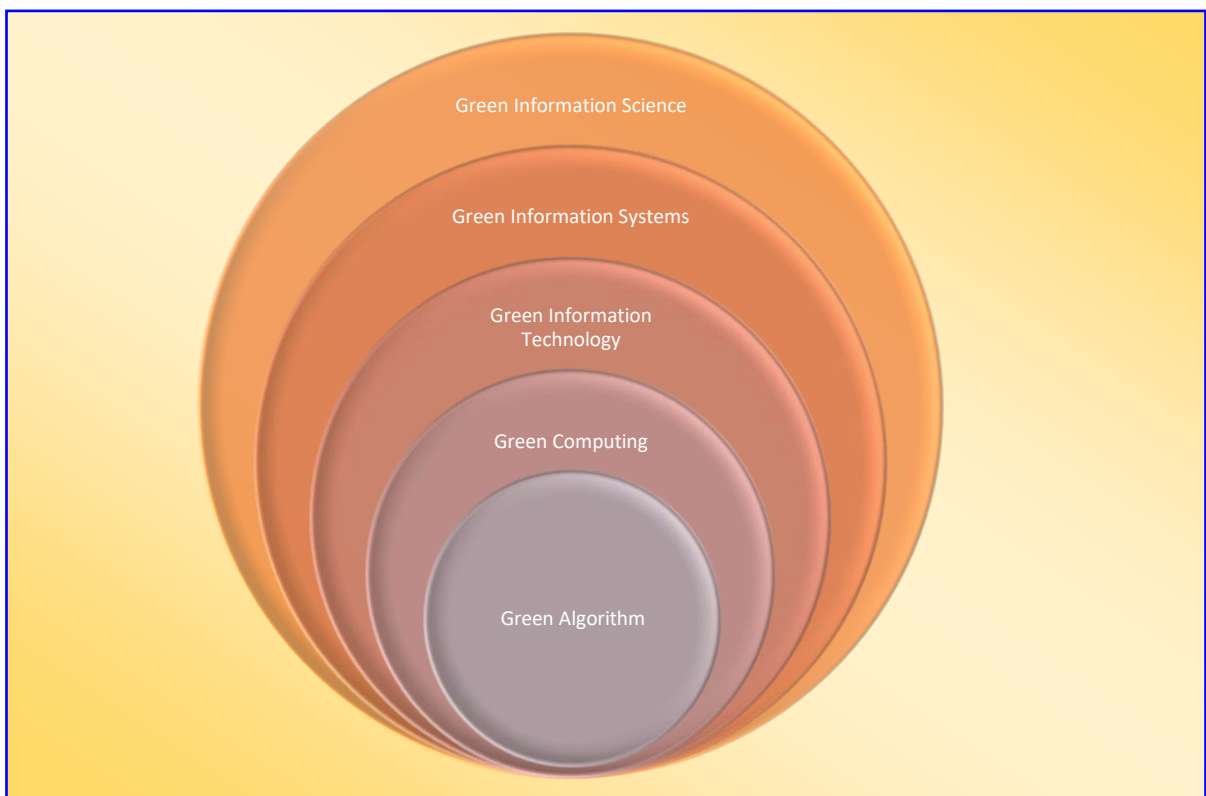


Fig: 1 The broader and smaller areas related with the Green Technologies lies on Computing

Green Information Technology or Green IT may be treated as another field responsible for Green and Sustainable design and development of Information Technology components viz. Networks, Websites and Systems, Database Systems. The Green IT not only responsible for the design and development but also managing the eco friendly systems [2], [8], [9].

Whereas the *Green Information Systems* is talks about the Green IT applications in the organizations and business houses. Green Information Systems is responsible also for sustainable business development. *Green Information Science* is responsible for the design, development and management of Green IT in technological and manual form. Hence Green Information Science is responsible for traditional document management with sustainability [6], [12].

3.3 ACADEMIC POTENTIALITIES

The Universities and educational institutions are offering large number of programs of different areas. In recent past few international universities have started programs on Green Technologies and Computing. As far as India is concerned few universities have started program on this area. Though potential programs may Green Computing, Green Information

Technology, Green Information Systems with Bachelors, Masters, Doctoral Degrees. The areas may be offered with full-fledged manner or as a specialization in different allied areas viz. Computer Science, Information Technology, Information Science, Information Systems, Computing, Computer Application, Software Engineering etc.

3. CONCLUSION

Reduced energy usage from green computing techniques converts into lower carbon dioxide outflows; moreover conserving resources means less energy requirement to produce, use as well as dispose of products. Different countries through its government are using strategy to energize reusing and bringing down energy use by people and organizations. Wide Green Computing practice as well as Individual Green Computing practice is important facet for solid and sustainable development. Hence joint and collaborative efforts from different stakeholders are solicited.

4. REFERENCES

- [1] Gholami, R., Sulaiman, A. B., Ramayah, T., & Molla, A. (2013). Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey. *Information & Management*, 50(7), 431-438.
- [2] Grossman, S. J., & Stiglitz, J. E. (1976). Information and competitive price systems. *The American Economic Review*, 66(2), 246-253.
- [3] Jenkin, T. A., Webster, J., & McShane, L. (2011). An agenda for 'Green' information technology and systems research. *Information and Organization*, 21(1), 17-40.
- [4] Molla, A., Cooper, V., & Pittayachawan, S. (2011). The Green IT readiness (G-Readiness) of organizations: An exploratory analysis of a construct and instrument. *Communications of the Association for Information Systems*, 29(1), 67-96.
- [5] Paul, P. K., & Chaterjee, D. (2012). Cloud computing and green computing: challenges & issues in Indian perspective. *Asian Journal of Computer Science and Technology*, 1, 50-54.
- [6] Paul, P. K., & Ganguly, J. (2013). Green computing: The emerging tool of interdisciplinary environmental sciences-problems and prospects in Indian scenario. *International Journal of Pharmaceutical and Biological Research (IJPBR)*, 5(04), 210-214.
- [7] Paul, P. K., & Ganguly, J. (2013). Green Information Infrastructure: Stakeholders-A Study. *International Journal of Pharmaceutical and Biological Research (IJPBR)*, 4(04), 159-164.
- [8] Paul, P., Aithal, P. S., & Bhuimali, A. (2017). MCA (Information Science and Management): The next Generation Interdisciplinary Specialization for Better Social Informatics and Digital Humanities Practice. *International Journal of Scientific Research in Mathematical and Statistical Sciences*, 4(5), 27-32.
- [9] Paul, P. K., & Ghose, M. K. (2018). Why Green Computing and Green Information Sciences Have Potentialities in Academics and iSchools: Practice and Educational Perspectives. In *Advances in Smart Grid and Renewable Energy* (pp. 103-112). Springer, Singapore.
- [10] Li, M., & Ye, L. R. (1999). Information technology and firm performance: Linking with environmental, strategic and managerial contexts. *Information & Management*, 35(1), 43-51.
- [11] Loos, P., Nebel, W., Gómez, J. M., Hasan, H., Watson, R. T., vom Brocke, J., & Recker, J. (2011). Green IT: a matter of business and information systems engineering?. *Business & Information Systems Engineering*, 3(4), 245-252.
- [12] Tochtermann, K., & Maurer, H. A. (2000). Knowledge management and environmental informatics. *Journal of Universal Computer Science*, 6(5), 517-536.

Multi Objective Optimization with Soft Computing Techniques

Manu Pratap Singh
Institute of Engineering & Technology,
Dr. B. R. Ambedkar University, Khandari, Agra, India
manu_p_singh@hotmail.com

ABSTRACT

The soft computing techniques are widely used for the optimization of various real world problems since very long. These techniques include neural network optimization with Hopfield neural network model, constraint free optimization with feedforward neural network model, Gradient free optimization with Genetic algorithm and many more hybrid evolutionary optimization techniques are available. Most of the time in all these techniques the problem of real world has been solved with single objective i.e. either to minimize or maximize the objective or cost function. The new trends in this direction are for optimization of more than one objective function. It means that the minimization of one objective and maximization of another objective function. As for as the case of pattern storage and its recalling it is expected that the neural network will occupy correct global minimum and simultaneously minimize the time of recalling with minimization of error in recalling and also maximize the pattern storage capacity. This can also apply for the image storage and its recalling even though the presented prototype input of image is not complete or noisy. We can also explore this possibility to the feedforward neural networks for the pattern classification and mapping. The network is expected to minimize the global error with minimum epochs and maximize the convergence of the network for efficient generalization and approximation. There are different approaches can be employed together for accomplish the task of multi objective optimization. This session explore the possibility of various techniques in combination for the multi objective optimization for the various real world problems like pattern recognition, image reconstruction, automated controlling system, path finding problems and many more. The most common approaches consist with evolutionary neural network system, neural fuzzy system, Hybrid evolutionary systems and hybrid neural networks. In this session the emphasis will be on the discussion of various evolutionary hybrid neural networks system for the solution of various real world problems with their multi objective optimal solutions.

Keywords: Pattern Storage Network, multi objective optimization, Non-random GA, Hybrid Evolutionary Algorithms.

1. INTRODUCTION

Pattern recognition is a dominate research area in the field of Machine intelligence. Pattern recognition is considered with various techniques of soft computing. In different approaches of soft computing the pattern recognition is considered as the non-constraint multi objective optimization problem. Pattern storage & recalling i.e. pattern association is one of prominent method for the pattern recognition task that one would like to realize using an artificial neural network (ANN) as associative memory feature. Pattern storage is generally accomplished by a feedback network consisting of processing units with non-linear bipolar output functions. The stable states of the network represent the memorized or stored patterns. Since the Hopfield neural network with associative memory was introduced, various modifications are developed for the purpose of storing and retrieving memory patterns as fixed-point attractors. The dynamics of these networks have been studied extensively because of their potential applications. The dynamics determines the retrieval quality of the associative memories corresponding to already stored patterns. The pattern information in an unsupervised manner is encoded as sum of correlation weight matrices in the connection strengths between the proceeding units of feedback neural network using the locally available information of the pre and post synaptic units which is considered as final or parent weight matrix.

Hopfield proposed a fully connected neural network model of associative memory in which we can store information by distributing it among neurons, and recall it from the dynamically relaxed neuron states. If we map these states corresponding to certain desired memory vectors, then the time evolution of dynamics leads to a stable state. These stable states of the networks represent the stored patterns. Hopfield used the Hebbian learning rule to prescribe the weight matrix for establishing these stable states. A major drawback of this type of neural networks is that the memory attractors are constantly accompanied with a huge number of spurious memory attractors so that the network dynamics is very likely to be trapped in these attractors, and thereby prevents the retrieval of the memory attractors. Hopfield type networks also likely are trapped in non-optimal local minima close to the starting point, which is not desired. The presence of false minima will increase the probability of error in recall of the stored pattern. The problem of false minima can be reduced by adopting the evolutionary algorithm to accomplish the search for global minima. There have been a lot of researchers who apply evolutionary techniques (simulated annealing and Genetic algorithm) to minimize the problem of false minima. Imades & Akira have applied evolutionary computation to Hopfield neural networks in various ways. A rigorous treatment of the capacity of the Hopfield associative memory can be found in. The Genetic algorithm has been identified as one of prominent search technique for exploring the global minima in Hopfield neural network.

Developed by Holland, a Genetic algorithm is a biologically inspired search technique. In simple terms, the technique involves generating a random initial population of individuals, each of which represents a potential solution to a problem. Each member of this population evaluates from a fitness function which is selected against some known criteria. The selected members of the population from the fitness function are used to generate the new population as the members of the population are then selected for reproduction based potential solutions from the operations of the genetic algorithm. The process of evaluation, selection, and recombination is iterated until the population converges to an acceptable optimal solution. Genetic algorithms (GAs) require only fitness information, not gradient information or other internal knowledge of a problem as in case of neural networks. Genetic algorithms have traditionally been used in optimization but, with a few enhancements, can perform classification, prediction and pattern association as well. The GA has been used very effectively for function optimization and it can perform efficient searching for approximate global minima. It has been observed that the pattern recalling in the Hopfield type neural networks can be performed efficiently with GA. The GA in this case is expected to yield alternative global optimal values of the weight matrix corresponding to all stored patterns. The conventional Hopfield neural network suffers from the problem of non-convergence and local minima on increasing the complexity of the network. However, GA is particularly good to perform efficient searching in large and complex space to find out the global optima and for convergence. Considerable research into the Hopfield network has shown that the model may trap into four types of spurious attractors. Four well identified classes of these attractors are mixture states, spin glass states, compliment states and alien attractors. As the complexity of the of the search space increases, GA presents an increasingly attractive alternative for pattern storage & recalling in Hopfield type neural networks of associative memory.

The neural network applications address problems in pattern classification, prediction, financial analysis, and control and optimization. In most current applications, neural networks are best used as aids to human decision makers instead of substitutes for them. Genetic algorithms have helped market researchers performing market segmentation analysis. Genetic algorithms and neural networks can be integrated into a single application to take advantage of the best features of these technologies.

Much work has been done on the evolution of neural networks with GA. There have been a lot of researches which apply evolutionary techniques to layered neural networks. However, their applications to fully connected neural networks remain few so far. The first attempt to conjugate evolutionary algorithms with Hopfield neural networks dealt with training of connection weights and design of the neural network architecture, or both. Evolution has been introduced in neural networks at three levels: architectures, connection weights and learning rules. The evolution of connection weights proceeds at the lowest level on the fastest time scale in an environment determined by architecture, a learning rule, and learning tasks. The evolution of connection weights introduces an adaptive and global approach to training, especially in the reinforcement learning and recurrent network learning paradigm. Training of neural networks using evolutionary algorithms started in the beginning of 90's . Reviews can be found in. Cardenas et al. presented the architecture optimization of neural networks using parallel genetic algorithms for pattern recognition based on person faces. They compared the results of the training stage for sequential and parallel implementations. The genetic evolution has been used as data structures processing for image classification.

The neural network applications address problems in pattern classification, prediction, financial analysis, and control and optimization. In most current applications, neural networks are best used as aids to human decision makers instead of substitutes for them. Genetic algorithms have helped market researchers performing market segmentation analysis. Genetic algorithms and neural networks can be integrated into a single application to take advantage of the best features of these technologies. Much work has been done on the evolution of neural networks with GA. There have been a lot of researches which apply evolutionary techniques to layered neural networks. However, their applications to fully connected neural networks remain few so far. The first attempt to conjugate evolutionary algorithms with Hopfield neural networks dealt with training of connection weights and design of the neural network architecture, or both. Evolution has been introduced in neural networks at three levels: architectures, connection weights and learning rules. The evolution of connection weights proceeds at the lowest level on the fastest time scale in an environment determined by architecture, a learning rule, and learning tasks. The evolution of connection weights introduces an adaptive and global approach to training, especially in the reinforcement learning and recurrent network learning paradigm. Training of neural networks using evolutionary algorithms started in the beginning of 90's . Reviews can be found in. Cardenas et al. presented the architecture optimization of neural networks using parallel genetic algorithms for pattern recognition based on person faces. They compared the results of the training stage for sequential and parallel implementations. The genetic evolution has been used as data structures processing for image classification.

Feed forward neural network is a biologically inspired classification algorithm. It consists of a number of simple neuron-like processing *units*, organized in *layers*. Every unit in a layer is connected with all the units in the previous layer. These connections are not all equal; each connection may have a different strength or weight. The weights on these connections encode the knowledge of a network.. The neural network consists of an input layer of nodes, one or more hidden layers,

and an output layer. Each node in the layer has one corresponding node in the next layer, thus creating the stacking effect. The input layer's nodes have output functions that deliver data to the first hidden layer nodes. The hidden layer(s) are the processing layer, where all of the actual computation takes place. Each node in a hidden layer computes a sum based on its input from the previous layer (either the input layer or another hidden layer). The sum is then "compacted" by a sigmoid function (a logistic curve), which changes the sum to a limited and manageable range. The output sum from the hidden layers is passed on to the output layer, which produces the final network result as shown in figure 2.1. Feed-forward networks may contain any number of hidden layers, network with a single hidden layer can learn any set of training data that a network with multiple layers can learn, depends upon the complexity of the problem [3]. However, neural network with a single hidden layer may take longer to train.

Popular working-out algorithms for feed forward neural networks such as back-propagation algorithm undergo the intrinsic complications of gradient –descent techniques-predominantly local minima in the error function. GA propose an another solution to conventional techniques since they do not rely on gradient information –they can sample the search space irrespective of where the existing solution is to be found , while remaining is biased toward good solutions. A genetic algorithm has four main elements: (i) the genetic code, a concise representation for an individual solution; (ii) the population, a number of individual solutions; (iii) the fitness function, an evaluation of the usefulness of an individual; (iv) the propagation techniques, a set of methods for generating new individuals. In the genetic algorithm, first a population of individuals is generated by randomly selecting different samples (or genes) through mutation and elitism. From these samples, the GA crossover operator is used to generate the combinations of selected samples. The fitness of each individual is then evaluated. The best among all these is selected for further processing. The cycle of evaluation and propagation continues until a satisfactory solution, the optimal solution, is found.

2. SIMULATION DESIGN AND IMPLEMENTATION DETAILS

This section describes the experiments designed to evaluate the performance of feed-forward neural network when evolved with two different learning algorithms. We have considered two different architecture first consisting 4 neurons in the input layer, 5 neurons in each hidden layers, 2 hidden layers and 5 neurons in the output layer, while the second architecture consists 4 neurons in the input layer, 6 neurons in each hidden layers, 2 hidden layers and 5 neurons in the output layer.

2.1 Experiment

Five different sets of alphabets are used for the both experiment. The alphabets are converted into their density function by using MATLAB program, for input data. We used two different learning algorithms (Back propagation and Genetic Algorithm). In the each experiment we have taken five trials to train the neural network. For this, the scanned images of five different samples of handwritten English alphabets were obtained. After collecting these samples, each English alphabets image was partitioned into four equal parts, and the density values of the pixels for each part were calculated. Next, the density values of the central of gravities for these partitioned images of the English alphabets were calculated. Consequently, four values were obtained from an image of handwritten English language alphabets, which were then used as the input for the feed-forward neural network. This procedure was used to present the input pattern to the feed-forward neural network for each of the sample of English language alphabets.

2.2 Neural Network Architecture

The structural design of the neural networks was based on a fully connected feed-forward multilayer generalized perceptron. Four input units were used, with two hidden layers (with five neurons in first architecture and six neurons in second architecture) and five neurons in the output layer. The hidden layers were used to investigate the effects of Back-propagation and GA on the hyperspace. Each network had a single output unit with the following activation and output functions,

$$A_k^o = \sum_{i=0}^H w_{io_k} O_i^h$$

$$f\left(A_k^o\right) = f\left(\sum_{i=0}^H w_{io_k} O_i^h\right) = O_k^o$$

where function $f\left(A_k^o\right)$ is given as,

$$O_k^o = \frac{1}{1 + e^{-KA_k^o}}$$

Now, similarly, the output and activation value for the neurons of hidden layers and input layer can be written as,

$$A_k^h = \sum_{i=0}^N w_{ik} O_i$$

and

$$O_k^h = \frac{1}{1 + e^{-KA_k^h}}$$

and

$$O_k^i = \int(A_k^i) = A_k^i$$

In the Back-propagation learning algorithm, the change in weight populations was done according to the calculated error in the network after each of the iteration of training. The genetic algorithms evolve the population of weights using its operators, and select the best population of the weights that minimize the error between the desired output and the actual output of neural network system.

2.3 The Genetic Algorithm Implementation

The initial population was generated with randomly assigned values for weights and biases. The values were obtained from the random generator generating values between 0 and 1. After the initial population of weights and biases was created, the problem domain is represented as a chromosome. For that, the set of weight values is represented as a square matrix, in which a real number corresponds to the weighted link from one neuron to another neuron. A zero value means that there is no connection between the two given neurons. Each row of this matrix represents a group of incoming weighted links to a single neuron. In total, there are 102 weighted links between neurons and 19 biased values of neurons in the neural network. Thus, a chromosome is a collection of genes representing either a weight or a biased value. A 121-gene chromosome can be represented as

w_{11}	w_{21}	Bias of hidden unit 1 of layer 1	w_{12}	w_{22}	Bias of hidden unit 2 of layer 1	-----	w_{11}	w_{21}	-----	w_{61}	Bias of unit 1 of output layer
----------	----------	----------------------------------	----------	----------	----------------------------------	-------	----------	----------	-------	----------	--------------------------------

where some gene corresponds to a single weighted link and some corresponds to biased values of neurons in the network. A mutation operator which randomly selects a gene in a chromosome and adds a small random value between -1 and 1 to that particular gene produces the next generation population of 121-gene chromosomes. The size of the next generated population will be $n + 1$, if the mutation operator applied n times over the old chromosome. Elitism was used when creating each generation so that the genetic operators did not lose good solutions. This involved copying the best-encoded network unchanged into the new population

This will select among the mutated population of chromosomes for which the sum of squared errors is minimum for the feed-forward neural network. After assigning the values, the network architecture will be able to fabricate output using these assigned values. For each chromosome of new population, the error can be calculated. Now the selection operator will pick a chromosome from new population, which generates minimized error for the network.

A fitness evaluation function defines a function for evaluating the chromosome performance. This function must estimate the performance of weight population of a given feed-forward neural network. A simple function defined based on the proportion of the sum of squared errors is applied. To evaluate the fitness of a given chromosome, each weight and biased value contained in the chromosome is assigned to the respective link and neuron in the network. The training set is then presented to the network, and the sum of squared errors is calculated. The smaller the sum, the higher is the fitness of the chromosome. In other words, the genetic algorithm attempts to find a set of weights and biased values that minimizes the sum of squared errors.

3. RESULTS

The results presented in this Section demonstrated that, within the simulation framework presented above, large significant difference exists between the performances of Back-propagation feed-forward neural network and genetic feed-forward neural network for handwritten English alphabets recognition problem. The results for handwritten English alphabets recognition problem performed (5 times) with all two algorithms up to having the maximum limit of 50000 iterations. All

the results take five different types of handwritten samples for each English alphabet. The results show the number of convergence matrices for each alphabet recognition process. This value shows how many numbers of convergence weight matrices have been obtained for the particular character by applying the genetic algorithm. For Back-propagation algorithm the same entry is not required, because if the characters are correctly recognized by the network, then only one convergence matrix will be obtained. Therefore, this entry is required only for genetic algorithm through which multiple number of convergence matrices can be obtained. This shows the higher accuracy of the algorithm for character recognition.

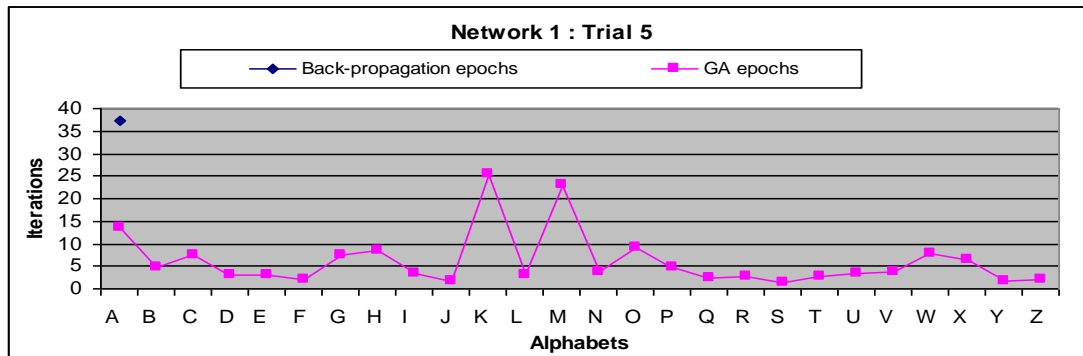


Fig.4.1: Comparison chart of the iterations preformed by Back-propagation algorithm and Genetic algorithm for 1st network.

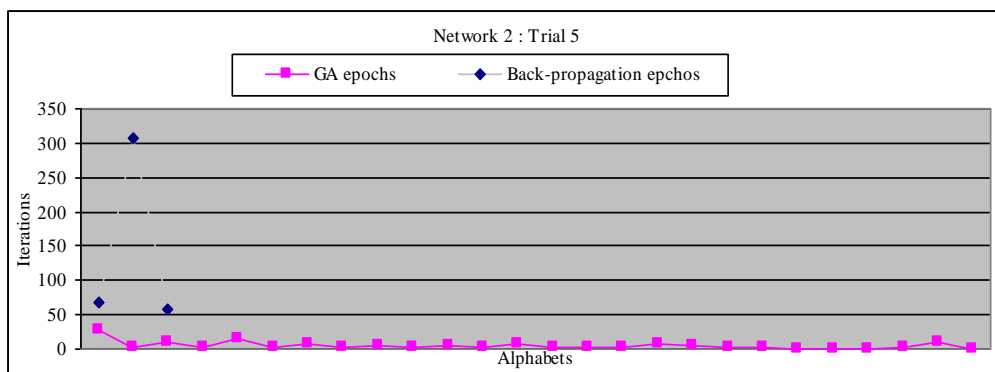


Fig. 4.2: Comparison chart of the iterations preformed by Back-propagation algorithm and Genetic algorithm for 2nd network.

4. CONCLUSION

The results described in this paper indicate that, for the handwritten English alphabets recognition problem, feed-forward neural network trained with Back-propagation algorithm does not perform better in comparison to feed-forward neural network trained with genetic algorithm. The performance of genetic algorithm is efficient and accurate in all the simulations. It is found that, in each and every case, the genetic algorithm gives more than one convergent weight matrices for every input pattern in comparison to the Back-propagation algorithm. This shows the higher accuracy rate in the pattern recognition with genetic algorithm. The higher number of convergence weight matrices in the GA training process, suggest that this algorithm may not be trapped in the false minima of the error surface. It may also minimize the possibilities of misclassification for any unknown testing input pattern. By comparing, it is also found that by increasing the number of neuron in the hidden layers of a feed forward neural network, the performance of the network increases significantly.

REFERENCE

- [1] Pat Christenson, Andrew Maurer, Grant Miner, Handwriting recognition by neural network, extracted by the URL: <http://csci.mrs.umn.edu/UMMCSiWiki/pub/CSci4555s04/InsertTeamNameHere/handwriting.pdf>, 2005.
- [2] M. Mangal , Manu Pratap Singh, Analysis of pattern classification for the multidimensional parity-bit-checking problem with hybrid evolutionary feed-forward neural network, in: Neurocomputing, Vol. 70, 2007, pp. 1511-1524.
- [3] M. Mangal M. , Manu Pratap Singh, Analysis of multidimensional XOR classification problem with evolutionary feed-forward neural networks, International Journal on Artificial Intelligence Tools , Vol. 16, issue 1, February 2007, pp. 111-120.
- [4] W. S. McCulloch and W. Pitts, A logical calculus of the ideas immanent in nervous activity, Bull. Math. Biophy. Vol. 5, 1943, pp. 115-133.

- [5] Rosenblatt, The perceptron: A probabilistic model for information storage and organization in the brain, in: *Psychological Review*, Vol. 65,1958, pp. 386 – 408.
- [6] U. Seiffert in, multiple layer perceptron training using Genetic Algorithms, in: *European symposium on Artificial Neural Networks (ESANN 2001)*, 2001, pp. 159-164.
- [7] E. D. Sontag, Feed-forward nets for interpolation and classification, *International Journal of Computing System Sciences*, Vol. 45,1992, pp. 20-48.
- [8] Ida G. Sprinkhuizen- Kuyper, Egbert J. W. Boers, The local minima of the error surface of the 2-2-1 XOR Network: *Annals of Mathematics and Artificial Intelligence*, Vol 25, Issue 1-2,1999, pp. 107 – 136.
- [9] Yahya H. Zweiri, Lakmal D. Seneviratne, Kaspar Althoefer. Stability analysis of a three-term backpropagation algorithm, in: *Neural Networks*, Vol. 18, Issue 10, December 2005, pp. 1341 – 1347.

Part – A
Science and Technology

Performance of Sophomore Information Technology Students in Assembly Language Subject Based on Different Teaching Methods

Joanna A. Erlano

Laguna State Polytechnic University- San Pablo City Campus, Philippines

Joanna.erlano@gmail.com

ABSTRACT

The ability to understand and implement the programming language is an important skill for the students to acquire. With so many universities in the country offering computer-related courses, both private and state university, there is a need to assess the performance of the students towards their programming subjects in order to produce outstanding graduates. The primary focus of this study was to determine the academic performance of the students using two sets of teaching methods: (1) traditional learning approach, collaborative learning and peer-assisted learning for midterm (2) traditional learning approach and problem-based learning for final term. A sample of 115 Bachelor of Science in Information Technology sophomore students taking up Computer Organization and Assembly Language was used for the study. Assessment results which came from quizzes, activities and examinations were systematically gathered and analyzed. Using T test with assumed equal variances, result showed that there was a difference of 2.052 in the performance in midterm and finals, and this difference was significant based on the p value which is less than .05. Findings indicated that the set of teaching method focused on group learning helped the students more in achieving higher performance rate than the traditional and individual learning. This study recommends that professors/instructors must be encouraged to use teaching methods with more student collaboration and group learning that require the students think outside the box to help them achieve better academic performance.

Keywords: Assembly language; combined teaching methods; peer-assisted learning; problem-based learning; traditional learning

1. INTRODUCTION

In our modern-day society, technology plays a vital role in business, education, transportation, communication and even agriculture. It has changed the personal lives of most people. In addition, modern technology has changed civilization in many different ways. Humans have almost always been on a path of progression, and because of technology, the twentieth and twenty-first centuries have seen a number of advancements that revolutionized the way people work, live and play. Imagining what life would be like without some of these advancements has become a difficult task due to their importance and the people's reliance on them [1].

As the technology progresses, demand for computer-related courses escalates as well. The Commission on Higher Education includes Information Technology as one of their "priority courses" for academic year 2017-2018 [2]. The Laguna State Polytechnic University-San Pablo City Campus offers Information Technology, Computer Science, Associate in Computer Technology and Master of Science in Information Technology under the College of Computer Studies. Programming forms part of the core concentration areas for students especially studying Information Technology (IT) and Computer Science as well as those other fields of study sandwiched with IT in an undergraduate degree programs [3]. Many students enrolled in information technology and/or computer science courses due to the fact that they know that there so many opportunities waiting for them after graduation.

The ability to understand and implement the programming language is important skill for the students to acquire. With so many universities in the country offering computer-related courses, both private and state university, there is a need to assess the performance of the students towards their programming subjects in order to produce outstanding graduates.

2. STATEMENT OF THE PROBLEM

This study aimed to analyse the effect of different teaching methods to the performance of students towards the assembly language subject. Specifically, it answered the question, "What combination of teaching methods are more effective to the students learning?"

- a. Traditional Instructor Lecturing/Learning Approach; Collaborative Learning and Peer Assisted Learning? or;
- b. Traditional Instructor Lecturing/Learning Approach and Problem-Based Learning?

3. SIGNIFICANCE OF THE STUDY

People who work with the students should understand the nature of the learner in order to be more effective in helping them deal with their difficulty of learning. With these findings, it is hoped that the teaching methods will be improved and become foundation of a good teacher-student relationship. In particular, the study is important to the following:

College Dean. The findings of the study may help the head of the college to plan for appropriate interventions to fit students and teachers' needs, specifically with students with difficulty in learning.

Curriculum Makers. Through this study, curriculum makers may be able to devise a curriculum in strengthening the academic performance of the students to achieve quality education.

Subject Teacher. The findings of this study can be helpful in planning and initiating appropriate learning materials inside the classroom and encourage them to upgrade their methods and techniques according to the needs of their students.

Students. Through this study, it can help them determine the techniques wherein they learn the most. It can also motivate them to cope with their difficulty and motivate them to overcome their weakness in programming.

Future Researcher. This study may serve as valuable resource of data while conducting their studies.

4. LITERATURE REVIEW

Teaching a programming language has long been a challenge in the classroom. The learning curve is a step function for many students; such students struggle to assimilate the concepts involved in the early stages, making little progress and becoming more and more confused, until, all of a sudden, the "penny drops". Overcoming this step is crucial; sadly, some students never make it, either failing or withdrawing [4]. The failure rates in programming courses at the university level are evidence to the fact that learning to program is a difficult task. In spite of research on factors that influence the enrolment and success of students in programming, it is still not fully understood what makes computer programming easy for a very little number of students, but difficult and frustrating for others [5].

Assembly Language sometimes referred to as assembly or ASL, is a low-level programming language used to interface with computer hardware. Assembly language uses structured commands as substitutions for numbers allowing humans to more easily read the code versus looking at binary. Although easier to read than binary, assembly language is a difficult language and is usually substituted for a higher language such as C [6].

Learning styles are considered to be intrinsic behaviours habitually applied by learners. Learning approaches describe tendencies: they are not immutable, nor are they independent of learning circumstance or environment. Nonetheless it is believed that "students also seem to develop habits in studying which may lead them to rely more on one or other approach" [7]. Learning approaches have been given less attention. Learning approaches have previously been considered in relation to a number of different subject disciplines, and high achieving students shown to be more likely to adopt a strategic approach to learning, and less inclined to adopt a surface apathetic approach [8],[9].

Traditional Learning Approach is concerned with the teacher being the controller of the learning environment. Power and responsibility are held by the teacher and they play the role of instructor (in the form of lectures) and decision maker (in regards to curriculum content and specific outcomes). They regard students as having 'knowledge holes' that need to be filled with information. In short, the traditional teacher views that it is the teacher that causes learning to occur [10].

Collaborative Learning takes place when students cooperate to construct a consensus to an open-ended activity. It shares many of the same traits as cooperative learning. It differs from cooperative learning by being more student centered than teacher centered. It also provides a vehicle for social constructivism, where students are in control of their own learning and ultimately, the outcome of their learning. Cooperative learning is more concerned with a specific outcome based on teacher facilitation and knowledge transmission [11]. This type of learning is best suited to an arrangement of groups, where students can freely interact with each other and construct their ideas together.

Peer-Assisted Learning or class wide peer tutoring demonstrated success, has been disseminated, and hybrid versions of the methods have been developed and tested. Fuchs and colleagues, for example, extended class wide peer tutoring to incorporate practice on strategic reading behaviours, including paragraph summarization and prediction activities. This hybrid form of class

wide peer tutoring, known as peer-assisted learning strategies, or PALS, has been shown to enhance the reading 310 development of low- and average-achieving students, as well as children formally diagnosed with learning disabilities, when PALS is implemented in elementary-level mainstream settings [12].

The roots of Problem-Based Learning(PBL) can be traced to the progressive movement, especially to John Dewey’s belief that teachers should teach by appealing to students’ natural instincts to investigate and create. Dewey wrote that “the first approach to any subject in school, if thought is to be aroused and not words acquired, should be as unscholastic as possible”. More than 80 years after that was written, students still learn best by doing and by thinking through problems. Educators who use problem-based learning recognize that in the world outside of school, adults build their knowledge and skills as they solve a real problem or answer an important question—not through abstract exercises. In fact, PBL originally was developed for adults, to train doctors in how to approach and solve medical problems [13].

Since the development of computer, in the early 1950’s all programming was done in machine language. Machine language is also called Binary language because it includes only numbers 0s or 1s. The Assembly language is classified and the only low-level language. It is not a complex language but is awkward for human to work with. In the late 1950s, IBM developed the Assembly language as one of the first programming language to run on its System 360. The Assembly language assembles a series of symbolic representations of machine language operation codes. These symbolic representations are called Mnemonic operation codes. From the early years, Assembly language had been used in commerce to develop applications in banking, accounting, and insurance industries. Today, few of these applications are still being used most were converted to the other newer, easier to program, and more powerful programming language [13].

5. METHODOLOGY

This study is composed of respondents from Bachelor of Science in Information Technology (BSInfo) students who were enrolled at College of Computer Studies in Laguna State Polytechnic University-San Pablo City Campus. As shown in table 1, each section has diverse qualities in terms of emotional and intellectual ability. Their age ranges from 17-18 years old. The sample respondents of the study as shown in table 1 below covered all 115 students (73 males and 42 females) enrolled during the first semester of academic year 2016-2017.

Table 1: Distribution of Population

Year and Section	No. of Male	No. of Female	Total
BSInfo II-A	12	14	26
BSInfo II-B	21	9	30
BSInfo II-C	14	8	22
BSInfo II-D	14	5	19
BSInfo II-E	12	6	18

This study engaged in data analysis to allow the researcher to measure the performance of the students according to the field of study, teaching strategies of the instructor and other factors such as computer laboratory equipment. The combination of teaching strategies was already identified in the syllabus given to the subject instructor. The researcher gathered data from midterm and finals which consists of quizzes, activities and term exam. Ratings of the students were analysed after the learning process. The teaching methods done by the instructor during midterm were Traditional Instructor Lecturing, Collaborative Learning and Peer-Assisted Learning. On the other hand, the teaching methods done by the instructor during finals were pure lecture and Problem-Based Learning with laboratory exercises afterwards. Using frequency distribution, the performance of the students was categorized the intellectual level of the students into three- the above average, the average and the below average. The rating of the above average category ranges from 90.01 up to 100. On the other hand, average category ranges from 78.01 up to 90 while the range from 1 up to 78 falls under the below average category. In addition, the researcher also used T-test to determine if there was a significant difference between the performance between midterm and finals.

6. RESULTS AND DISCUSSION

6.1 Midterm Performance of the Sophomore IT Students

Fig. 1 provides the analysis of the rating of the students' performance during midterm. The researcher categorized the intellectual level of the students into three- the above average, the average and the below average. The rating of the above average category ranges from 90.01 up to 100. On the other hand, average category ranges from 78.01 up to 90 while the range from 1 up to 78 falls under the below average category. The results obtained shows that Traditional Instructor Lecturing, Collaborative Learning and Peer-Assisted Learning are highly effective learning approaches resulting in high performance of students in Assembly Language programming subject. This is because 50% of the students' performance are above average, 46% of the students have average performance and only 3% of the students are below average in performance.

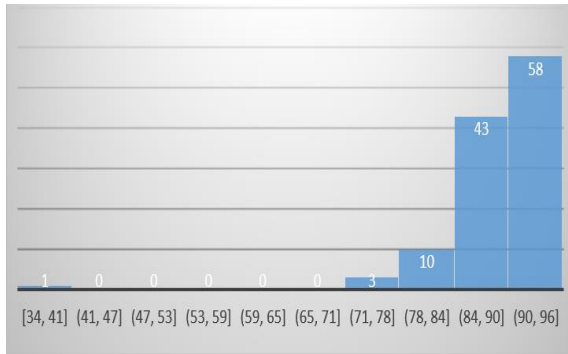


Fig. 1: Midterm Overall Performance

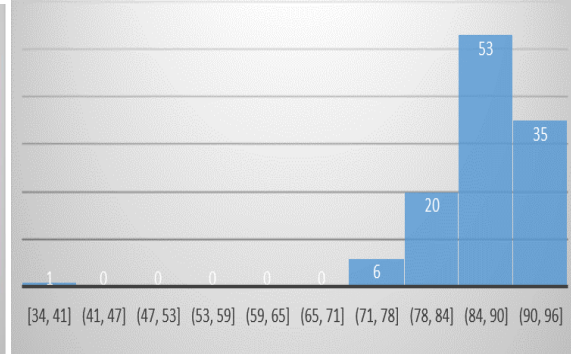


Fig. 2: Finals Overall Performance

6.2 Finals Performance of the Sophomore IT Students

Fig. 2 provides the analysis of the rating of the students' performance during finals. The researcher categorized the intellectual level of the students into three- the above average, the average and the below average. The results obtained shows that pure lecture or Traditional Instructor Lecturing together with Problem-Based Learning are not effective learning approaches resulting in lower performance of students in Assembly Language programming subject. This is because only 30% of the students' performance are above average, 63% of the students have average performance and 5% of the students are below average in performance.

Based on Table 2, there is a difference of 2.052 in the performance in midterm and finals, and this difference is significant based on the p value which is less than .05. This result implies that the two methods used were found to have significant differences on the effect, which is the performance of the sophomore IT students taking up Assembly Language subject. T-test showed that the performance of the students during midterm was higher than the performance during finals.

7. CONCLUSION

It is very conclusive that the 21st generation students cannot perform well in the programming course with traditional lecturing approach and problem-based approach only. Since findings indicated that the set of teaching method focused on group learning helped the students more in achieving higher performance rate than the traditional and individual learning. They are more inclined with collaborative and peer-assisted learning wherein they have the chance to express and discuss their ideas, as well as work with their peers. Programming language, particularly the Assembly language can be easily learned if the students have open communication and do not work alone. It is also concluded that every time the instructor or teacher involves the student in the learning process, they are more likely to learn and love the Assembly Language programming subject.

Table 2: T-test for Equality of Means

		t-test for Equality of Means						
		<i>t</i>	<i>F</i>	Sig. (2 -tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
grades	Equal variances assumed	2.256	228	0.025	2.05217	0.90970	0.25968	3.84467

Moreover, the improvements in the method of conducting this type of course/subject must be a high priority and should be enhanced from time to time [14]. Lastly, the result was supported by the previous study [3] that the different learning approaches that students adapt to the study of programming course is of greater importance with regards to their performance. In most cases, learning approach which requires practical and collaboration as well as persuading the learner to think outside the box and solve problem is much effective.

ACKNOWLEDGEMENT

This paper is an output of the action research for a curriculum enhancement for the subject Computer Organization and Assembly Language. The researcher would like to thank the sophomore students who participated in this work, as well as to the dean of the college, who encouraged the faculty members to make research studies that will enhance the programming curriculum of the Information Technology Students.

REFERENCES

- [1] Kazmeyer M., "The importance of modern technology," Retrieved from <https://itstillworks.com/importance-modern-technology-2077.html>, Jan. 2018.
- [2] Bacani, L. "CHED lists in-demand, priority college courses until 2018", Retrieved from <http://www.philstar.com>, Jan. 2018.
- [3] Amoako P., Adu-Manu K.S., Arthur J.K., and Adjetej, C. "Performance of Students in Computer Programming: Background, Field of Study and Learning Approach Paradigm", International Journal of computer Applications, Vol. 77, pp 12, Sept. 2013.
- [4] Biggs J. "Individual and Group Learning Difference Study Processes", British Journal of Educational Psychology, vol. 48 issue 3, page 266-279, Nov. 1978.
- [5] Akinola O.S, Nosiru K.A. "Factors Influencing Students' Performance in Computer Programming: A Fuzzy Set Operations Approach", International Journal of Advances in Engineering & Technology. Vol. 7, Issue 4, pp. 1141-1149, Sept. 2010
- [6] "Assembly language", Retrieved from <https://www.computerhope.com/jargon/a/al.htm>, Jan. 2018.
- [7] Wilson Learning Worldwide Inc, (2007). "Approach to Learning: How We Enhance Human Performance Through Learning", Position Paper.
- [8] Byrne, M., Flood, B., and Willis, P. (2004). "Using the Student Learning Framework to Explore the Variation in Academic Performance of European Business Students", Journal of Further & Higher Education, 28, 1, pp. 67-78.
- [9] Novak, J., "Learning, Creating and Using Knowledge: Concept Maps as Facilitative Tools in Schools and Corporations", Journal of E-Learning and Knowledge Society, Vol. 6 No. 3 pp. 21-30
- [10] Panitz, T. (2019). "A Definition of Collaborative vs. Cooperative Learning", Retrieved from http://colccti.colfinder.org/sites/default/files/a_definition_of_collaborative_vs_cooperative_learning.pdf
- [11] Fuchs, D., Fuchs, L. S., Mathes, P. G., & Simmons, D. C. (1997). "Peer assisted learning strategies: Making Classrooms More Responsive to Diversity", American Educational Research Journal, 34, pp. 174-206.
- [12] Dewey, J. (1916). "Democracy and Education", New York, NY: The Free Press.
- [13] Christensson, P. "Machine Language Definition", Retrieved from <https://techterms.com>, Jan. 18, 2019.
- [14] Rahmat M. et al. (2012) "Major problems in basic programming that influence student performance", Procedia-Social and Behavioral Science, Vol. 59, pp 287-296.

The ad-hoc data is not equivalent to that is obtained in reality because of the fact that huge amount of the data is lost while moving to the cloud centres. Many researches are going on in order to reduce this data leakage. In today’s world, several kinds of data are accumulated in a cloud environment as the cost of devices of information and communication technology is decreasing day by day. There is an urgent need to analyze these massive data so that it can be helpful for the business and society.

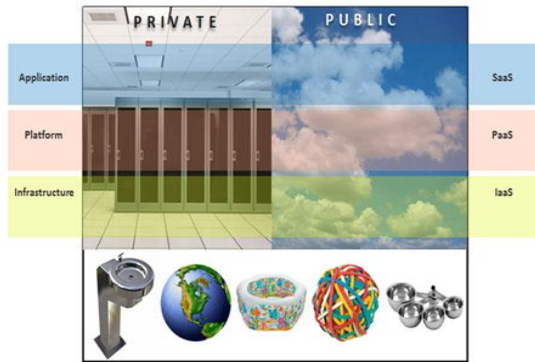


Fig. 2: The 5-3-2 principle Cloud computing architecture [6]

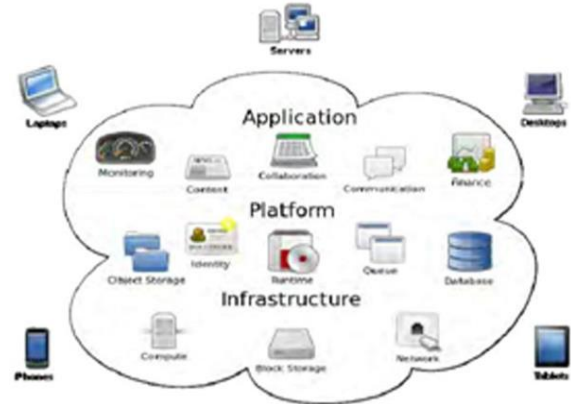


Fig. 3: Cloud computing architecture [8]

2. THE ESSENTIAL CHARACTERISTICS OF CLOUD COMPUTING [10]

- ❖ **On-demand self-service:** a customer can have a provision of computing capabilities, such as server time and network storage, as they needed.
- ❖ **Broad network access:** wide range of network accessibilities by various client platforms.

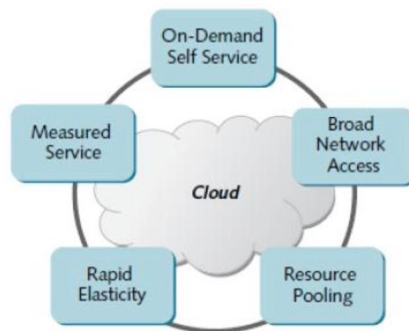


Fig. 4: Essential characteristics of cloud computing [6]

- ❖ **Resource pooling:** the provider’s computing capabilities are pooled to serve different consumers using a different-tenant model. Resources are dynamically assigned and reassigned according to customers demand. [9]
- ❖ **Rapid elasticity:** capabilities can be quick, elastically provisioned, and in some cases automatic. The consumers’ capabilities are available for provisioning often appear to be unlimited and can be purchased in any quantity at any time.
- ❖ **Measured service:** cloud systems automatically control and optimize resources used by leveraging a survey capability.

3. CHOOSING THE RIGHT MODEL [9]

Cloud service models offer financial institutions the option to move from a capital intensive approach to a more flexible business model that lowers operational costs. The solution to success remains in selecting the right cloud services model to adapt the business needs.

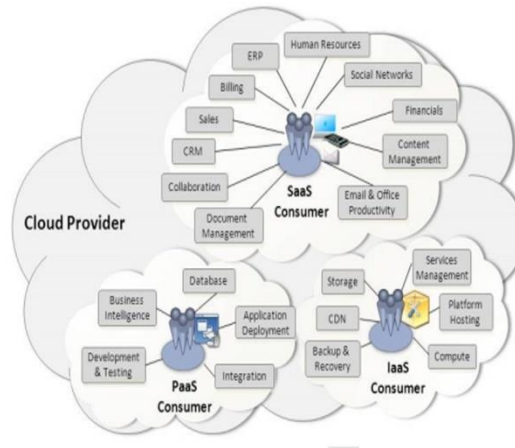


Fig. 5: Services available to a Cloud Consumer [6]

i) Software as a Service (SaaS) [9]

- Google Docs— A suite of products that allows you to create different types of documents, work on them in real time with other people and store them, along with other files, online.
- Salesforce.com— A cloud-based Customer Relationship Management (CRM) platform that can be used by a firm to connect with customers and employees.

ii) Platform as a Service (PaaS) [9]

- Microsoft Azure— A platform cloud that helps developers build, host and scale applications through Microsoft datacenters.
- Google App Engine— It is a platform cloud that enables the developers to build and host web applications on the same systems that powered by Google applications.

iii) Infrastructure as a Service (IaaS) [9]

- Amazon EC2— An infrastructure cloud web service that provides resizable compute, storage and network capacity on the cloud.
- Rackspace— An infrastructure organization that enables public, private and hybrid cloud hosting.
- NYSE Euronext CMCP— Infrastructure cloud services offering aimed at NYSE Euronext’s financial services customers.

iv) Business Process as a Service (BPaaS) [9]

- ADP Employ ease— An Online business process services for HR, benefits administration and outsourcing.
- AMEX Concur— An online business process that connects travel suppliers and mobile solutions from around the world to provide advanced travel and expense functionality.

v) Data as a Service (DaaS) [9]

- Google Public Data— A public data service that makes large datasets easy to explore, visualize and communicate.
- Xignite Capital Markets Data— A platform that the above cloud services can be delivered through deployment models, such as:

❖ **Public Cloud**— A public cloud is available over the internet to everyone. The cloud provider manages and owns everything from operations and facilities to computing resources. There are various popular public clouds are present this time some of them are Microsoft Azure, Google App Engine and Amazon EC2.

❖ **Private Cloud**— A private cloud is available only to trusted users of an organization or a group. Every single thing in a private cloud should be managed either by the cloud provider or by the organization itself.

- ❖ **Community Cloud**— A community cloud is accessible to the members of a larger community comprised of different organizations or groups, and where partner organizations and the cloud provider co-manage everything from operations to facilities.
- ❖ **Hybrid Cloud**— A hybrid cloud is a mix of multiple public and private clouds and it addresses the challenges of a pure public or private cloud environment.

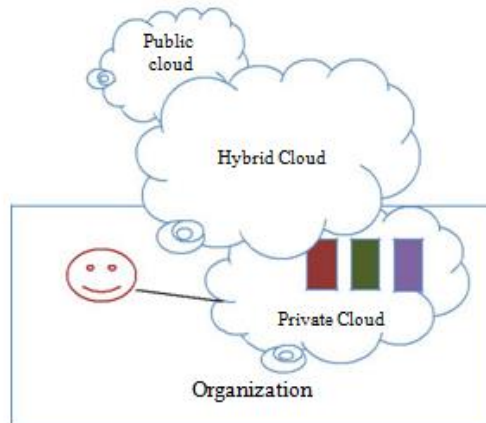


Fig. 6: Cloud Deployment Model [13, 14]

Now a day's finance sectors are expected to enter the cloud computing arena carefully, with no single cloud services distribution model being a silver bullet for best meeting their demanding business needs. Cloud computing can offer financial institutions a number of advantages, including:

- ❖ Cost savings
- ❖ Usage-based billing
- ❖ Business continuity
- ❖ Business velocity and Focus
- ❖ Green IT

4. WHY WE USE CLOUD COMPUTING FOR FINANCE SECTOR? [10]

Cloud computing can help financial institutions to improve performance in a number of ways.

i. Cost Savings and Usage-based Billing: With cloud computing, financial institutions can turn a large up-front capital expenditure into a smaller, ongoing operational cost. There is no need for massive investments in new hardware and software. In addition, the identical nature of cloud computing allows financial institutions to pick and choose the services required on a pay-as-you-go basis.

ii. Business Continuity: With cloud computing, the provider is liable for managing the technology. Financial firms can avail an upper level of data protection, error tolerance, and inversion recovery. Cloud computing also provides a high level of redundancy and back-up at lower price than consecutive managed solutions.

iii. Business velocity and Focus: The flexibility of cloud-based operating models permits all financial institutions accustomed shorter development cycles for new products. It supports faster and efficient responses to the needs of the banking customers. Since the cloud is available on-demand, less infrastructure investments are required, saving opening set-up time. Cloud computing also allows a new product development to move onwards without Primary capital investment. Cloud computing also allows businesses to move non-critical services, including software patches, maintenance, and other computing issues to the cloud.

iv. Green IT: Organizations can use cloud computing to transfer their services to a virtual environment that reduces the energy consumption and carbon footprint that comes from setting up a physical infrastructure. It also leads to more efficient utilization of computing power and less idle time.

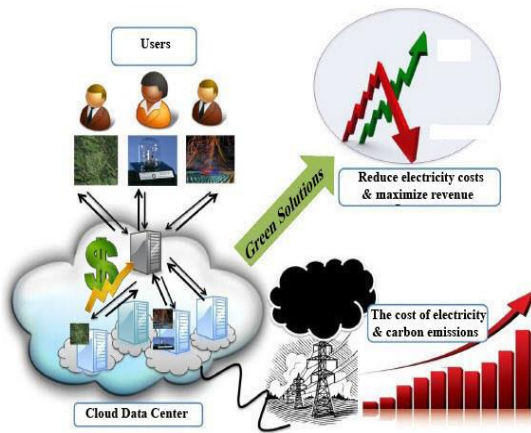


Fig. 7: Green IT [8]

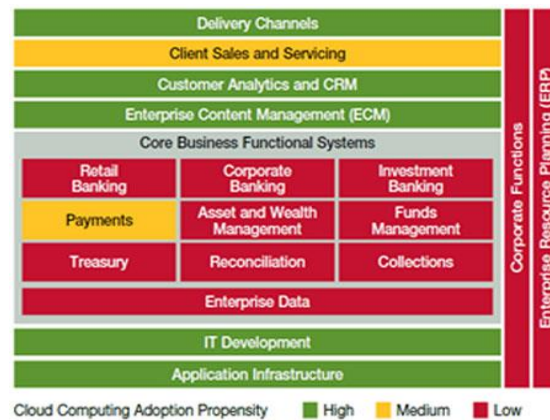


Fig. 8: Cloud computing adoption propensity [15]

5. APPLICATIONS TO CONSIDER FOR THE CLOUD [10]

At first, financial organisations would be likely move non-principal business applications to the cloud. Many software providers such as Oracle, IBM have available for their leading financial services applications for cloud solutions. Areas that would be gain from cloud computing include:

- ❖ Customer relationship and analytics management. Vendors with cloud solutions include Salesforce.com and Pegasystems.
- ❖ Browser-based technologies such as enterprise content management. Vendors with cloud solutions include IBM and EMC.
- ❖ IT development and application infrastructure. Since these functions are highly outsourced, banks can achieve cost savings through the cloud.

6. BENEFITS OF CLOUD COMPUTING IN VARIOUS BANKING IT SERVICE AREAS [13]

- i. **Analytics:** Integrating customer data across all banking platforms to enable near real-time insights.
- ii. **Cost Savings and Usage-based Billing:** With the cloud computing, all financial institutions can turn a large up-front capital expenditure into a smaller, ongoing operational cost. There is no need for substantial investments in a new hardware as well as softwares.
- iii. **Collaboration:** Enabling employees across distributed branches to access trading and banking systems through a security-rich cloud infrastructure
- iv. **Development and testing:** Enabling a bank's development teams to quickly and easily create virtual environments thus increasing the agility of development and testing.
- v. **Infrastructure compute:** Allowing capacity to be allocated, expanded and reallocated efficiently gives banks flexibility and agility while resolving the issues of complexity and cost increases related to scaling up traditional network models to accommodate future growth.
- vi. **Desktops and devices:** Deploying a private cloud to centralize management of desktops allows for greater remote flexibility without sacrificing control, while enabling banking employees to access the applications and data they needed.
- vii. **Infrastructure storage:** Providing scalable storage solutions to ensure that the real-time demands of today's trading and analytics processes are maintainable.
- viii. **Managed backup:** Backing up a bank's critical business data to ensure that in the event of a disaster a bank can bounce back rapidly and easily.
- ix. **Industry applications:** Enabling payment providers to standardise and modernise transaction processing.

- x. **Security:** Enforcing active security and endpoint management to ensure corporate governance and banking IT policies are maintained.

7. SECURITY RISKS CLOUD FOR COMPUTING [11]

Cloud computing represents a very dynamic area at the present time, with new suppliers and new offerings arriving all the time. There have some number of security risks integrated with cloud computing that should be suitable addressed.

- i. **Loss of governance**
- ii. **Responsibility ambiguity**
- iii. **Isolation failure:** called guest-hopping attacks as this risk category covers the failure of separating the usage of storage, memory, routing and even reputation between different tenants.
- iv. **Vendor lock in:** Services that do not support portability of applications and data to other providers increase the risk of data and service unavailability.
- v. **Compliance and legal risks:** by migration to use cloud computing if the cloud provider cannot provide evidence of their own compliance with the relevant requirements or if the cloud provider does not permit audit by the cloud consumer.
- vi. **Handling of security incidents.**
- vii. **Management interface vulnerability.**
- viii. **Data protection.**
- ix. **Malicious behaviour of insiders.**
- x. **Business failure of the provider:** data and applications to the consumer’s business unavailable.
- xi. **Service unavailability:** software failures in the Provider’s data centre, through failures of the Communications between the consumer systems and the provider services.
- xii. **Insecure or incomplete data deletion:** Requests to delete cloud resources. If the above mentioned security risks necessity to be addressed, afford chances to use of cloud computing for transformation in provisioning security services that should retain the expectation of enhancing the global security of many financial institutions. Cloud service providers should be able to offer advanced facilities for supporting security and privacy due to their economies of scale and automation capabilities potentially a boon to all consumer organizations, especially those who have limited numbers of personnel with advanced security skills.

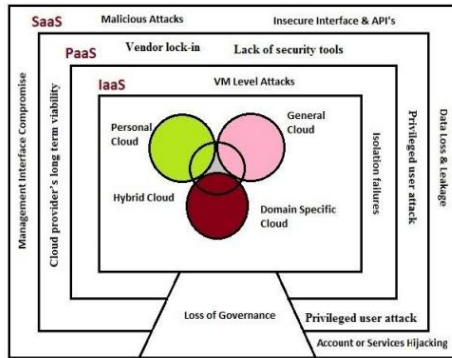


Fig. 9: Cloud computing security risks categories [12]

8. SOME SUCCESS FACTORS FOR CLOUD IMPLEMENTATIONS [10]

When considering cloud solutions for financial services, banks should partner to achieve cloud competence. Cloud services providers should have:

- ❖ A patently defined cloud strategy.
- ❖ Verifiable return on investment.

❖ Evince cloud service conveyance capabilities.

Capgemini has experience illuminating large financial institutions on cloud computing. We are developed four numbers of key success factors that financial institutions should consider when launching cloud capabilities:

- i. **Clearly define the ROI for cloud-based projects:** Not only Banks but also all financial institutions should be aware about making consequential venture in cloud computing until substantial interest is available. In a first step, cloud providers should describe the costs and inference of drifting existing banking applications and foundation to the cloud.
- ii. **Choose service providers with demonstrative proficiency in cloud services management:** Banks as well as all financial institutions should use an interpretation to best govern cloud services transportation programs. Service providers who have spent in experimental projects will have real-world experience and trading cases for cloud computing resourcefulness. Banks and all financial institutions can start little with less critical applications such as Customer Relationship Management (CRM) and then move on to central Trading applications.
- iii. **Sign outsourcing contracts that use pay-per-use cloud delivery models:** For the cloud capability, financial institutions need service level agreements (SLAs) that links billing to steady system performance.
- iv. **Understand data confidentiality and regulatory demands:** All financial institutions may be needed to keep delicate data within firewalls to fulfill local regulations and customer confidentiality demands. Hence, private cloud-based operating models are now the first choice than public or hybrid cloud model. As public clouds gain assurance and trust among customers, financial institutions as well as banking sector can moderately transition to above models. Strategy such as the Cloud Security is looking at these concerns. But to best take advantages of cloud computing, financial institutions must have a clear understanding of privacy and regulatory affair to make enlightened resolution.

9. CONCLUSION

Continuous improvement of cloud computing within the financial institutions will require trader and banks to conquer its challenges together. When arrangement of cloud computing initiatives in the near future, financial sectors should select service and delivery models that foremost match requirements for working flexibility, cost effectiveness, and pay-as-you-use models. Financial institutions should choose a progressing evolutionary motion towards cloud computing services, scrutinizing each project based on the type of data. Underneath risk projects may include customer relationship management (CRM) and Enterprise Content Management (ECM). High-level risk projects will involve primary business usefulness systems such as wealth management or core banking.

In the lengthy term financial institutions will have an application portfolio mix of on-premise and cloud-based services distributed across an integration of private, hybrid, and public cloud based deplorable models with the allowance of cloud services moderately increasing in the service blend. Private clouds area waited to increasingly become the deplorable model for cloud services among banks as well as financial institutions to full manage through ownership and operations of cloud systems.

ACKNOWLEDGMENT

I am taking this opportunity to acknowledge all the staffs of Sri Satya Sai University of Technology & Medical Sciences, Sehore, MP, for their constant support and guidance in the research area of cloud computing. Their sincerity, thoroughness and perseverance have been a constant source of inspiration. A special thank to **Dr. Suresh Dara** (SSSUTMS), Sehore, MP, for his remarkable guidance. I want to convey my thanks to **Dr. A. Sinha**, my respected teacher and who is the pathfinder of my present life. I also want to convey my thanks to **Dr. P. K. Paul** of Raiganj University, W.B. India for advising me for this very paper. At last I want to convey my heartiest thanks to my better half for constant support and inspiring me to write this article.

REFERENNCES

- [1] Barrie Sosinsky 2016. Cloud Computing Bible, Published by Wiley India Pvt. Ltd. ISBN: 978-81-265-2980-3.
- [2] Thomas Erl, Zaigham and Ricardo Puttini. (2017). "Cloud Computing Concepts, Technology & Architecture", Published by Pearson Education, in India Dorling Kindersley India Pvt. Ltd.
- [3] Derrick Rountree and Ileana Castrillo. (2014). "The Basics of Cloud Computing", SYNGRESS, ISBN: 978-0-12-405932-0.

- [4] Rajkumar Buyya, Christian Vecchiola and S. Thamarai Selvi. “Mastering Cloud Computing”, McGraw Hill Education (India) Private Limited. ISBN: 978-1-25-902995-0.
- [5] Kailash Jayaswal, Jagannath Kallakurchi, Donald J.Houde and Deven Shah. “Cloud Computing Black Book”, Dreamtech Press, ISBN:978-935119-418-7.
- [6] www.ndpublisher.in/admin/issues/IJASEV5N1d.pdf
- [7] www.capgemini.com/financialservices
- [8] <https://www.idexcel.com/blog/cloud-computing-in-banking-environment/>
- [9] M. Sharma, H. Bansal, A. K. Sharma,” Cloud Computing: Different Approach & Security Challenge” International Journal of Soft Computing and Engineering (IJSCE), Volume-2, Issue-1, March 2012.
- [10] www.ijsrp.org/research-paper-0614.php?rp=P302779
- [11] <https://ijarcce.com/wp-content/uploads/2012/03/IJARCCE7E-a-sahil-cloud.pdf>
- [12] <http://www.cisco.com>
- [13] <http://unesdoc.unesco.org>
- [14] <http://www.idrbt.ac.in>
- [15] Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, “Cloud Computing: A Practical Approach”, ISBN 9780071626941.
- [16] <https://onlinelibrary.wiley.com/doi/book/10.1002/9780470940105>
- [17] [www.asecib.ase.ro/cc/carti/Cloud%20Computing%20Strategies%20\[2011\].pdf](http://www.asecib.ase.ro/cc/carti/Cloud%20Computing%20Strategies%20[2011].pdf)
- [18] <https://www.springer.com/gp/book/9781447125808>
- [19] Cloud Computing Concepts, Technology and Architecture: Thomas Erl, Zaigham & Ricardo Puttini.

Sustainable Computing Technology: with Reference to Future Potentiality for Eco-Friendly System

Debasish Kumar Chaki

*Chairman, Environmental Monitoring Cell,
Dakshin Dinajpur D. ED College, Dakshin Dinajpur, West Bengal, India
saheebchaki1999@gmail.com*

ABSTRACT

Sustainability is an important for the development; it is the need of hour for a health future. There are different kind of technologies for the betterment of human life and society, and among these information technology is an important name. Simple information technology is the application of computing for information related affairs. In Information affairs technology play a leading role for its fulfillment. The Application of IT in Green System or better to say integration of it & Green system lead the concept of Green computing. However apart from Green computing few other areas have already been engages viz. Green Information Technology, Green Information system, Green ICT etc. There are deferent Natural Hazards and Artificial Hazard are going on earth and for managing Environment few measure have been taken so for this paper fully based on Green Technology Specially Green Computing and IT for Sustainable and Eco- friendly Infrastructure development.

Keywords: Green Computing, Green IT, Green Science, Green Technology, Energy Management, Virtualization, Carbon Emission, Recycling power Management.

1. INTRODUCTION

Green Computing simply the application of Green Technology & Environment Management Principle for design and Development of Green and Eco-friendly computer system [1], [5]. Green Computing may also denote as recycling and re-use of computational and IT Products. Green Computing is a kind of approach and a model which is responsible for energy efficient, sustainable computer design. Among the important aspect of Green Computing few important are

- Virtualization Promoting.
- Energy consumption;
- Ergonomics
- Material Recycling;
- Power Management;
- Ergonomics
- Deployment optimization
- Using Hazard free material

However for better information Management with Green Principles few important other areas may also treated as important such as Green Information Technology, Green Information System etc [2], [3].

Objective:

The main aim of this paper is to know about the following (but not limited to)

- To know about the sustainable Technology's
- To know about the emerging important of Green computing and Green IT
- To lear about the basic method & tools used for Green System design & Development.
- To know about the possibility and challenges of Green Computing and Information Technology.
- To get a basic knowledge of Green Informatics & Information system development.
- To get & frame the possibilities on Green related technology is in academic.

2. GREEN TECHNOLOGIES

Green Technologies are the core of Environmental friendly & Eco-Friendly information system designs and development. Among the Green related technologies few important are-

- Green computing: - Green Computing concepts have been emerged during 1980's thereafter different effective have been taken for the promotion of eco-friendly computation. There are different tools and way by which environmental Management become Possible such as-
- Use of better algorithm designing for reducing energy consumption [4], [7].
- Eco-friendly policies for using computer's & Electronic devices. Such as "turn off" the machine while not in use.
- Using various technologies instead of old equipment.
- Less uses in Environmental Hazards based tools and product.
- Purchasing the product having Energy star for building Green Information Infrastructure.
- Promotion of virtualization is also important for design Healthy information system.
- Introduction of E-Services such as E- Administration, E-Governance Etc for Promotion Green System.

There so many away for Green Computing Practice and among this few important are deployment optimization, power management, Material recycling, Teleconference, Virtualization etc [6], [8].

Deployment-Optimization:

Deployment optimization is a kind of strategy which is responsible for healthy and efficient algorithm. Hence the deployment optimization promotes better computer machinery system.

Power Management:

Power Management is another way for the development of Green computing practice. Power management may involve design and Development of less power consume computing devices and accessories such as energy consume display unit (LCD), Graphics card, Power unit Supply etc [5], [9], [10].

Material Recycling:

Material Recycling is important for a health & energy efficient green computing Practices. The Computing Products and accessories needs to improve the Protection of recycling. Here display unit, Printer, networking device etc.

Teleconferencing:

Teleconferencing is actually promoting virtualization. With Teleconferencing from a remote place affair can be done. So, in green computing or allied area promoting Teleconferencing means promoting energy efficiency.

Virtualization:

Virtualization is the way of remote access IT Infrastructure. Hence Virtualization helps in reduction of IT Infrastructure and Promote Energy efficiency and sustainability [6], [11], [14].

Green Information Technology:

Green Information Technology may also called as green IT. It may be considered as the border area of Green computing when Green Computing looks into only computer related affair it may deal more than that we know IT deals with various components viz. Network Technology, Web Technology, data base technology, Multimedia technology etc; so Green IT also responsible for following activities-

- Study, design, develop, and management of Energy efficient, sophisticated Network system
- In case of web also healthy and sustainable web system may be developed and those here importances should be provided on better design development, Management and evaluation.
- Green Database should be a thrust area for better data base management, here more time management relationship with data system need to care of.
- Animation and multimedia component are important name today for different proposes and here energy efficient picture and audio video content may be used.

Hence Green Information Technology hence to build a healthy Environmental system.

Green ICT:

Green ICT or Green Information and communication systems may consider similar to Green IT but here focus should be provided on only healthy, sophisticated and energy efficient and communication system [12], [13].

Green Information System:

Green Information system may consider as similar to Green IT but the focus of Green information system is specifically on corporate world. More clearly Green Information system should be focus on use of Green Technology in corporate and company [8], [14].

Green Information Science:

Green Information science may be treated as another promising area for the development of Green and energy efficient information infrastructure development. As coined and proposed by Dr. P.K. Paul, the field may deals computational or technological green information infrastructure design, development, management and evaluation. The green information science has a philosophy of managing green recourses i.e. manual content etc. So the green information science may be treated as a border area then Green IT which looks the matter of manual document, content organization instruction Government and individuals- regarding green system and sustainable infrastructure development. In this philosophy the priority not only provided on green network, green data base or green web but also how to create manage traditional document with eco-friendliness. Hence traditional document here received priority for green knowledge organization and Green eco-friendly information services.

Possibility and challenges of Implementing Green Information System:

Green Information system which include Green IT, Green computing etc. the pillar for developing Green Information Infrastructure Green Computing has come with different kind of opportunities it Promotes the interaction of all computing and other product with the ignition of Green Computing Company's may save energy and may help in smarter information system design. The Green computing practice requires proper strategies and planning for its father growth Green computing used different kind of technologies and helps in Eco-friendly infrastructure development.

The Green computing approaches such as Enhancing product longevity, improved data centre design, Software optimization, deployment optimization etc. Green computing reduces the hazards material and maximizes energy efficiency. More over Green computing also promotes recyclability. Green computing today also tacks the help of cloud computing, edge computing, Telecommuting, there are different organizations, and NGO's have taken initiative for the promotion of energy efficiency in IT product, monitors, Climate control equipment etc. The Green computing helps in Government and Industries. Green computing initiative have been taken by different in Industries such as-

- Climate savers computer initiative.
- Green Electronic Council (electronic product Environmental assessment tools)
- Green grid (Established by different company like- IBM, HP, DEL, AMD, APC INTEL, MICRO-SOFT, SUN MICRO SYSTEM, VMWARE etc.)
- Green 500 initiatives
- Green comm. challenge for better information and communication practice.

The better Green computing practice needs healthy collaboration for attempt society cal, economical and environmental recourses using method from Mathematical and computer science field. Sustainability is also treated as emerging concept for better Green computing Practice, Many things are essential for healthy green computing practices viz.-

- Data migration
- E-cycling
- Digger gold
- Power uses effectiveness etc.

Green computing is an important initiative and thus it's required different attention and ultimately as it is helps in eco-friendliness and carbon emission so better infrastructure development are very essential.

Challenges:

There are different challenges of healthy green computing practice and among this few important are as follows-

- A green computing initiative require proper initiative by the Government and private bodies
- Government Ministry and department should take proper step for the promotion of Green computing required healthy financial support and that should be organized properly with various initiatives taken by the individual and organization.
- Awareness should be created among the step holders, industries and organization.
- Proper instruction with Environmental Organization Company and organization should be highlighted.
- Proper policy should be implemented by the department and ministries for green computing practices.
- Different educational institute should established proper policies regarding the established green computing practices.
- The awareness of using computational display system instead of manual document for Environmental friendliness.
- The research program and academic activates must be started by the different college and University.

Academic Initiative and Green Computing:

Different kind of educational institutes are doing well for the promotion of Green and Eco-Friendly systems by implementing the systems and also by the creation of knowledge products by different means. For example, many institutions, educational bodies are engaged in training and educational programs in Green Computing, Green Information Systems and Green Technologies and among theme few are Green Computing Initiative, CompTia Starta Green, Information Systems Examination Board, Singapore Information Technology Federation, Australian Computer Society etc. Even few universities have started program on Green Computing and Allied areas viz.-

- Australian National University
- Athabasca University
- Leeds Beckett University
- Keele University

Table: 1-Depicted Green based programs in Management Context

Management Context
BBA (Green Information Systems/ Technology Management MBA (Green Information Systems/ Technology Management MBM (Green Information Systems/ Technology Management MSc Management (Green Information Systems/ Technology Management

The universities are moving towards more innovative and interdisciplinary programs. As far as India is concerned, it is worthy and important to note that India has total 900+ Universities and within these different categorized institutions are there viz. Central Universities, State Universities, Private Universities, Deemed Universities, Institution of National Importance etc. And other hand a large number (30000+) of colleges and educational institutions are involved but unfortunately no institutions offer the program on Green Computing and Technologies, though there are huge potentialities exits to offer the program in different context (Refer Table: 1 and 2).

Table: 2-Depicted Green based programs in Computing Context

Computing/ IT Context
BCA (Green Information Technology) MCA (Green Information Technology) BSc/MSc (Green Information Technology) BSc/MSc-IT (Green Information Technology) BSc/MSc-Computer Science (Green Information Technology) BTech/MTech-IT/CSE (Green Information Technology)

This way the educational institutes may offer different kind of programs for the promotion of Green Computing and Green Information Systems and allied areas which may ultimately helps in proper and sustainable systems.

3. CONCLUSION

The Green Technologies are rising rapidly for the promotion of healthy information systems which are eco friendly and sustainable systems. It is an important fact that it helps in eco-friendliness and carbon emission so better infrastructure development is very essential. There are many challenges in Green Computing promotion and development but using proper strategy this may be solved easily. Further proper man power creation and development is an issue so educational institute may think deeply for solving the problem and for the creation of healthy infrastructure.

REFERENCE

- [1] Agarwal, S., Nath, A., & Chowdhury, D. (2012). Sustainable approaches and good practices in green software engineering. *International Journal of Research and Reviews in Computer Science (IJRRCS)*, 3(1), pp. 1425-1428.
- [2] Al-Adamat (et.al) (2012). The combination of indigenous knowledge and geo-informatics for water harvesting siting in the Jordanian Badia. *Journal of Geographic Information System*, 4(4), pp. 366-376.
- [3] Diani, M. (1995). *Green networks: A structural analysis of the Italian environmental movement*. Edinburgh University Press.
- [4] Gai, K., Qiu, M., Zhao, H., Tao, L., & Zong, Z. (2016). Dynamic energy-aware cloudlet-based mobile cloud computing model for green computing. *Journal of Network and Computer Applications*, 59, pp. 46-54.
- [5] Harmon, R. R., & Auseklis, N. (2009, August). Sustainable IT services: Assessing the impact of green computing practices. In *PICMET'09-2009 Portland International Conference on Management of Engineering & Technology*, pp. 1707-1717, IEEE.
- [6] Kansal, N. J., & Chana, I. (2012). Cloud load balancing techniques: A step towards green computing. *IJCSI International Journal of Computer Science Issues*, 9(1), pp. 238-246.
- [7] Malviya, P., & Singh, S. (2013). A study about green computing. *International Journal of Advanced Research in Computer Science and Software Engineering*, 3(6) pp. 790-794.
- [8] Yamini, R. (2012, March). Power management in cloud computing using green algorithm. In *IEEE-International Conference On Advances In Engineering, Science And Management (ICAESM-2012)*, pp. 128-133. IEEE.
- [9] Paul, P. K., & Ganguly, J. (2013). Green computing: The emerging tool of interdisciplinary environmental sciences-problems and prospects in Indian scenario. *International Journal of Pharmaceutical and Biological Research (IJPBR)*, 5(04), pp. 210-214.
- [10] Roy, S., & Bag, M. (2009). Green computing-New horizon of energy efficiency and e-waste minimization–World perspective vis-à-vis Indian scenario. *CSI, India*, pp. 64-69.
- [11] Sarkar, S., & Misra, S. (2016). Theoretical modelling of fog computing: A green computing paradigm to support IoT applications. *Iet Networks*, 5(2), pp. 23-29.
- [12] Li, Q., & Zhou, M. (2011, August). The survey and future evolution of green computing. In *Proceedings of the 2011 IEEE/ACM International Conference on Green Computing and Communications*, pp. 230-233. IEEE Computer Society.
- [13] Talebi, M., & Way, T. (2009). Methods, metrics and motivation for a green computer science program. *ACM SIGCSE Bulletin*, 41(1), pp. 362-366.
- [14] Kansal, N. J., & Chana, I. (2012). Cloud load balancing techniques: A step towards green computing. *IJCSI International Journal of Computer Science Issues*, 9(1), pp. 238-246.

Snoring Characteristics Inventory and Blood Pressure: Window Assessment Tool for Obstructive Sleep Apnea and Cardiovascular Risk

Rose Ann Z. Masa

Laguna State Polytechnic University, Laguna, Philippines

roseannzmasa@gmail.com

ABSTRACT

This study utilized Modified Berlin Snoring Inventory in determining characteristics and post wake up functional condition and its relationship with blood pressure. Respondents are frequent snorers, mostly males, 46 years old and above, with 130-150 systolic and diastolic of 80-100 mmHg blood pressure with only 12.5% who experienced choking and apnea. There is no significant difference in systolic, diastolic blood pressure, snoring characteristics as to frequency, loudness, apnea, choking, feeling of tiredness and fallen asleep while watching TV when grouped according to age and sex. There is a significant difference in disturbing effects and post wake up condition as to fallen asleep while waiting for turns when grouped according to sex. Males have more disturbing effects and fallen asleep than female. The loudness predict significantly with systolic blood pressure. Disturbing effects predict significantly with diastolic blood pressure. There is no significant relationship between the post wake up condition and systolic and diastolic blood pressure. There is a significant relationship in the loudness snore characteristics with the systolic blood pressure. There is a significant relationship in the snoring inventory post wake up condition as to feeling of tiredness and the diastolic blood pressure.

Keywords: snoring characteristics, post wake up functional condition, systolic BP, diastolic BP

1. INTRODUCTION

Among Filipinos, snoring is a sign of good quality of deep sleep. However, people who snore are actually possibly suffering from a serious condition although not all episodes indicate trouble. Snoring comes in three varieties namely occasional, habitual, and serious or obstructive. There are various causative factors for the condition that includes obstructive nasal airway, poor muscle tone in the throat and tongue, bulky throat tissue, and too soft palate.

Sleep disorder like Obstructive Sleep Apnea (OSA), is a condition known to be the most common and often undiagnosed sleep disorder worldwide. Snorers usually stop breathing repeatedly brought about by airway collapse due various factors such as extra tissue in the airway, decreased muscle tone holding the airway open and even larger tongue that prevents air to enter into the lungs. This pause in breathing can happen for more than 30 times per hour and recurrent snoring is linked to developing cardiovascular or heart disease (de los Reyes, 2013).

Moreover, there are documented findings among snoring patients who have experienced a rise in both systolic and diastolic blood pressure values. While sleeping, they experienced apnea. With the temporary stopping of breathing brought about by an imbalance in the oxygen and carbon dioxide in the brain, thus, sleep apnea is a primary risk factor for hypertension. Systolic blood pressure rises at the end of apnea while the diastolic pressure rises during onset of apnea. The greater the hypoxemia or the inadequate oxygen supply in the blood, the greater the hypertensive response to sleep. It should also be noted that cases of sudden death in sleep have been reported in untreated sleep apnea patients with known arrhythmias (Lombardi, et al. 2009). The risk for arrhythmias or having irregular heartbeat is associated with factors like snoring and hypertension.

There is an estimated 4 to 6 percent of the Filipino population who suffers from sleep disorder without them knowing the condition that they really stop breathing while sleeping. These episodes subsequently could lead to post waking up problems such as sleepiness, inability to perform on the optimum level in workplace as well as physiological effects like increase blood pressure. Inability to undergo polysomnography due to limited resources, this study aimed to identify high risk subjects.

This is the reason why there is a need for this research and subsequently begins with an earlier interventions for the affected snoring individual. Moreover, by means of this study, sleeping disorder assessment could be obtained with the use of the Modified Berlin Snoring Inventory to the snoring employee and their relatives who lives on the same house. Systolic and diastolic Blood Pressure and profile were also gathered in order to determine the relationship of these factors with OSA.

Prevention is better than cure, thus, the need to educate the people about OSA, its harmful effects and health risk after the conduct of the assessment and consequently with the attainment of optimum health could be achieved.

2. LITERATURE REVIEW

The prevalence of cardiovascular ailment has reached alarming levels and most often than not, the condition is associated with hypertension. There are documented findings on patients who have experienced a rise in both systolic and diastolic values. While sleeping, a person experience apnea, a condition wherein there is a temporary stopping of breathing brought about by an imbalance in the oxygen and carbon dioxide in the brain. Sleep apnea is a primary risk factor for hypertension. Systolic blood pressure rises at the end of apnea and diastolic pressure rises during apnea. The greater the hypoxemia, the greater the hypertensive response to sleep. It should also be noted that cases of sudden death in sleep have been reported in untreated sleep apnea patients with known arrhythmias. The risk to this condition is associated with factors like snoring and hypertension (Lombardi, et al. 2009).

Heavy snoring is a sign of OSA. When people with this condition sleep, the soft tissues in the back of their throats relax and close off the airway—they simply stop breathing. Usually associated with snoring, sleep apnea means the involuntary cessation of breathing during sleep, which deprives the individual of valuable oxygen during the episodes. This breath-holding initially lasts for 10 seconds and progresses to 20 to 30 seconds, and each episode is immediately followed by gasping for air. This cycle could repeat itself several times (20 to 100 times per hour) the whole night long. The snorer is totally oblivious of all this and only the roommate is aware of this bothersome snoring and scary sleep apnea. Furthermore, the condition is aggravated by the post effect since the snoring person could not have the normal sleeping pattern. Sleepiness occurs as a post effect of the snoring activity. The person wakes up with a dry mouth and throat, headache, fatigue and sleepiness throughout the day, together with some memory deficiency, poor attention and concentration, lack of sleep, due to sleep apnea (Endeshaw, et al., 2013). Moreover, daytime sleepiness could be symptomatic of insufficient sleep, disturbed sleep, and/or circadian disruption that in turn increase the risk of vascular events. It could also be due to an underlying medical illness that is a risk factor for cardiovascular disease and could be an independent risk factor for stroke and Congestive Heart Disease (Gangwisch, et al. 2014).

However, a study by Sharma, et al. (2005) revealed that administration of modified Berlin questionnaire prior to a polysomnography study can identify high risk subjects. These factors are window assessment of cardiovascular conditions. The Berlin sleep questionnaire is applied to bed partners and used in screening apneic patients (Sagaspe, 2010). Furthermore, this questionnaire was considered as reliable and practical tool in screening OSA (Srijithesh, 2011).

3. CONCEPTUAL FRAMEWORK

Figure 1 shows the conceptual framework of the study. Under the Input is the profile of the respondent, age, sex, systolic and diastolic blood pressure. With the Process is the use of modified berlin snoring inventory questionnaire. Under the Output are the respondents' Categorized Snoring Inventory Characteristics and the Snoring Inventory Post Wake up condition. Moreover assessment of respondent's obstructive apnea was also determined. Furthermore the Relationship of Systolic and Diastolic Blood Pressure and the Snoring Inventory Characteristics and Post wake up condition the respondents is also part of the dependent variable.

This study aimed to make an assessment of the snoring inventory characteristics which includes snoring inventory post wake up functional condition and established an assessment of respondent's obstructive apnea condition, as a window assessment for cardiovascular ailment. Moreover, it also deals with the relationship of the systolic and diastolic blood pressure and snoring inventory of the selected employees of the Laguna State Polytechnic University, San Pablo City Campus and their relatives who live within the same house.

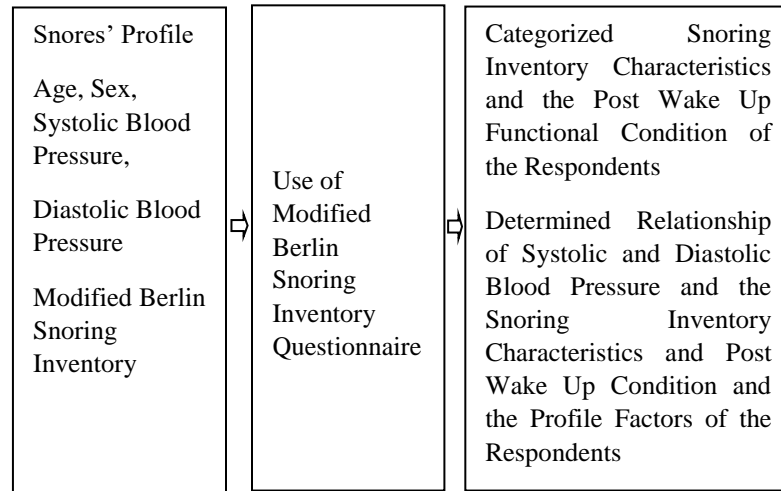


Fig. 1: Research Paradigm

Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of age and sex?
2. What is the systolic and diastolic Blood Pressure of the respondents?
3. What is the snoring inventory characteristics of the respondents as to frequency; loudness; disturbing effect; occurrence of apnea; and occurrence of choking while sleeping?
4. What is the snoring inventory post wake up functional condition of the respondents as to: feeling of tiredness; fallen asleep while waiting for their turn; and fallen asleep while watching television during daytime?
5. Is there a significant difference in the systolic and diastolic blood pressure of the respondents when grouped according to profile factors?
6. Is there a significant difference in the snoring inventory characteristics of the respondents when grouped according to their profile factors?
7. Is there a significant difference in the snoring inventory post wake up functional condition of the respondents when grouped according to their profile factors?
8. Is there a significant relationship between the snoring inventory characteristics and the systolic and diastolic blood pressure of the respondents?
9. Is there a significant relationship between the snoring inventory post wake up condition and the systolic and diastolic blood pressure of the respondents?

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the systolic and diastolic blood pressure of the respondents when grouped according to profile factors.
2. There is no significant difference in the snoring inventory characteristics of the respondents when grouped according to their profile factors.
3. There is no significant difference in the snoring inventory post wake up functional condition of the respondents when grouped according to their profile factors.
4. There is no significant relationship between the snoring inventory characteristics and the systolic and diastolic blood pressure of the respondent.
5. There is no significant relationship between the snoring inventory post wake up functional condition and the systolic and diastolic blood pressure of the respondents.

4. PRESENTATION, ANALYSES AND INTERPRETATION OF DATA

Table 1 shows the age of respondents. It indicates that the dominant population of the respondents' age ranges from 46 and above with 23 out of 40 or 57.5 percent, while there are 17 out of 40 or 42.5 percent whose age ranges from 45 and below. The dominant population of the snoring respondents is above 46 years old.

Table 1: Age Profile of the Respondents

Age of the Respondents	Frequency	Percentage
45 and below	17	42.5%
46 and above	23	57.5%
Total	40	100%

Table 2 presents the sex of the respondents. It indicates that the dominant sex is male with 22 out of 40 or 55 percent of the total number of respondents, while there are only 18 out of 40 or 45 percent who are female. It shows that the snoring population is dominated by male.

Table 2: Sex Profile of the Respondents

Sex of the Respondents	Frequency	Percentage
Female	18	45%
Male	22	55%
Total	40	100%

Table 3 shows the systolic blood pressure results of the respondents. There are 24 out of 40 or 60 percent of the respondents who have the result of 130mmHg whereas the lowest percentage of 2.5 percent or 1 out of 40 respondents got the result of 150mmHg. It indicates that all the respondents' systolic blood pressure is above normal, the value of which must be 120 mmHg.

Table 3: Systolic Blood Pressure results of the Respondents

Results in mmHg	Frequency	Percentage
150	1	2.5%
140	15	37.5%
130	24	60.00%
Total	40	100.00%

Table 4: Diastolic blood pressure result of the Respondents

Results in mmHg	Frequency	Percentage
100	2	5.00%
90	16	40.00%
80	22	55.00%
Total	40	100%

Table 4 shows the diastolic blood pressure results of the respondents. There are 22 out of 40 or 55 percent of the respondents who have the result of 80mmHg whereas the lowest percentage of 2.5 percent or 2 out of 40 respondents got the result of 100mmHg. There are 16 out of 40 or 40 percent who have a diastolic blood pressure. This clearly indicates that the dominant population of the respondents' diastolic blood pressure is within normal level which is 80 mmHg. It also implies that 45 percent of the respondents have a diastolic blood pressure that ranges from 90-100mmHg which is categorized as hypertensive diastolic

blood pressure. The diastolic blood pressure is a window indicator for the functional ability of the heart. The higher the value, the more prone to cardiovascular ailment since both systolic and diastolic blood pressure have strong associations with all cardiovascular disease (Preidt, 2014). Table 5 shows the snoring frequency results of the respondents. It revealed that 20 out of 40 or 50 percent always snore and there are 18 out of 40 or 18 percent snores when they are tired. As to occasional snorer, there are only 2 out of 40 or 10 percent. The result clearly indicates that the dominant population of the respondents is snorer, especially when they were tired.

Table 5: Snoring Inventory Frequency result

Characteristics	Occurence	Frequency	Percentage
Frequency	Always	20	50.00%
	When Tired	18	40.00%
	Occasionally	2	10.00%
Total		40	100%

Table 6 shows the snoring inventory loudness results of the respondents. There are 16 out of 40 or 40 percent of the respondents whose snoring were slightly louder than breathing, 11 out of 40 or 27.5 percent whose snoring are as loud as breathing while 7 out of 40 or 17.5 percent whose snoring are louder than talking and 6 out of 40 or 15 percent whose snoring are very loud.

Table 6: Snoring Inventory Loudness result

Snoring inventory	Characteristics	Frequency	Percentage
Loudness	Very loud	6	15.00%
	Louder than talking	7	17.50%
	As loud as talking	11	27.50%
	Slightly louder than breathing	16	40.00%
Total		40	100%

Table 7 shows the snoring inventory disturbing effects results of the respondents. There are 12 out of 40 or 30 percent of the respondents whose snoring were Nearly never disturbing effects, 11 out of 40 or 27.5 percent with Seldom disturbing effects, 9 out of 40 or 22.5 percent who have occasional disturbing effects and 8 out of 40 or 20 percent whose snoring always have a disturbing effects.

Table 7: Snoring Inventory Disturbing Effects result

Characteristics	Occurence	Frequency	Percentage
Disturbing Effects	Always	8	20%
	Occasionally	9	22.5%
	Seldom	11	27.5%
	Nearly never	12	30%
Total		40	100%

Table 8 shows the snoring inventory occurrence of apnea results of the respondents. There are 35 out of 40 or 87.5 percent of the respondents whose snoring does not coincide and perceive “nearly never” with the occurrence of apnea whereas 5 out of 40 or 12.5 percent seldom experience the occurrence of apnea. This clearly implies that the dominant population of the respondents is not yet experiencing apnea usually associated with snoring; sleep apnea means that there is an involuntary cessation of breathing during sleep, which deprives the individual of valuable oxygen during the episodes. This breath-holding initially lasts for 10 seconds and progresses to 20 to 30 seconds, and each episode is immediately followed by gasping for air. Because of the interruptions in breathing, sleep apnea can also place a strain on the heart, in turn potentially causing hypertension, arrhythmia and other heart problems. (Schwimmer, 2013).

Table 8: Snoring Inventory Occurrence of Apnea result

Snoring Characteristics	Occurence	Frequency	Percentage
Occurence of Apnea	Always	0	0%
	Occasionally	0	0%
	Seldom	5	12.5 %
	Nearly never	35	87.5 %
Total		40	100%

Table 9 shows the snoring inventory occurrence of choking results of the respondents. There are 35 out of 40 or 87.5 percent of the respondents whose snoring does not coincide and perceive “nearly never” with the occurrence of choking whereas 5 out of 40 or 12.5 percent seldom experience the occurrence of choking. This clearly implies that the dominant population of the respondents is not yet experiencing choking.

Table 9: Snoring Inventory occurrence of Choking while sleeping

Snoring Characteristics	Occurence	Frequency	Percentage
Choking	Always	0	0%
	Occasionally	0	0%
	Seldom	5	12.5%
	Nearly never	35	87.5 %
Total		40	100%

Table 10 shows the snoring inventory as to post wake up condition as to feeling of tiredness. There are 28 out of 40 or 70 percent who answered “nearly never” in terms of feeling of tiredness while 8 out of 40 or 20 percent answered “seldom”, 3 out of 40 or 7.5 percent and 1 out of 40 or 2.5 percent always experienced feeling of tiredness after waking up. This clearly implies that less than half of the population of the respondent experienced post waking up tiredness. The feeling of tiredness is attributed to the inability to have a continuous sleep.

Table 10: Post Wake up condition as to feeling of tiredness result

Snoring Characteristics	Occurence	Frequency	Percentage
Feeling of tiredness	Always	1	2.5%
	Occasionally	3	7.5%
	Seldom	8	20%
	Nearly never	28	70%
Total		40	100%

Table 11 shows the snoring inventory as to post wake up condition as to falling asleep while waiting for a turn. There are 14 out of 40 or 35 percent who occasionally fall asleep while waiting for a turn, 13 out of 40 or 32.5 percent who nearly never experienced fallen asleep while waiting for a turn, 11 out of 40 or 27.5 percent who seldom experienced and 2 out of 40 or 5 percent always fall asleep while waiting for their turn. The result clearly implies that the dominant population of the respondents is fallen asleep as a post effect of snoring.

Table 11: Snoring Inventory Post wake up condition as to Fallen asleep while waiting for turn

Snoring Characteristics	Occurence	Frequency	Percentage
Fallen Asleep while waiting for turn	Always	2	5%
	Occasionally	14	35%
	Seldom	11	27.5%
	Nearly never	13	32.5%
Total		40	100%

Table 12 shows the snoring inventory post wake up condition as to falling asleep while waiting TV during daytime. There are 16 out of 40 or 40 percent who seldom fall asleep while waiting TV during daytime, 11 out of 40 or 27.5 percent who occasionally fallen asleep, 9 out of 40 or 22.5 percent always experienced fallen asleep, whereas only 4 out of 40 or 10 percent nearly never fall asleep while waiting for their turn. The result clearly implies that the dominant population of the respondents is fallen asleep as a post effect of snoring.

Table 12: Snoring Inventory Post Wake up condition as to Fallen asleep while watching TV during daytime

Snoring Characteristics	Occurence	Frequency	Percentage
Fallen Asleep	Always	9	22.5%
While watching TV	Occasionally	11	27.5%
	Seldom	16	40%
	Nearly never	4	10%
Total		40	100%

Table 13 shows the relationship of Systolic Blood Pressure to the profile factors. It shows that as to age, the p value obtained is .549 with the t value of .604 and as to sex, the p value obtained is .532 with t value of .628. The statistical value obtained clearly indicates that there is no significant difference in the systolic blood pressure of the respondents when grouped according to the age and sex profiles. The respondent's systolic blood pressure ranges from 130 to 150 mmHg.

Table 13: Systolic BP vs. Profile Factors

Variables	t-value	p-value	Interpretation
Age	0.604	0.549	NS
Sex	0.628	0.532	NS

*NS – Not Significant S- Significant

Table 14 shows the relationship of Systolic Blood Pressure to the profile factors. It shows that as to age, the p value obtained is .975 with the t value of .032 and as to sex, the p value obtained is .534 with t value of .628. The statistical value obtained clearly indicates that there is no significant difference in the diastolic blood pressure of the respondents when grouped according to the age and sex profiles. The diastolic blood pressure ranges from 80-100mmHg.

Table 14: Diastolic BP vs. Profile Factors

Variables	t-value	p-value	Interpretation
Age	0.032	0.975	NS
Sex	0.628	0.534	NS

Table 15 shows the relationship of Snoring Inventory Characteristics and snoring post wake up effect with the Age profile of the respondents. It clearly indicates that all the five (5) snoring characteristics and the three (3) snoring post wake up effects do not predict significantly with the age factor of the respondents. It can be implied that regardless of age, may it be 45 and below or above 45 years old, the snoring characteristics such as frequency, loudness, effects to others, apnea choking as well as the post wake up effect of feeling of tiredness, fall asleep while waiting and fall asleep while watching TV are all the same.

Table 15: Snoring Inventory Characteristics and post effect vs. Age

Characteristics	t-value	p-value	Interpretation
Frequency	-0.958	0.355	NS
Loudness	-1.590	0.120	NS
Disturbing effects	0.366	0.716	NS
Apnea	-0.392	0.697	NS
Choke	-0.392	0.697	NS
Post wake up effect	t-value	p-value	Interpretation
Feeling of tiredness	-0.023	0.982	NS
Fall asleep while waiting	-0.392	0.109	NS
Fall asleep watch TV	-1.259	0.219	NS

Table 16 shows the relationship of Snoring Inventory Characteristics and snoring post wake up effect with the sex profile of the respondents. It clearly indicates that with the five (5) snoring characteristics, only the disturbing effect of snoring to other people predict significantly with sex with the p value of .024 with the t value of 2.353. With the three (3) snoring post wake up effects, the post wake up effects of falling asleep while waiting for their turn also predict significantly with the sex factor having a p value of .021 with the t value of -2.455. All the remaining factors do not predict significantly with sex of the respondents. Male snorer seems to have a characteristic of snoring with a more disturbing effect as compared to their female counterpart. As to the Post wake up condition, males also have the tendency to fall asleep while waiting for their turn like in the case of paying bills etc.

Table 17 indicates the relationship of snoring characteristics with Blood pressure. This clearly indicates that the snoring characteristics namely frequency, disturbing effects, apnea and choking does not predict significantly with the systolic blood pressure. However, snore loudness characteristics predict significantly with systolic blood pressure, with the r value of -.312 and a p value of .050. The higher the systolic BP, the louder the snore characteristics. With the Diastolic blood pressure, all the

snore characteristics such as frequency, loudness, and disturbing effect, occurrence of apnea and occurrence of choking do not predict significantly.

Table 16: Snoring Inventory Characteristics and post effect vs. Sex Profile

Snore Characteristics	t-value	p-value	Interpretation
Frequency	-1.012	0.318	NS
Loudness	-1.667	0.102	NS
Disturbing effects	2.353	0.024	S
Apnea	-0.707	0.484	NS
Choke	-0.707	0.484	NS
Post tiredness	-1.693	0.099	NS
Fall asleep waiting	-2.455	0.021	S
Fall asleep watch TV	-1.571	0.126	NS

Table 17: Snoring Inventory Characteristics vs. BP

Snore Characteristics	Systolic BP			Diastolic BP		Interpretation
	r value	p value	Interpretation	r value	p value	
Frequency	-0.086	0.600	NS	0.148	0.363	NS
Loudness	-0.312	0.050	S	-0.269	0.093	NS
Disturb effect	0.308	0.053	NS	0.013	0.938	NS
Snore-apnea	-0.104	0.523	NS	0.104	0.523	NS
Snore-choke	-0.104	0.523	NS	0.104	0.523	NS

Table 18 indicates the relationship of snoring post wake up characteristics with Blood pressure. This clearly indicates that only the characteristics indicator post feeling of tiredness predict significantly with the diastolic blood pressure with the obtained r value of .365 with the p value of .020, whereas all the indicators do not predict significantly. There is a significant relationship in the feeling of tiredness as the snorer woke up in the morning. Diastolic BP reflects the cardiovascular condition of the respondents.

Table 18: Snoring Post Wake up Characteristic vs. BP

Post wake up characteristics	Systolic BP		Interpretation	Diastolic BP		Interpretation
	r value	p value		r value	p value	
Feeling of tiredness	0.242	0.133	NS	0.365	0.020	S
Fallen asleep while waiting for turn	-0.087	0.592	NS	0.058	0.721	NS
Fallen asleep while watching TV	-0.210	0.193	NS	-0.113	0.489	NS

5. CONCLUSIONS

- i. There is no significant difference in the systolic (130-150 mmHg) and diastolic (80-100mmHg) blood pressure of the respondents when grouped according to profile factors.

- ii. There is no significant difference in the snoring inventory characteristics of the respondents as to frequency, loudness, apnea and choking when grouped according to their profile factors. There is a significant difference in the snoring inventory characteristics as to disturbing effects of the respondents when grouped according to sex profile, male snorer shows more disturbing effects. Respondents are not yet high risk to cardiovascular disease due to absence of apnea and choking.
- iii. There is no significant difference in the snoring inventory post wake up condition of the respondents as to feeling of tiredness and fallen asleep while watching TV when grouped according to their profile factors. There is a significant difference in the snoring post wake up condition of the respondents as to fallen asleep while waiting for their turns when grouped according to sex profile. Male respondents have the tendency to fall asleep while waiting for their turns as post snoring effect which could eventually lead to a work related problems due to inefficiency.
- iv. There is no significant relationship between the snoring inventory characteristics and the systolic and diastolic blood pressure of the respondent.
- v. There is a significant relationship in the loudness snore characteristics with the systolic blood pressure. The higher the systolic BP, the louder the snoring characteristics.
- vi. There is no significant relationship between the snoring inventory post wake up condition such as feeling of tiredness, fallen asleep while waiting and fallen asleep while watching TV and the Systolic BP. There is no significant relationship in the snoring inventory post wake up condition such fallen asleep while waiting and fallen asleep while watching TV Diastolic BP of the respondents. There is a significant relationship in the snoring inventory post wake up condition as to feeling of tiredness and the Diastolic BP. The higher the diastolic BP, the higher the occurrence of feeling of tiredness of the snorer despite the sleep during the night.

REFERENCES

- [1] De Los Reyes, V.S., Ojascastro, E.B., Ceniza, R.B., Dizon, R.V., Banzon, A.G., Jocson, M.C., Jorge, M.C., Remulla, A.T., and Zaraspe, A.C. (2016). "Philippine Clinical Practice Guidelines on the Diagnosis and Management of Obstructive Sleep Apnea in Adults", Philippine College of Physicians. Retrieved from: http://philchest.org/v3/wp-content/uploads/2013/05/09_May_-final-draft-cpg-osa.pdf.
- [2] Endeshaw, Y., Rice, T.B., Schwartz, A.V., Stone, K.L., Manini, T.M., Satterfield, S., Cummings, S., Harris, T., and Pahor, M. (2013). "Snoring, Daytime Sleepiness, and Incident Cardiovascular Disease in the Health, Aging, and Body Composition Study", SLEEP Research Society, 36(11), pp. 1737-1745. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3792392/>.
- [3] Gangwisch, J. E., Rexrode, K., Forman, J. P., Muk-amal, K., Malaspina, D., and Feskanich, D. (2014). "Daytime sleepiness and risk of coronary heart disease and stroke: results from the Nurses' Health Study II". Sleep Medicine, 15(7), pp. 782–788. doi:10.1016/j.sleep.2014.04.001.
- [4] Lombardi, C., Castiglioni, P., Lugaresi, E., Cortelli, P., Montagna, P., and Parati, G. (2009). "Autonomic arousals in sleep related breathing disorders: a link between daytime somnolence and hypertension?". Sleep, 32(7), 843–844. doi:10.1093/sleep/32.7.843
- [5] Preidt, R. (2014). "Health Risk may depend on which BP number is high", Health Daily Report. Retrieved from: <https://www.webmd.com>.
- [6] Sagaspe, P., Leger, D., Taillard, J., Bayon, V., Chaumet, G., and Philip, P. (2010). "Might the Berlin Sleep Questionnaire applied to bed partners be used to screen apneic patients?", Sleep Medicine, Volume 11, Issue 5, pp. 479-483. Retrieved from: <https://www.ncbi.nlm.nih.gov>.
- [7] Sharma S.K., Vasudev, C., Sinha, S., Banga, A., Pandey, R. M., and Handa, K. K. (2006). "Validation of modified Berlin questionnaire to identify patients at risk for obstructive sleep apnea syndrome", The Indian Journal of Medical Research, 124 (3): pp. 281-90. Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/17085831>.
- [8] Srijithesh, P.R, Shukla, G., Srivastav, A., Goyal, V., Singh, S., and Behari, M. (2011) "Validity of the Questionnaire in identifying obstructive sleep apnea when administered to the informants of stroke patients", Journal of Clin Neurosci, Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/21237648>.

Abstracts

Transformation of Dependency and Association in UML Design Class

Ngamsantivong Thavatchai ¹, Ratanavilisagul Chiabwoot ²

¹*Faculty of Applied Science, King Mongkut's University of Technology North Bangkok*

²*Faculty of Applied Science, King Mongkut's University of Technology North Bangkok*

¹tvc@kmutnb.ac.th, thavatchai.n@sci.kmutnb.ac.th

²chiabwoot.r@sci.kmutnb.ac.th

ABSTRACT

This paper presents two novel conceptual relationships between classes of software development known as dependency and association. The design between two relationships could interchangeable because it always takes place in real-life situations. For instance, relationship from friends to husband and wife and vice versa. However, in terms of coding, the most important factor is system performance. In this research, four situations are designed to test the performance of each relationship, written in C++ language. A time stamp is used to measure the execution time and before and after the execution time. The four situations include messages, strings, calculation and sorting. There are two kinds of relationships; association and dependency. Association could be further divided into the factors of composition and aggregation. In general, the results showed that the aggregation relationship is the fastest, followed by composition and dependency. However, in terms of execution of Strings are the fastest, followed by dependency, composition and aggregation.

Keywords: Relationship Between Class; Association; Dependency; Composition; Aggregation

Fractal Antenna - Wireless Communication New Beginning Breakthrough in Digital Era

Anand Mohan¹, M Sundararajan²

¹MBA System Management, NSHM Groups of Institutions, Durgapur, India

²Sr. Principal Scientist (CSIR-CIMFR) & Professor (CIMFR Academic of Scientific & Innovative Research), Dhanbad

¹anand.mohandhn@gmail.com

ABSTRACT

In this digital era, we are subject to cellular gadgets, there has been an expanding demand in antennas that are smaller, conformal, and broadband. Fractal antenna wire utilizes a self-comparative structure to expand the length of a material in an all out surface zone. Fractal Antenna Systems creates and constructs the most smaller, most astounding execution Wideband/multiband antennas on the planet. These antennas are regularly two to multiple times smaller than conventional aerials, while accomplishing remarkable recurrence inclusion and magnificent gains and power designs. Fractal Antenna's items have been demonstrated in the toughest business, military, and government applications. Fractal antennas apparatuses depend on mind boggling rehashing geometrical shapes having novel traits that make them particularly significant for broadcast communications and different remote needs. Their requirements are not well met by Traditional antennas apparatuses. Applications for fractal geometries in cell gadgets have turned out to be hotly debated issues of research in science and building due to buyer request.

Keywords: Fractal Antenna, Blue tooth, Fractal Antenna Technology, Fractal Antenna System and Wi-Fi

Critical Success Factors of Hospital Management Information System (HMIS) Implementation in Developing Countries

Dionisius Alvian Ariwibowo¹, Dumilah Ayuningtyas²

¹Department of Health Policy and Administration, Faculty of Public Health Universitas Indonesia, Jakarta, Indonesia.

*²Department of Health Policy and Administration, Faculty of Public Health Universitas Indonesia, Jakarta, Indonesia.
dumilah.ayuningtyas@gmail.com*

ABSTRACT

Hospital Management Information System (HMIS) was a proficient tool which can improve the quality of care by increasing the services effectiveness and efficiency in hospital. Unfortunately, the utilization of HMIS in developing countries was still not maximized when compared to developed countries. This study aimed to identify the critical success factor in implementing HMIS through SWOT (Strength, Weakness, Opportunity, and Threat) analysis. SWOT analysis is a powerful approach for evaluating strength and weakness of an entity from internal perspective, as well as opportunity and threat from external perspective. The analysis showed that HMIS have ability to provide more accurate data, timely available, faster documentation retrieval compared to paper-based system, and those considered as the HMIS implementation strengths. Competition in hospital industry and government policies open the opportunity for HMIS to be implemented immediately. Despite of the benefits from implementing HMIS, the transition from old to new system has been progressed slowly. The hospital readiness from extra funding need, lack of skilled personnel, inadequate infrastructure to support system were a form of HMIS implementation weaknesses. External factors such as existing culture, technologies providers which underestimated healthcare complexity, also lack of communication and collaboration across organization became obstacle which threaten HMIS implementation.

Keywords: Hospital Management Information System, SWOT Analysis, Critical Success Factors, Developing Countries

Effectiveness of Tax Incentives of Hard-to-Recover Oil Reserve Development

I. V. Sharf¹, M. P. Ivanova², I. V. Filimonova³

^{1,2}*Tomsk Polytechnic University, Russia*

³*Novosibirsk State University, Russia*

¹*irina_sharf@mail.ru*

ABSTRACT

The present-day stage of the world hydrocarbon market development is characterized by the growing share of oil and gas production from the fields related to hard-to-recover reserves in terms of different criteria, which is a consequence of technological breakthrough in the USA. The strategic task of Russian oil and gas sector is to intensify the development of such fields with governmental support in the form of tax incentives. The goal of this research is to consider dynamics of oil production from the fields related to Bazhenov, Abalak, Domanic, and Khadumsk geological formations with enormous hydrocarbon potential thanks to tax incentives. The research method used is statistical analysis. The research results have shown the effectiveness of tax incentives, but due to absence of native development technologies, the effectiveness of incentives is evened, which requires different approaches to the tax incentive system.

Keywords: hard-to-recover reserves, oil, regions, tax incentives, technologies.

Manufacturing Learning and Forgetting: Steady State Optimal Batch Size for Constant Demand Case

Sunantha Prime Teyarachakul

California State University, Fresno, CA, USA

steyarachakul@mail.fresnostate.edu

ABSTRACT

Assuming learning and forgetting in processing units, constant demand rate, and infinite horizon, we analyze costs and properties related to lot sizes in the steady state. Steady State characteristics are described by a convergence in worker experience level or skills. The average per period cost as a function of lot size is found to be non-convex in the steady state. Thus, a simple approach such as first-order condition is not guaranteed to give an optimal solution. We develop sufficient conditions for existence of a unique optimal solution, which are found in some problems. Our study shows that EOQ-type policies that use fixed batch size and produce when inventory reaches zero are not necessarily optimal.

Keywords: manufacturing learning and forgetting, steady state optimal batch size, cost minimization, forms of optimal policy

Electronic Commerce Adoption by Manufacturing Companies in Laguna

Adoree A. Ramos
ACTS Computer College
Avril_shaine@yahoo.com

ABSTRACT

The study focused on the development of E-commerce adoption action plan meant for the use of manufacturing companies in Laguna. Specifically, the problem dealt with the level of E-commerce adoption, pressures and factors and the significant relationships associated with the decision to adopt E-commerce. A total of seventy-three manufacturing companies participated in the survey. The study employed the quantitative research method. Weighted mean and multinomial regression were used. The findings indicated that the level of E-commerce adoption is extensive utilizing more than ten E-commerce techniques and applications; the technological, social/environmental, organizational and external readiness greatly pressured the owners and managers to adopt E-commerce; the organizational factors greatly influenced the implementation of E-commerce; the pressures found to be significant were overall operational practices in the industry, increased power of consumers, customers demand, extremely low-labor cost, company's clear-cut vision, information overload is timely done, adequate financial aids from government and capabilities of company to finance E-commerce. While the significant factors influencing the adoption of E-commerce were unreliable and inefficient telecommunication, lack of appropriate legal environment, keeping up with changing technology, and limited technical knowledge of the owners/managers. The recommendation is the implementation of the action plan on the adoption of E-commerce.

Keywords: E-commerce, adoption level, pressures, factors, action plan

The Consumers' Acceptance of E- Commerce in the Province of Laguna

John Matthew M. Macalinao¹, Adoree A. Ramos², Rolando Jr. B. Marinay³

^{1,2,3}*ACTS Computer College, Laguna*

scieman_12@yahoo.com.ph

ABSTRACT

This study dealt with the level of E-commerce acceptance, factors and barriers, significant difference and relationships associated with the consumers' acceptance of E-commerce. Four hundred twenty (420) consumers in Laguna were surveyed and interviewed through quantitative research design. The researchers treated the data using descriptive statistical techniques, non-parametric methods and regression analysis. The findings of the study revealed that the consumers' acceptance in E-commerce was low; the acceptance levels are more likely to be influenced by perceived usefulness, ease of use, risk, satisfaction with past transactions and trust. A number of barriers, including poor internet connection, lack of security and privacy and knowledge and lack of government regulations on E-commerce were identified. The study also found that civil status and monthly income significantly influenced the acceptance of E-commerce. Using the regression analysis, the study established that the likelihood of acceptance significantly affected by perceived usefulness, ease of use and trust factors. The study provided the business owners' information about barriers and needs to develop and to implement more effective strategies towards successful E-commerce acceptance in the country to align with the competitive environment.

Keywords: E-commerce, acceptance, barriers, perceived usefulness, perceived ease of use, perceived risk, perceived awareness, satisfaction, trust

A Keyword based Educational and Non-Educational Site Recognition Tool

Sangita Modi¹, Sudhir B. Jagtap²

^{1,2}Swami ramanand teerth marathwada university, Nanded, state.Maharashtra country India

sangitasable1@gmail.com, sudhir.jagtap7@gmail.com

ABSTRACT

Today we all depend upon internet to do our daily activities. For booking hotel, air tickets, finding particular places, travelling, cooking, education, banking, etc. we require internet. To get a specific thing immediately, we require filtering tools. E-learning is a new and rapidly growing media in modern education system, which is totally based upon internet. While surfing on internet students may get distracted from offensive and irrelevant websites. In avoiding such distractions, filters play a vital role. This paper proposes a filter tool which carries out web scraping of text data, data cleaning, Natural language processing, and filtering the non-learning sites in real-time. We have collected the text from paragraphs, images and video tags. This extracted textual data is in the form of sentences, which are processed part of speech (POS) by NLP. In NLP we are using WSD method to find the exact meaning of the ambiguous words in that context. This tool creates a knowledge base of student related sites using NLP and SVM classification technique. Word sense disambiguation is used to find the correct senses of those words, in the present sentence, which may have multiple meanings. We have created a keyword database of all learning sites. Lastly, we are classifying the sites in two categories learning and non-learning using Support Vector Machine in this tool.

Keywords: E-learning, NLP, web content mining, SVM, WSD, POS.

Multi Performance Optimization of Shoulder Milling Process Parameters of AA6063 T6 Aluminium Alloy by Taguchi Based GRA

Om Prakash Singh¹, Gaurav Kumar², Mukesh Kumar³

^{1,2,3}Vidya College of Engineering, Meerut, India.

omprakash@vidya.edu.in

ABSTRACT

In this paper, a grey relational analysis method based on Taguchi is proposed to improve the multi-performance characteristics of VMC shoulder milling process parameters in the processing of AA6063 T6. Taking into account four process parameters such as coolant, depth of cut, speed and feed, there are three level of each process parameter in addition to two levels of coolant. 18 experiments were used by L18 orthogonal array using the taguchi method. Multi-performance features like surface roughness and material removal rate are used. Grey Relational Analysis method is used to obtain the Grey Relational Grade, and the multiperformance characteristics of the process are pointed out. Then, the Taguchi response table method and ANOVA are used to analysis data. In order to ensure the validity of the test results, a confirmation test was conducted. The study also shows that this method can effectively improve the multi-function characteristics of shoulder milling process. In his work microstructure and mechanical properties of AA6063 T6 before and after shoulder milling have been investigated.

Keywords: Shoulder Milling, Surface roughness, Material removal rate, Multi-performance, Optimization.

A Fuzzy Logic Based Personalized Result Analysis Support for Student Performance Up-Gradation

Sangita A. Jaju¹, Sudhir B Jagtap², Rohini B. Shinde³

¹Department of Computer Science, Dayanand Science College, Latur, (M.S.), India.

²Principal, Swami Vivekanand Mahavidyalay, Udgir (M.S.), India.

³Department of Computer Science, Dayanand Science College, Latur, (M.S.), India.

jaju.sangita@gmail.com, drsudhir.jagtap7@gmail.com, rvmali007@gmail.com

ABSTRACT

Education system conducts various competitive exam and analyze the result but there is no any provision for improvement of result analysis. The proposed research method uses a fuzzy logic based result analysis system which suggest the improvement is possible in performance of result. This method uses Mamdani Fuzzy inference system and Triangular and Trapezoidal membership functions for removing uncertainty and prediction of better results. When marks are analyzed through a classical method it represents two dimensional graphs only. Using this two-dimensional graph, it is quite difficult to predict range of result. In the proposed method using 36 Fuzzy rules output is categorized in 6 grades namely O, A+, A, B, C, D. and it is represented in 3D surface graph. This graph helps to increase the grade level of number of student by upgrading phase.

Keywords: DNS: Discrete Numbers System FIS: Fuzzy Inference System, Mamdani fuzzy, Triangular membership function, Trapezoidal membership function.

Organizing Duplicate Spatio-Temporal Data in Location Intelligence

Sumeet Gill¹, Meenakshi²

^{1,2}*Department of Mathematics, M. D. University, Rohtak*

¹drsumeetgill@gmail.com, ²mshthebest@gmail.com

ABSTRACT

In the last few years, it has been observed that there is great expansion in the areas of location intelligence and location-based services. The management and processing of spatio-temporal data is becoming very important for the applications with the rising, promising and well recognized GPS based portable devices and wireless interactions. Spatio-temporal data has been massively increased, which results in a big challenge of indexing of spatio-temporal data. Due to extensive extension of location-aware instruments and the significance of applications based on location, a considerable amount of research was initiated to tackle different requirements and issues of spatio-temporal data handling, like query processing, optimization, indexing and accessing techniques and preservation of privacy of exact locations of users. In the present work, the researchers present a novel indexing method to organize spatio-temporal datasets through which data can be organized efficiently.

Keywords: Spatio-temporal Indexing, k-d Tree, Hashing.

Prediction of Heart Disease using Name Entity Recognition Based on Back Propagation and Whale Optimization Algorithms

Velmurugan T¹, Latha U²

^{1,2}PG and Research Department of Computer Science, D. G. Vaishnav College, Arumbakkam, Chennai, India

¹velmurugan_dgvc@yahoo.co.in, ²dgvclatha@gmail.com

ABSTRACT

Nowadays, heart diseases play a very big role in the universe. The Physicians in practice gives various names for heart diseases such as heart attack, cardiac attack, cardiac arrest etc. Among the computerized methods to find the heart disease, Named Entity Recognition (NER) algorithm is used to find the synonyms for the heart disease text to mine the meaning in medical reports and various applications. Methods/Statistical Analysis: The Heart disease text input data given by the physician is taken for the preprocessing and changes the input content to the desired format, then that resultant output fed as input for the prediction. This research work uses the NER to find the meanings of the heart disease text data and uses the existing two methods Deep Learning Models and whale optimization are combined and proposed a new method Optimal Deep Neural Network (ODNN) for predicting the disease. Findings: For the prediction, weights and ranges of the patient affected data via selected attributes are chosen for the analysis. The result is then classified with the Deep Neural Network to find the accuracy of the algorithms. The performance of ODNN is evaluated by means of classification measures such as precision, recall and f-measure values. Improvement: In future, the other classification algorithms or other text data algorithms were used to find for large amount of text data.

Keywords: Named entity recognition, Back Propagation, Whale optimization Algorithm, Sensitivity, Specificity, Accuracy

Quality Based Analysis of Clustering Algorithms using Diabetes Data for the Prediction of Disease

K. Saravananathan¹, T. Velmurugan²

¹SRM Arts and Science College, Kattankulathur, Tamil Nadu, India.

²PG and Research Dept. of Computer Science and Application, D. G. Vaishnav College, Chennai, India.

¹greatsaro@yahoo.co.in, ²velmurugan_dgvc@yahoo.co.in

ABSTRACT

Clustering is the majority essential investigative data analysis method widely used in many real-time applications. Most of the clustering algorithms proved their efficiency in solving different kind of problems for a variety of data sets. Partition based clustering algorithms are easy to implement in order to test its performance and its clustering quality. Herewith, the clustering algorithms k-Means and k-Medoids are used in this research work to analyze the diabetes dataset to predict the diseases. 15000 diabetic patients' consequent blood test reports are given as input for the prediction of diabetes. The algorithms performance is tested based on its execution time and accuracy. The execution time of the algorithms to form the clusters is compared for different executions. The most excellent algorithm in each class was found out based on their performance. The best suitable algorithm is suggested for the prediction of diabetes data in this work.

Key words: Cluster analysis, k-Means clustering, k-Medoids clustering, Diabetes Data Analysis.

Rule Based Machine Translation of English Text to Indian Sign Language

Gouri Sankar Mishra¹, Parmanand Astya², Pooja³

^{1,2,3}School Of Engineering & Technology, Sharda University, Greater Noida

¹mishragm@gmail.com, ²parma.nand@sharda.ac.in, ³pooja.1@sharda.ac.in

ABSTRACT

Machine translation has been one of the prominent technology to facilitate a two-way communication to the deaf and hard of hearing community all over world. In this paper we have explored the rule based translation mechanism to translate English sentences to Indian Sign Language. The syntactic structure of the source text is transferred to the target language and the rules and sub rules along with the intermediate sentence structure in experimentation are also represented very neatly in this research.

Keywords: Machine Translation, Indian Sign Language (ISL), Rule Based Machine Translation (RBMT), syntactic transfer.

An Algorithm to Determining SIFT Matching Score for Dorsal Vein Recognition System

Tarshi Jain¹, Rajendra Kumar²

¹M. Tech., Scholar

^{1,2}Vidya college of Engineering, Meerut

¹tarshijain@vidya.edu.in, ²rajendra.kumar@vidya.edu.in

ABSTRACT

Vein pattern recognition has been an increasingly biometric branch now a days. This technology has many advantages over other biometric technologies. This technology works only on alive person only. Vein structure of every person is unique even in case of twins. Whole procedure of registration to verification of a person gives a hygienic opportunity. Vein pattern of a person remain constant throughout the life. Recognition through veins cannot be affected from aging, color and physical environment because veins are present underneath the skin. NIR cameras of wavelength of 700 nm to 10000 nm are used to capture the images of vein pattern. When infrared light falls on the veins, it gets illuminated in dark color due to the absorption of light by the hemoglobin present in the vein. In this work, we proposed an algorithm to determine matching score of patterns matched through SIFT algorithm. For experimental purpose, we performed image acquisition, pre-processing and feature extraction methods to remove the extra noises from the image. We tested algorithm on the database of 160 persons as well as we have the calculated the results in FAR and FRR 0.05 and 0.22 respectively.

Keywords: Pattern matching, biometrics, dorsal vein, security

SIFT based Dorsal Vein Recognition System for Cashless Treatment through Medical Insurance

Rajendra Kumar¹, Ram Chandra Singh²

¹Vidya college of Engineering, Meerut

²School of Basic Sciences and Research, Sharda University, Knowledge Park-III, Greater Noida, India

¹rajendra04@gmail.com, ²rcsingh_physics@yahoo.com

ABSTRACT

The time has come not to carry any physical id. The person's identity will be known by his/her biometric features for any purpose exclusively when the person is unconscious and not carrying any identity proof. Vein recognition system is leading biometric trait in terms of flexibility and security. The fake recognition of veins is almost impossible as the feature points lie underneath the skin and cannot be read without the knowledge of a person (if not unconscious). Most important thing about it is that it works only living persons. In this paper, we have proposed a recognition system based on dorsal vein to claim cashless treatment in a hospital which is on panel of medical insurance company. The proposed model is applied on 1000 samples dorsal vein patterns of 250 persons. The FAR and FRR achieved for 1000 samples were 0.001 and 0.21. For vein image acquisition camera namely NIR camera VF620 of 950 nm wavelength was used.

Keywords: Veins Pattern Recognition, Biometric Identification, Dorsal Vein Biometric, SIFT, Pattern Recognition.

Biometric Traits Verification Using Deep Learning

Aashish Jain¹, Rohit Khokher², Ram Chandra Singh³

¹Research Scholar, Meerut, U.P., India

²Vidya Prakashan Mandir (P) Ltd., Meerut, U.P., India

³School of Basic Sciences and Research, Sharda University, Gr. Noida, U.P., India

¹jain.aashish2.n@gmail.com, ²khokherrohit@gmail.com, ³rcsingh_physics@yahoo.com

ABSTRACT

Multi-biometric system is a system involving more than one biometric trait, has been developed and used for verification, authentication or identification in several domains. In this paper, the impact of deep learning in the field of biometrics is investigated where supervised learning is primarily involved in identifying biometric traits with the help of GUI. The trained deep learning system proposed is called *MultiTraitConvNet* whose architecture is based on a combination of Convolutional Neural Network (CNN) and Softmax classifier to extract discriminative features from the input image (an image from the centralized database of 05 biometric traits, i.e. face, fingerprint, footprint, iris and palmprint, of 100 images for each trait) without any domain knowledge and then classify into one of 05 classes (i.e. each trait represents one class). A discriminative CNN training scheme based on a combination of back-propagation algorithm and mini-batch Adam optimization method is used for weights updating and learning rate adaption, respectively. In addition, other training strategies (e.g. data augmentation and dropout method) are also used in order to evaluate different CNN architectures. To test and evaluate the performance of the system different publically available data sets e.g. MMU1 for iris, Google 11K hand for palmprint, UTKFace for face etc. are used in this study. The GUI is used to verify the input trait image with the help of trained CNN model. The accuracy of the proposed system is found 100%. The system has been developed using Python's libraries: Keras for CNN and Tkinter for GUI.

Keywords: Deep learning, Convolutional Neural Network (CNN), GUI, face recognition, fingerprint recognition, footprint recognition, iris recognition, palmprint recognition

Part – B
Management and Humanities

Spend Analysis and Budget Stability of Employed Solo Parents in San Pablo City, Laguna

Elaine Joy C. Apat

Laguna State Polytechnic University

elaine.apat@gmail.com

ABSTRACT

In the Philippines, one of pressing concerns of the government is providing sustainable programs for Filipino families especially those poor families. To raise a family alone is very hard financially, emotionally and psychologically. As the head of the household, it is up to *you* to make sure that your entire family's needs are being met. In order to do that, you need to be extremely diligent when it comes to money management basics. Extending your budget out into the future also allows you to forecast how much money you will be able to save for important things like your vacation, a new vehicle, your first home or home renovations, an emergency savings account or your retirement. This paper aimed to study the significant relationship of spend analysis tool (visibility, analysis and process) and budget stability in terms of needs and wants of employed Solo Parents in San Pablo City. By means of purposive sampling technique out of 100 questionnaires distributed, only 65 were retrieved. Pearson -r was used to test the relationship of the profile of the respondents and spend analysis to the budget stability of the Solo Parents. Findings revealed that there is a significant relationship between their monthly income and spend analysis to their budget stability with p-value of .035 and .012 respectively.

Keywords: Employed Solo Parents, Spend Analysis, Budget Stability, Filipino families, Head of the Family

1. INTRODUCTION

As everyone knows, human beings have needs and wants. The needs are technically the things that humans must have in order to survive such as food, water, shelter, and clothes. Moreover, wants are associated to the unnecessary things that humans can live without like gadgets, car, jewelries and stuffs. In like manner, needs and wants are unfortunately not free, therefore the capability to supply the essentials and non-essentials sufficiently, rely upon the earnings of the individual.

However, the income of every individual varies in source as well as in amount. In general, an entity or an individual practically generate income through salary or wages; form of payment from an employer to an employee. In which the range or in other words the extent of how much one receives still vary based upon the job position, job performance, tenure of employment and significantly the employer and its terms.

An analysis on spending is the process of collecting, classifying and analyzing expenditures in aiming to decrease costs, improving monetary management. According to Bartels, (2008), there are three core areas of spend analysis - visibility, analysis and process. By leveraging all three, companies or individuals can generate answers to the crucial questions affecting their spending, including: What am I really spending? With whom am I spending it? Am I getting what's been promised for that spend? Business and large corporations perform spend analysis for several reasons. The core business driver for most organizations is profitability. One's awareness on spending their money with separation of needs from wants is very crucial on budgeting their income. When the basic needs are fulfilled, the thirst of spending on the things that are wanted but can live without increases in which most people mistakenly categorize need as a want, in example to this is that food is basically necessary but dining out in a fancy restaurant is not a need anymore, it is a want. Likewise, the shelter or the place you live in is similarly necessary but residing in a luxurious condominium or lavish mansion is neither a need, but a want. In addition, gadgets and any other form of entertainment stuffs are mere wants and was never a need. In a addition to improving compliance and reducing cycle times, performing detailed spend analysis helps businesses find new areas of savings that previously went untouched, and hold on to previous areas funds that they have already exchanged. Spend analysis is not just vital for large organi - zations and businesses but also on individuals whether they are working, have a small business.

In the Philippines, one of the pressing concerns of the government is providing sustainable programs for the Filipino families especially those poor families. Hence, raising a poor family with the help of husbands and wives will at least make hard things a bit lighter for them, A family that consist of parents (Mother and Father) and Children. But being a Solo Parent is another

story to tell, it can never be taken for granted, some of them lost their husbands or wives while raising a young family, however some gave births out of wedlock and worst are rape victims who chose to still carry and deliver their child. According to De Vera, (2016) from Manila Bulletin, 14 million of singled or solo parents in the country who single - handedly raised their children. To raise a family alone is very hard financially, emotionally and psychologically. They will come a time Solo Parents tend to spend all their earnings in raising their child and no time for self-relaxation or care. Budgeting is vital but it is a challenge for every individual mostly for Solo Parents. A solo parent is defined in Republic Act 8972 as follows: "Solo parent" – any individual who falls under any of the following categories: (1) A woman who gives birth as a result of rape and other crimes against chastity even without a final conviction of the offender: Provided, that the mother keeps and raises the child; (2) Parent left solo or alone with the responsibility of parenthood due to death of spouse; (3) Parent left solo or alone with the responsibility of parenthood while the spouse is detained or is serving sentence for a criminal conviction for at least one (1) year; (4) Parent left solo or alone with the responsibility of parenthood due to physical and/or mental of spouse as certified by a public medical practitioner; (5) Parent left solo or alone with the responsibility of parenthood due to legal separation or de facto separation from spouse for at least one (1) year; as long as he/she is entrusted with the custody of the children; (6) Parent left solo or alone with the responsibility of parenthood due to declaration of nullity or annulment of marriage as decreed by a court or by a church as long as he/she is entrusted with the custody of the children; (7) Parent left solo or alone with the responsibility of parenthood due to abandonment of spouse for at least one (1) year; (8) Unmarried mother/father who has preferred to keep and rear her/his child/children instead of having others care for them or give them up to a welfare institution; (9) Any other person who solely provides parental care and support to a child or children; (10) Any family member who assumes the responsibility of head of family as a result of the death, abandonment, disappearance or prolonged absence of the parents or solo parent.

As the head of the household, it's up to *you* to make sure that your entire family's needs are being met. In order to do that, you need to be extremely diligent when it comes to money management basics. This is not something that will happen by accident. Instead, you must plan for it and work toward it. Based from Credit Counseling Services, **Budgeting** is the process of creating **a plan to spend your money**. This spending plan is called **a budget**. Creating this spending plan allows you to determine in advance whether you will have enough money to do the things you need to do or would like to do. Once you create your first budget, begin to use it and get a good feel for how it can **keep your finances on track**, you may want to map out your spending plan or budget for 6 months to a year down the road. By doing this you can easily forecast which months your finances may be tight and which ones you'll have extra money. You can then look for ways to even out the highs and lows in your finances so that things can be more manageable and pleasant. Budgeting and spending are very much important in every family, without proper knowledge about it, there will always be less in raising your child/ren. Necessities might take for granted if people spend too much on the unimportant things around them. Instead of providing a happy and established family even raising them alone, Solo Parents will not have a happy life.

2. LITERATURE REVIEW

Several notable studies revealed that Budgeting or managing finances correctly is the leading problem of many individuals. Financial issues like developing a savings plan, paying off debt and balancing a check book have a major impact on one's ability to raise a family exclusively and make smart decisions about spending properly. Unfortunately, many people were never taught about basic budgeting. (Laney, 2013).

Spending is one of the activities that people have made into a daily routine. To spend means to use the money that will be used for one's necessities, leisure and miscellaneous activities. In the income-expenditure model of John Maynard Keynes, he explained fluctuations in production of goods and services and spending. The model basically states that we produce as many goods as will sell on the market and fluctuations in production and expenditure are tied to keep an economy stable. The theory makes a couple of assumptions that aren't always true: wages, prices and interest rates are fixed, and output is determined by demand.

On the 2013 study of Kaitlin Karlson, the researcher looked at the financial behavior of college students and recent alumni as it relates to economic theory and the life-cycle hypothesis. College students are money-spending machine in addition to the tens of thousands of dollars students and their families spend on tuition; the campus students also spend money on alcohol, clothing, food, and other activities. These consumption habits may seem harmless, but when combined with limited income, accumulating credit card debt, and large student loans, the deficit spending becomes detrimental to future financial well-being. The researcher's aspects of spending on college tuition include financial aid, decisions regarding selecting college majors and

future careers, and navigating student loans. In the study, the results showed that participants overestimated future salaries, making it difficult for them to smooth current consumption based on future earning as predicted by the life-cycle model. It also showed the preference of using cash rather than debit and credit.

According to another study on spending and saving habits of college students, it has been undertaken to analyse the spending and saving habit of college students especially in Newman college Thodupuzha. The main reason behind the study is the youth spend more than their income and saving habit is declining. This study shows the various spending and saving avenues for youth and how they maintain their financial requirements with limited income and high expenses. They emphasized that spending and saving habit of college students is a relevant topic in this current scenario because the income of students is very low and expenses are very high. Thus, it is important to study on how they will manage their expenses with their limited income. This study is anchored with The **Life-Cycle Hypothesis (LCH)** an economic theory that pertains to the spending and saving habits of people over the course of a lifetime. The concept was developed by Franco Modigliani and his student Richard Brumberg. The Life Cycle Hypothesis replaced an earlier hypothesis developed by economist John Maynard Keynes. He believed that savings were just another good and that the percentage that individuals allocated to savings would grow as their incomes rose. LCH presumes that individuals plan their spending over their lifetimes, taking into account their future income. Accordingly, they take on debt when they are young, assuming future income will enable them to pay the debt off. They then save during middle age in order to maintain their level of consumption when they retire. Keynes also considered consumer spending to be the most important determinant of short-term demand in an economy. Pillai et al. stated that attitude of young adults toward spending plays a vital role in sustainability perspectives of their finance and is a significant variable in financial prudence. Besides, adults with high financial literacy enable them to decrease their chances of bankruptcy, receiving government assistance and making poor consumer decision also in a **Theory of Personal Budgeting** by Simone Galperti (2016), paper analyses the link between budgeting and self-control problems in consumption-saving decisions. It shows that the use of good-specific budgets depends on the combination of a demand for commitment and the demand for flexibility resulting from uncertainty about intra-temporal trade-offs between goods. It explains the subtle mechanism which renders budgets useful commitments, their interaction with minimum-savings rules (another widely- studied commitment technique), and how budgeting depends on the intensity of self-control problems.

3. CONCEPTUAL FRAMEWORK

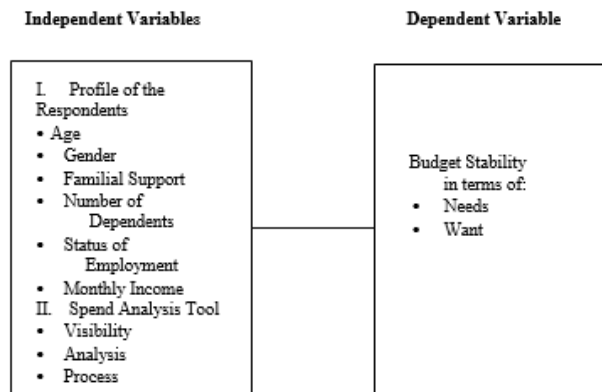


Fig 1: Research Paradigm

Figure shows the relationship between the profile of the respondents and Spend Analysis tool to the Budget Stability of Employed Solo Parents in San Pablo City.

4. STATEMENT OF THE PROBLEM

i. Profile of the Respondents

- Age
- Gender
- Familial Support

- Number of Dependents
 - Status of Employment
 - Monthly Income
- ii. Spend Analysis Tool
- Visibility
 - Analysis
 - Process
- iii. Budget Stability in terms of:
- Needs
 - Wants
- iv. is there a significant relationship between the profile of the respondents and their budget stability?
- v. is there a significant relationship between their spending activities and budget stability?

5. HYPOTHESES

There is no significant relationship between the profile of the respondents and the budget stability of Employed Solo Parents and their budget stability. There is no significant relationship between the spend analysis and their budget stability of Employed Solo Parents.

6. RESEARCH METHODOLOGY

This paper is a descriptive research and used purposive sampling techniques and is limited to Employed Solo Parents living in San Pablo City. Researcher went to DSWD (Department of Social Welfare and Development) and DILG (Department of Interior and Local Government) to get information about Solo Parents in San Pablo City. Due to Data Privacy Act of 2012 only the complete number of registered Solo Parents was given to the researcher which is 841 as of 2018. So she decided distributing 100 questionnaires in selected individuals that she knows that are solo parents and to barangay officials to help her out completing the data gathering. Self-made survey questionnaires were made and given to evaluate their spending behavior and budget stability. Frequency count was used to determine the profile of the respondents also put them into label accordingly to test the relationship. Mean was used to analyze their spending and budget stability. Pearson-r was used to identify the significant relationship between profile of the respondents, spending analysis tools and budget stability. For part II and III of the survey questionnaires, point likert scale 4-Always, 3 – Often, 2 – Sometimes and 1 – Never was used to analyze their spending analysis tools and their budget stability.

7. DISCUSSION

7.1 Profile of the Respondents

Most of the respondents or 28 out of 65 ages from 29 to 39 years old, 19 were ages between 40 to 50 years old. Respondents in ages 18 to 28 and above 51 years old got, 15 and 3 respectively. 63 respondents have 1 to 2 dependent/s and remaining 2 have 3 to 4. Female dominated the Employed Solo Parents with 62 out 65. 45 from them have their families supporting them especially in financial matters. However, not all of them have regular jobs that has a frequency of only 29, some of them were contractual and probationary with a frequency of 25 and 11 respectively. For their monthly income, 23 of them earns 15,001 to 21, 000 followed by 9,001 to 15,000, frequency of 21. Hence, the remaining frequencies of 7, 6, 5 and 3 of the respondents earns 21,001 to 27, 000, 3,000 to 9,000, 33, 000 and above and 27,001 to 33,000 respectively.

7.2 Spend Analysis

Table depicts the means as to the visibility of spend analysis tool of the respondents. With a mean of 3.75, most of the respondents immediately take actions to fix necessary things in the house that needs repair. A shelter is one from the three basic needs of every individual and family. A shelter can protect you from warm and cold weather, other insects or animals and even from bad people. It can give you a feeling of well-being and maintain your will to survive (DNEWS, 2011). However, lowest mean of 2.17 with verbal interpretation of sometimes, respondents eat in restaurants and fast food chain

with their families. Even though, food is the primary necessity of survival of the families and individuals, solo parents chose to prioritize to buy healthier food, purchase clothes for their work needs and pay their utility bills.

Table 1: Visibility (What am I really spending?)

Indicators	Mean	Verbal Interpretation
I pay all the bills and expenses first after each salary.	3.57	Always
I buy inexpensive yet healthy food for my family.	3.03	Often
I eat in restaurants and fast food chain with my family.	2.17	Sometimes
I immediately take actions to fix necessary things in the house that needs repair.	3.75	Always
I purchase clothes most of the time, if it is needed at work.	2.80	Often
Overall Mean	3.06	Often

Table 2: Analysis (To whom and why I'm spending it?)

Indicators	Mean	Verbal Interpretation
I prioritize the needs of my family.	3.58	Always
I make sure to send my child/ren to schools with good standing even if it is quite expensive.	2.62	Often
I see to it that all the basic needs of my family were bought first before mine.	3.42	Always
I go out with my friends for lunch and dinner occasionally.	2.08	Sometimes
I do shop if I have extra money.	2.22	Sometimes
Overall Mean	2.78	Often

Table 2 shows with a mean of 3.58, most of the respondents really knew that most of their spending were allotted to the needs of the family. Quora.com said, family should always come first because your connection with them is permanent and profound. Indeed, the respondents believed, their family is everything although raising their children alone is a big challenge, they chose to send them to schools with good standing regardless if it is quite expensive with 2.62 mean. Family will always be the priority, that's why most of the respondents cannot always buy for themselves or eat lunch or dinner with friends all the time with means 2.22 and 2.08 respectively.

In this table you can see the carefulness of solo parents in buying goods and services. They are often concern of the quality and durability of the products they are availing. 2.86, the highest mean with verbal interpretation of often, respondents made sure that upon buying the products, they will get satisfied. In this country today, where taxes and inflations were too high, it is very important for the customers to be satisfied. Money is important, it is one of the means to survive this life and quality is needed to make you spend worth it. That's why the second highest mean is 2.63, oftentimes, solo parents purchase goods with a quality regardless of the price of it. Buying items solo parents need on sale helps them in saving money because Dorisbelland, 2017 in one article, said when you buy something on sale, your certainly pay less than the usual price. For solo parents, paying less or having more than you pay is very important.

Table 3: Process (Am I getting what's been promised for that spend?)

Indicators	Mean	Verbal Interpretation
I spend on goods or items regardless of the price because of its quality.	2.63	Often
I avail of quality service even if sometimes its costly.	2.38	Sometimes
I make sure to buy many items that I need if it's on sale.	2.62	Often
I make sure I will get satisfied to every money I will spend.	2.86	Often
I carefully read labels or nutrition fact before I buy.	2.38	Sometimes
Overall Mean	2.58	Often

7.3 Budget Stability

The obligations of Solo Parents cannot be questioned, be it financial, emotional and social aspect. Raising a family by oneself allocation of resources and income. Most of the time, the income of a solo parent would not suffice in covering up for all the expenses of the family.

Table 4: Needs

Indicators	Mean	Verbal Interpretation
I buy goods and services that are required.	3.63	Always
I see to it that the goods and service I purchase are all in my priority lists.	3.51	Always
I list all the things I need before I buy goods.	3.48	Always
I prefer buying goods in Public Market rather than Supermarkets.	2.35	Sometimes
I consider improving my financial situation so what I buy, are the necessities of my family.	3.58	Always
Overall Mean	3.31	Always

As the table represents with 3.31 overall mean, solo parents always seek what is important and what is needed by the family. Stable budgeting is hard to achieve even individuals who have proper knowledge sometimes fails also in managing their money. How much more of those solo parents who do not get familial support and have a low income? It is definitely a day-to-day challenge for them to budget their means to supplement the needs of the family.

Table 5: Wants

Indicators	Mean	Verbal Interpretation
Sometimes, I allot budget for what I want even if it's not necessary.	2.49	Often
Even if sometimes, I buy things that are not priority, I feel happy and satisfied.	2.37	Often
I make sure I will have my time to at least travel with my family once in a while.	2.43	Often
When I can afford things that is really nice, I buy it when I have extra.	2.40	Often
I don't sacrifice needs over wants.	2.95	Often
Overall Mean	2.53	Often

In working solo parents, relaxations to pamper themselves can never be disregarded. They will feel their tiredness in doing their jobs while raising a child/ren alone. Results revealed as presented on the table above that, most of the respondents do not forget to think and buy for themselves once in a while. Hence, they are still aware of their priority which is the needs of the family over wants with a highest mean of 2.95. So, prepared from time to time travels or out of town of they have extra money to at least unwind and bond with their children, with a mean of 2,40 and verbal interpretation as often. According to Forbes 2016, a decent salary and appropriate responsibilities aren't necessary enough to make a job worth pursuing. Travel benefits working solo parents by boosting their morale, relieve stress and feel the acceptance towards other people.

7.4 Significant Relationship

Table 6: Profile of the Respondents as to Budget Stability

Profile	r-value	p-value	Interpretation
Gender	.087	.491	Not Significant
Familial Support	.015	.904	Not Significant
Monthly Income	.262	.035	Significant
Number of Dependents	(.098)	.440	Not Significant
Age	(.110)	.382	Not Significant
Status of Employment	.015	.903	Not Significant

Table shows the significant relationship of the profile of the respondents and budget stability of Solo Parents in San Pablo City; only monthly income has a significant relationship with p-value of .35. Economics always reiterating the importance of money in consuming goods and services and when you have more money you tend to spend more. Here we can realize the importance of budgeting and limiting your resources in spending. The budget set is a list of all the possible combinations of goods and services that are affordable, given both income and the prices of all goods and services. It is defined by: total spending \leq disposable income (www.saylordotorg.github.io).

Table 7: Spend Analysis and Budget Stability

	r-value	p-value	Interpretation
Spend Analysis vs Budget Stability	.311	.012	Significant

Spend analysis and budget stability has a significant relationship with p-value of .012. A budget is a plan that helps you prioritize your spending. According Caldwell, 2019 budgeting is one of the biggest keys to managing your money. Many people are often turned off by the simple term budget. Tools in spend analysis such as visibility, analysis and process play a vital role for an individual especially solo parent. Most of the time people work for 48 to 60 hours per week to earn more of what they are receiving monthly. Many workers in the Philippines 24.2 billion or two thirds of the population to be exact, according to www.businessinquirer.net, 2018. Spending and budgeting are not just an individual issue but an economic problem too. Government is a factor also; do they implement proper minimum wage or is the inflation rate too high? Whether you consume less if the prices of goods and services are too high, proper spending and budgeting is impossible to achieve.

8. SALIENT FINDINGS

Monthly Income under the profile of the respondents was the only significantly related to the budget stability with r-value of .262 and p -value of .035. The rest such as number of dependents, familial support, status of employment and age of the respondents do not have significant relationship. Whereas, in spend analysis tools such as visibility or knowing what they are really spending, analysis or to whom and why are they spending and process or getting what has been promised for that spend, and budget stability in terms of their needs and wants, findings show it was also significantly related with r-value of .311 and

p-value of .012. Caldwell said, most people who do not have a budget end up overspending each month. Solo parents raise their family alone and their spending power decreased by being one and make it more limited without proper budgeting. If you lack of money or budget spending more of their capabilities may results in debts. Even though they are working, solo parents have also difficulty in spending wisely and stabilizing their budget.

9. CONCLUSIONS

Based on the findings of the study, the proponent concluded the following:

- 1) There is a positive correlation between the monthly income and the budget stability of Employed Solo Parents in San Pablo City.
- 2) There is a positive correlation between the spend analysis tool such as visibility, analysis and process and the Employed Solo Parents' budget stability.

A plan of spending is a budgeting plan where you can

REFERENCES

- [1] Chavaia, Q. (April 10,2015). "Miscellaneous Travel Expenses". Retrieved from: <http://www.wisebread.com/7-budget-items-you-may-be-forgetting>.
- [2] Domingo, R.W (2013). Most employed Filipinos works longer than required. Retrieved from: <https://business.inquirer.net/114463/most-employed-filipinos-work-longer-than-required>
- [3] Doyle, J. "What Is the Income Expenditure Model", Retrieved from: <http://smallbusiness.chron.com/income-expenditure-model-26104.html>
- [4] Handel, A. (2014). "The Power of Leisure", Retrieved from:<http://goo.gl/AUdNZP>
- [5] Jan, I. "Benefits-Received Principle", Retrieved from: <https://xplained.com/877395/benefits-received-principle>
- [6] Huston C. R., et. al., (2013). "Differences in spending habits and credit use of young adults", *Journal of Consumer Affairs*, 34 (1), pp. 20.
- [7] Karlson, K. May 2013. "Does the Life-Cycle Theory Really Matter? Saving and Spending Habits of College Students". Connecticut College New London, CT.
- [8] Keynes, M. (2015). "Propensity to Consume. Retrieved from: [http://www.encyclopedia.com/topic/Consumption_\(Economics\).aspx](http://www.encyclopedia.com/topic/Consumption_(Economics).aspx)
- [9] Lindahl's and Bowen's Model. (N.D) Retrieved from: https://en.wikipedia.org/wiki/Theories_of_taxation
- [10] Manasana, R. G. (2017). "Assessment of the 2017 Tax Reform for Acceleration and Inclusion". Retrieved from: <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1727.pdf>
- [11] Perculeza, N. P L., et al., (2016). "Spending Behavior of the Teaching Personnel in an Asian University". *Asia Pacific Journal of Multidisciplinary Research* Vol. 4 No.1, 99-108. Lyceum of the Philippines University, Batangas City, Philippines.
- [12] Saylor Academy (2012). *Economics: Theory Through Application*. Retrieved from: https://saylordotorg.github.io/text_economics-theory-through-applications/index.html
- [13] Shaji, S., et.al., (2016). *A Study on Spending and Saving Habit of College Students*. Department of Commerce Newman College Thodupuzha.
- [14] Simone G. "A Theory of Personal Budgeting", Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2964067
- [15] Villegas, B. M. (2010). "Guide to Economics for Filipinos", 7th Edition. Economic Wants and the Filipino Citizen. Recto Manila, Sinag-Tala Publishers.

Sustaining the Supply Chain Management System of a Multi-Purpose Cooperative in Tiaong, Quezon

Janzene L. Aguilar

San Pablo Colleges, San Pablo City

janzeneaguilar02@gmail.com

ABSTRACT

This study primarily intended to analyze the supply chain management of Luntian Multi Purpose Cooperative in Tiaong Quezon, to determine the problems that the cooperative are encountering and to furnish recommendations. For this research, descriptive method and inferential method were used. The researcher gathered information from 10 members, 3 suppliers and 9 from the management of the Luntian Multipurpose Cooperative for a total of twenty-two (22) respondents. The questionnaires were directly administered and retrieved from the respondents. The data collected were gathered and analyzed using the percentage, frequency distribution and weighted mean. The study revealed that the factors that gained the lowest ratings were the location where to order/purchase, new product development, space utilization, accurate inventory information, inventory location (proper shelving) and machine efficiency. In the problems encountered, the researcher recommends that Luntian MPC should solicit suggestions from their customers and members on how to innovate and further improve the cooperative operations according to their needs. The following are the suggestions given by the customers: to have branches in different places, to standardize the processes in the supply chain management processes, to ensure the reliability of the supplier, to have automated machines, to initiate activity for suppliers, members and management that will build rapport and trust within the cooperative and lastly, to purchase a vehicle for the delivery of the products to provide better service and ease to their customers.

Keywords: supply chain management, multipurpose cooperative

1. INTRODUCTION

In every business, there is always an aspect of supply chain. Supply chain management is often seen as an integral part of business for its success and to fulfill its customer satisfaction. In this modern era, businesses need to have a sense of efficient management and revision of the existing supply chain so it stays ahead of the changing trends that this world brings.

This study focused on the analysis of the Supply Chain Management of Luntian MPC. It sought to determine and evaluate the degree of importance of the different supply chain management factors and to know the perception of its members, suppliers and management in terms of the management systems that made up the whole supply chain management.

According to Handfield (2011), supply chain management is the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective & efficient ways possible. Supply chain activities cover everything from product development, sourcing, production, and logistics, as well as the information systems needed to coordinate these activities.

The organizations that make up the supply chain are “linked” together through physical flows and information flows. Physical flows involve the transformation, movement, and storage of goods and materials. They are the most visible piece of the supply chain. But just as important are information flows, they allow the various supply chain partners to coordinate their long-term plans, and to control the day-to-day flow of goods and material up and down the supply chain (Handfield, 2011).

The Luntian Multi-Purpose Cooperative which is located in Lalig, Tiaong Quezon is composed of members who are considered as the owners of the cooperative. The Luntian MPC is involved in feed milling, hog fattening and has a meat shop of its own. Feed milling is the main business of Luntian MPC. It produces two brand names of feeds, the Luntian (premium brand) and Talisay. The cooperative claims lower prices than most commercial feed brands sold in Tiaong, Quezon. The hog fattening of Luntian MPC is the system of hog raising wherein the members provide for the piglets, while the cooperative provides for the feeds and veterinary medicines. The cooperative helps the member in selling the pig and after computing for all the cost of the feeds and medicines shouldered by the cooperative, the earnings/profit are given to the member. There is also a meat shop to

provide more services among its members and it produces nine different kinds of processed meats: cured bacon, embutido, ham, hamburger patties, siomai, tocino, skinless longganisa and regular longganisa.

It is known that livestock raising and the consumption of animal products make a crucial contribution to the economic and nutritional well-being of millions of people around the world and with that, the operations of Luntian MPC, especially for its members are vital. At the present time, the Luntian MPC is facing a problem with regard to their production due to lack of machines. The demand for feeds from its members and customers are rapidly increasing and the number of feeds produced by the machine is not enough to meet the demand. Due to that, the workers of Luntian need to add shift in their working hours in order to meet the demand. The interest in better management of supply chains has expanded rapidly over the years in line with increased consumer demand for quality, convenience and novelty. Satisfying these consumer needs and demands would only be realized by coordinating management of the supply chain from farm to retail shelf (Wheatly, Woods and Setyadjit 2004).

These interests in supply chain teamed up with the interest on the operations of production of feeds from raw materials to end consumers bring the researcher to the decision to study this topic in a broader and profound aspect. It is believed that this study will help the researcher utilize their accumulated knowledge and bring them closer to the business world.

2. REVIEW OF RELATED LITERATURE

According to Colayco (2009), cooperatives provide their members strength in numbers. They pool resources of their varied memberships and they provide a ready venue for exchange of ideas and skills. More importantly, in coming together for a common cause, cooperatives increase the intellectual capital of the members thus providing opportunities where none existed. Opportunities are indeed when cooperatives perform and live up to their real mission. In short, the cooperative as a movement is truly the only practical tool to achieve units of purpose and thus secure the “Power of One”.

The official of Cooperative Development Authority (CDA), a government body that supervises cooperatives, define cooperative as “a duly registered association of persons, with common bond of interest who have voluntarily joined together to achieve a lawful common social or economic and making equitable contributions to the capital required and accepting a fair share of the risks and benefits of the undertaking in accordance with universally acceptable cooperative principles.”

According to Schill A. the cooperative system is probably the most misunderstood economic system today. Many are confused with its nature, its principles, doctrines and practices. They suspect that cooperation is socialistic and when people re drawn into it, they are only being sucked farther toward the left. Many believe that it is anti- capital and it allowed to prosper it would necessarily destroy the present economic structure. And still others believe that cooperation is basically faulty and impractical, which attribute to the terrible failures of many cooperative societies that have been organized in this country.

Cooperatives, by definition, are controlled by members (Siebert & Park 2010). By belonging to a cooperative, farmers subscribe to a share of the capital and participate, as partners, in the running of the cooperative according to the democratic principal of “one man one vote”. Now, certain studies have noted a decrease in members’ participation in the democratic life of cooperatives even if these are indeed their “own” (Harte 1997; Holmström 1999; Levi and Davis 2008; Siebert & Park 2010). Whether members behave opportunistically (Cook 1995; Nilsson et al. 2009) or as free-riders (Bhuyan 2007), the main reason for this change in farmers’ behavior seems to lie in the phenomenon of concentration and restructuring of agricultural cooperatives (Fulton & Giannakas 2001; Lang and Fulton 2004). In certain cases, farmers find themselves in huge cooperative groups; these are diversified and international with strategy so complex that farmers find it difficult to understand (Österberg & Nilsson 2009). In view of their members’ detachment, it is important that cooperatives understand such attitudes and behaviors, for members contribute to the cooperatives’ performance (Fulton & Adamowicz 1993; Birchall & Simmons 2004; Bhuyan 2007). The success of a cooperative depends on the degree of participation of its members, as shown in Österberg and Nilsson’s study (2009) carried out with over 2000 Swedish farmers. As voluntary organizations, cooperatives are based on a democratic decision-making process that rests upon collective participation, balance of countervailing powers, and cohesion among members (Hendriske & Bijman 2002).

Supply chain management (SCM) refers to the management of the entire set of production, distribution, and marketing processes, which supplies consumers with a desired product. Folkers & Kochorst (1998) define a supply chain as a set of interdependent companies that work closely together to manage the flow of goods and services along the value-added chain in order to realize superior customer value at the lowest possible cost. Fundamentally, SCM is a process that seeks to integrate supply and demand through coordinating the activities of many independent actors in the procurement, production and distribution of food products (Batt & Cadilhon 2006).

Interest in better management of supply chains has expanded in line with increased consumer demand for quality, convenience, novelty and other non-food attributes in the food products they buy, together with an increased concern over food-product integrity and safety. Satisfying these consumer demands can be achieved only by coordinator management of the supply chain from farm to retail shelf (Wheatly, Woods & Setyadjit 2004).

In developing countries such as the Philippines, supply chains are typically long and fragmented, involving multiple small hold producers delivering produce to collectors. The produce then moves to several layers of traders, wholesalers and retailers. These chains are flows and a predominance of spot transactions over longer-term buyer-seller relationships.

Batt and Cadilhon (2006) aptly describe the major SCM challenges in the context of a developing country. First, SCM requires producers either directly or indirectly, to deliver to consumers the food that fulfills their expectations. But herein lies the first major obstacle: do producers know what consumers want? In most instances, small hold farmers do not transact directly with the ultimate buyer: rather, they sell their produce to a downstream market intermediary who is just one of many in a long and complex process of exchange. Secondly, the increasing role of institutional markets in food retail is giving rise to another obstacle: how can small hold farmers coordinate their activities to meet their needs of the institutional market? This inevitably calls for strong collaborative marketing groups or for downstream marketing intermediaries to exert control through contract farming. Either way, it becomes mandatory to standardize production systems and to implement quality standards. Herein arises the third major constraint: how is it possible to introduce and to implement quality assurance systems for small hold farmers?

According to Lee (2004), from the book of Operation and Supply Management, there are four types of supply chain: (a) Efficient supply chains that utilize strategies aimed at creating the highest cost efficiency. For such efficiencies to be achieved, non-value-added activities should be eliminated, scale economies should be pursued, optimization techniques should be deployed to get the best capacity utilization in production and distribution, and information linkages should be established to ensure the most efficient, accurate, and most cost effective transmission of information across the supply chain; (b) Risk-hedging supply chain are supply chain that utilized strategies aimed at pooling and sharing resources in a supply chain so that the risks in supply chain disruption can be shared. A single entity in s supply chain can be vulnerable to supply disruptions, but if there is more than one supply source or alternative supply resources are available, then risk of disruption is reduced.; (c) Responsive supply chain utilize strategies aimed at being responsive and flexible to the changing and diverse needs of the customers. To be responsive, companies use to build-to order and mass customization processes as a means to meet the specific requirements of customers; (d) Agile supply chains utilize strategies aimed at being responsive and flexible to customer need, while the risks of supply shortages or disruptions are hedged by pooling inventory and other capacity resources. These supply chains essentially have strategies in place that combine the strengths of “hedged” and “responsive” supply chain. They are agile because they have ability to be responsive to the changing, diverse, and unpredictable demands of customers on the front end, while minimizing the back-end risks of supply disruptions.

The main goal of SCM is to maximize value for the consumer through coordination and control of all activities within a supply chain. Sparling and van Duren (1998) state that the activities within the supply chain occur across multiple organizations and geographic locations. It focuses on four management activities; determining market requirements; establishing and managing supply chain relationships; managing and sharing information; and, managing material production and distribution.

3. RESEARCH METHODOLOGY

This study used descriptive research design which focuses on describing the supply chain management of Luntian MPC and the characteristics of variables in particular instances. Inferential method of research was also in this study. Information was gathered from 10 members, 3 suppliers and 9 from the management of the Luntian Multipurpose Cooperative for a total of twenty-two (22) respondents. Purposive sampling is used which is a type of probability sampling. In non-probability sampling, there is no system in selecting the sample. The researcher used survey questionnaires. The gathering of primary data and pre-interview for the initial data gathering of information about the topic. Questionnaires were used to have information regarding the process of supply chain management in Luntian MPC and the problems they are encountering. It was constructed in a manner that the respondents can easily choose upon the given choices. The choices were arranged in in a five-point Likert scale.

The ratings and weighted mean of the participants were ascertained with the use of the scale given below:

Table 1: Descriptive Rating Table

SCALE	Range	Verbal Description	Verbal Description	Verbal Description
5	4.50-5.00	Very Important	Excellent	Very Strong
4	3.50-4.49	Important	Very Good	Strong
3	2.50-3.49	Moderately Important	Good	Normal
2	1.50-2.49	Unimportant	Fair	Weak
1	1.00-1.49	Very Unimportant	Needs Improvement	Very Weak

4. RESULTS AND DISCUSSION

Table 2: Degree of Importance of the Different Supply Chain Management Factors of Luntian MPC in terms of Developing Supply Chain Management System according to its supplier, management and member

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
Reliable delivery date of goods	5.00	Very Important	3.40	Moderately Important	4.56	Very Important
Accurate Order fulfillment	5.00	Very Important	3.60	Important	4.67	Very Important
Delivery at specified time	5.00	Very Important	3.60	Important	4.67	Very Important
Handling of complaints	5.00	Very Important	3.80	Important	4.67	Very Important
Quality of materials	5.00	Very Important	4.10	Important	4.78	Very Important
Quality of service	5.00	Very Important	4.20	Important	4.78	Very Important
Product availability	5.00	Very Important	4.00	Important	4.78	Very Important
Top management support in terms of promo, or discount	5.00	Very Important	3.40	Moderately Important	4.56	Very Important
Trust in Luntian MPC	5.00	Very Important	4.40	Important	4.89	Very Important
Mutual interest in terms of pricing	5.00	Very Important	3.80	Important	4.67	Very Important
Closer links between demand/ supply	5.00	Very Important	4.30	Important	4.44	Important
Free flow of information of the status of operation	5.00	Very Important	3.80	Important	4.56	Very Important
Improved customer service	5.00	Very Important	4.30	Important	4.44	Important
Overall supply chain reduction	5.00	Very Important	3.70	Important	4.56	Very Important
Increased profitability	5.00	Very Important	3.80	Important	4.44	Important
Increased market competitiveness	5.00	Very Important	3.90	Important	4.33	Important
Cost reductions within the organizations	5.00	Very Important	4.20	Important	4.33	Important
Benefits to the client	5.00	Very Important	4.00	Important	4.22	Important
Benefits to your supplier	5.00	Very Important	3.90	Important	4.00	Important
Improved quality assurance	5.00	Very Important	4.30	Important	4.33	Important
Average Weighted Mean	5.00	Very Important	3.93	Important	4.53	Very Important

On the degree of the importance of the different supply chain management factors of the Luntian MPC in developing supply chain management system, in the point of view of the suppliers, they consider every factor as very important. According to Zigiari (2000), the best companies around the world are discovering a powerful new source of competitive advantage. It is

called supply-chain management and it encompasses all of those integrated activities that bring product to market and create satisfied customers. The Supply Chain Management Program integrates topics from manufacturing operations, purchasing, transportation, and physical distribution into a unified program. Successful supplychain management, then, coordinates and integrates all of these activities into a seamless process. It embraces and links all of the partners in the chain.

Table 3: Perception of Suppliers, Management and Member in the Order Management Performance of Luntian MPC

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
Fast Ordering Process	4.00	Very Good	3.78	Very Good	3.50	Very Good
Accurate Order fulfillment(if your order is correctly fulfilled)	4.00	Very Good	4.00	Very Good	3.30	Good
Location where to order/purchase	4.00	Very Good	4.00	Very Good	3.20	Good
Handling of complaints	4.00	Very Good	3.89	Very Good	3.50	Very Good
Purchasing (if it is smooth flowing)	4.33	Very Good	3.67	Very Good	3.40	Good
Responds rapidly to unexpected demand change	4.00	Very Good	3.78	Very Good	3.50	Very Good
Average Weighted Mean	4.06	Very Good	3.85	Very Good	3.40	Good

In the order management of Luntian MPC in the perception of the supplier and management, Luntian MPC has a very good order management. But for the perceptions of the members, it has a good order management.. According to Rouse (2012), a well implemented order management include improved sales visibility, improved customer relations and efficient order processing with a minimum of delays and back-orders.

Table 4: Perception of Suppliers, Management, Member in the Production Management Performance of Luntian MPC

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
Quality of Materials	4.33	Very Good	4.22	Very Good	3.60	Very Good
Quality of Service	4.33	Very Good	4.11	Very Good	3.70	Very Good
Reliability of manpower in the production process	4.33	Very Good	4.11	Very Good	3.60	Very Good
Reliability of supply in terms of:						
*Feeds	4.67	Excellent	4.11	Very Good	3.50	Very Good
*Hog Fattening	4.33	Very Good	4.11	Very Good	3.50	Very Good
*Meat	4.33	Very Good	4.33	Very Good	3.80	Very Good
Compete based on quality	4.67	Excellent	4.11	Very Good	3.90	Very Good
Offer products that are highly reliable	4.67	Excellent	4.11	Very Good	3.20	Good
Average Weighted Mean	4.46	Very Good	4.15	Very Good	3.60	Very Good

In terms of the production management, Luntian MPC also has a very good production management as perceived by its supplier, member and management. According to the book of “Supply Chain Logistic Management” by Donald J. Bowersox, David J. Closset. Al., effective production planning results in a time sequenced plan to manufacture the correct items efficiently while operating within facility equipment and labor constraints. Production planning identifies the item that should be produced in anticipation of need to remain within production constraints and yet minimize inventory.

Table 5: Perception of Suppliers, Management, Member in the Warehouse Management Performance of Luntian MPC

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
Security of the products	4.00	Very Good	4.22	Very Good	3.30	Good
Handling of materials (if it is handled with care)	4.33	Very Good	4.33	Very Good	3.40	Good
Space Utilization (if the space is properly utilized)	4.00	Very Good	4.00	Very Good	3.00	Good
Picking optimization (can the product be easily find in the warehouse)	4.00	Very Good	3.89	Very Good	3.70	Very Good
Proper warehousing of the products	4.00	Very Good	3.89	Very Good	3.80	Very Good
Proper Sanitation	4.00	Very Good	3.78	Very Good	3.90	Very Good
Average Weighted Mean	4.06	Very Good	4.02	Very Good	3.52	Very Good

The Luntian MPC’s warehouse management is very good according to its suppliers, members and management. Bowersox (2009) mentioned that warehousing exists to support marketing, manufacturing and distribution efficiency.

Table 6: Perception of Suppliers, Management, Member in the Inventory Management Performance of Luntian MPC

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
Accurate count of stocks/ Accurate inventory information	4.00	Very Good	3.56	Very Good	3.30	Good
Forecasting demand of Luntian Products	4.33	Very Good	3.78	Very Good	3.60	Very Good
Inventory location (proper shelving)	4.00	Very Good	3.67	Very Good	3.20	Good
Availability of stocks in terms of:						
*Feeds	4.33	Very Good	3.78	Very Good	3.80	Very Good
*Hog Fattening	4.33	Very Good	3.67	Very Good	3.70	Very Good
*Meat (Meat Shop)	4.33	Very Good	3.78	Very Good	3.90	Very Good
Average Weighted Mean	4.22	Very Good	3.71	Very Good	3.58	Very Good

Regarding Luntian MPC’s inventory management from the point of view of the suppliers, members and management, its performance was also very good. Stevenson (2009) discusses that good inventory management is important for the successful operation of most businesses and their supply chains. Poor inventory management hampers operations, diminishes customer satisfaction and increases operating costs. Thus, inventories are a vital part of business and they are not only necessary for operations, but also contribute to customer satisfaction.

Table 7: Perception of Suppliers, Management, Member in the Manufacturing Management Performance of Luntian MPC

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
Time Management in the manufacturing process	3.67	Very Good	3.78	Very Good	3.50	Very Good
Reliability of manpower/workers	4.00	Very Good	3.78	Very Good	3.50	Very Good
Training and inspections	4.00	Very Good	3.56	Very Good	3.80	Very Good
Balancing between demand and supply	4.33	Very Good	3.78	Very Good	3.40	Good
Accurate manufacturing date on the products	4.33	Very Good	3.78	Very Good	3.80	Very Good
Enough machine to produce the demand	4.00	Very Good	3.67	Very Good	3.80	Very Good
Machine Efficiency	4.00	Very Good	3.67	Very Good	3.10	Good
Average Weighted Mean	4.00	Very Good	3.72	Very Good	3.56	Very Good

According to Luntian MPC’s suppliers, members and management, it has a very good manufacturing management. Vollman, Berry, Whybark. Al, state that manufacturing planning and control system is concerned with planning and controlling all aspects of manufacturing including managing materials, scheduling machines and people and coordinating supplies and key customers. The development of an effective manufacturing planning and control system is key to the success of any goods producing company.

Table 8: Perception of Suppliers, Management, Member in the Distribution Planning Performance of Luntian MPC

	SUPPLIER		MANAGEMENT		MEMBER	
	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation	Weighted mean	Verbal interpretation
On time delivery	4.33	Very Good	3.67	Very Good	3.70	Very Good
Control of rate of deliveries	4.00	Very Good	4.00	Very Good	3.70	Very Good
Verifying if deadlines meet consumer expectations	4.00	Very Good	3.67	Very Good	3.70	Very Good
Ability to reach target consumers	4.00	Very Good	3.67	Very Good	3.30	Very Good
Communication on the distribution process	4.00	Very Good	3.89	Very Good	3.40	Very Good
Accurate distributed products	4.33	Very Good	3.67	Very Good	3.80	Very Good
Average Weighted Mean	4.00	Very Good	3.76	Very Good	3.58	Very Good

In the distribution planning of Luntian MPC, the suppliers, members and management perceived that it has a very good distribution planning. According to Margaret Rouse, distribution planning is a systematic process to make the delivery of the goods more efficient by determining which goods, in what quantities and at what location are required to meet anticipated demand. The goal is to minimize shortages and reduce the costs of ordering, transporting and holding goods. In addition to distribution planning of Luntian MPC, the management stated that they provide vehicle for the delivery of their products but the member on the other hand claim that they pick up their orders from Luntian using their own vehicle.

5. CONCLUSION

Based on the findings of the study, the researcher made the following conclusions:

- 1) On the degree of importance of the different supply chain management factors of the Luntian MPC in terms of developing supply chain management system, improved quality assurance and trust in Luntian MPC was considered very important.
- 2) In the performance of Luntian MPC in the supply chain management, most of the ratings are high except for location where to order/purchase in the inventory management, offer products that are highly reliable in the production management, space utilization for warehouse management, accurate count of stocks/accurate inventory information, inventory location (proper shelving) in the inventory management, machine efficiency for the manufacturing management.

6. RECOMMENDATIONS

Anchored on the conclusions which were derived from the findings of the study, the following recommendations were made:

- 1) Luntian MPC should make an effort to know all their customers. The firm must solicit suggestions on how to innovate and further improve according to what their customers need, want and demand.
- 2) Luntian MPC is known to have branches in different places but it offers different price compared to the main branch of Luntian in Tiaong, Quezon. With that, the branch should give the standardized price of the product like that of the main branch. Aside from that, the reason the member still placed their order in the main branch is because of the discount and the patronage points they get as a member in their purchase. In that case, Luntian members should gain that patronage points in other branches as well.
- 3) Luntian MPC should produce products that ensured product quality throughout the chain. Promoting product quality and safety can be done by making guidelines and rules starting from the procurement of raw materials down to the delivery of products to the end consumer.
- 4) The processes involved in ordering, production, warehousing, inventory, manufacturing and distribution should be standardized. Time limits for certain processes in the production should be set to ensure efficient utilization of time. Luntian MPC must standardize control. Control charts can be introduced and thoroughly explained on how to implement and how it should be followed.
- 5) The supplier should be reliable in delivering supply of raw materials to make sure that anytime of the day Luntian MPC's products are available for the consumers.
- 6) Luntian MPC have the proper milling machines that provide feeds, but the demand of the product is too high for one machine that they have. They should acquire more machine to be able to meet the rising needs of their members and consumers and if possible they should also adopt the advance technology of today like automation of the machines.
- 7) The Luntian MPC management and members should have an activity that will make them closer to each other and to build that rapport and trust within the cooperative.
- 8) The Luntian MPC should have a vehicle for delivery for members who do not have vehicle for the pick-up of their orders.

REFERENCES

- [1] Berry, W.L., Vollman, T.E. et.al (2011). "Writing with precision: Manufacturing Planning and Control", (6th ed.). McGraw-Hill International Edition. U.S.A
- [2] Bowersox, D.J., Closs, D.J. (2009). "Writing with precision: SupplyChain Logistics Managements", (4th ed.). McGraw-Hill International Edition. U.S.A
- [3] Hult T., Closs D.J. (2014). "Writing with precision: Global Supply Chain Mgmts Leveraging process, measurement and tools for strategic corporate advantages", McGraw-Hill Education. U.S.A
- [4] Jacobs, F.R. (2008). "Writing with precision: Operations and Supply Management- The Core", McGraw-Hill International Edition. U.S.A
- [5] Schill, A. (1995). "Writing with precision: Cooperative office systems : concepts and enabling technologies", London: Prentice Hall.
- [6] Steveson, W.J. (2009). "Writing with precision: Operation Management", (10th ed.). McGraw-Hill International Edition. U.S.A
- [7] Webster. S. (2008). "Writing with precision: Principles and tools for Supply Chain Management", McGraw-Hill/ Irwin International Edition. Boston, U.S.A
- [8] Writing with precision: State of the Art and Abstract Bibliography (2008) Supply Chain Management in the Philippines. University of Philippines Los Banos

- [9] Rouse and Gibilisco, (2009) Order management. Retrieved from <http://searchfinancialapplications.techtarget.com/definition/order-management>
- [10] Colayco, Francisco(2009). “Cooperatives”. GMA News. Retrieved from <http://www.gmanetwork.com/news/story/opinion/blogs/cooperatives>
- [11] Valérie B. D., Henninger, M.C., Assâad E.A (2012), “The Relationship Between Members’ Trust and Participation in the Governance of Cooperatives: The Role of Organizational Commitment”, Retrieved from <https://www.ifama.org/resources/Documents/v15i1/Didier-Henninger-Akreml.pdf>
- [12] Zigiari (2000), Supply chain management Retrieved from http://www.adi.pt/docs/innoregio_supp_management.pdf
- [13] Greenlight (2014), Supplier management relationship, Retrieved from <https://www.greenlight-itc.com/importance-supplier-relationship-business/>
- [14] Handfield, 2011, What is supply chain management. Retrieved from <https://scm.ncsu.edu/scm-articles/article/what-is-supply-chain-management>
- [15] Top 5 Benefits of Supply Chain Management that will Double Your Business, <https://solutiondots.com/blog/benefits-of-supply-chain-management.html>

Employment of Unskilled Craft Workers in the UAE Construction Projects: Explicating the Reasons

Mohammed Albattah^{1*}, Adejumo Saheed², Muhammed Tariq Shafiq³

^{1,3}United Arab Emirates University

²Westfield Global Construction Ltd

¹mohammed.battah@uaeu.ac.ae

ABSTRACT

The United Arab Emirates construction industry is beset with negative project performance outputs, such as defects, low productivity, delay in completion, and higher costs. Most critical among the recorded reasons for having these undesirable outputs is the engagement of unskilled craft workers. However, the demand for construction projects in the UAE is continually increasing, especially after Dubai won hosting of Expo 2020, as this consequently translates to increased demand for skilled construction craft workers, if optimal project delivery performance must be achieved. Therefore, subject matters related to skillfulness and productivity of construction craft workers become research windows for academic scholars and industry investigators in the UAE built environment. The main purpose of this study is to explicate the reasons behind employment of unskilled craft workers in the construction projects from the management level perspective. To meet this purpose, the authors conducted in-depth interview with construction project managers. The results show number of reasons why unskilled craft workers are been hired and the effect of specialized certificates on hiring the craft workers.

Keywords: craft workers, Dubai construction labour market, hiring, skills, and reasons.

1. INTRODUCTION

The construction industry is universally considered to be the live wire of any country. To a very large extent, the evolution of a country and its advancement is generally determined by the superiority of its infrastructure and construction projects. In the United Arab Emirates (UAE), the construction industry plays a major role in national economic growth, it accounts for the employment of approximately 1.2 million workers (20% of the total workforce) in 2014 only; the highest percentage amongst all other sectors in the UAE. Furthermore, the volume of salaries for construction workers this very year was 50.3 billion Dirhams (12.3% of the total volume of salaries); the third highest percentage amongst all other sectors, even surpassing “governmental services” and “bulk, retail trade and reparation services” sectors (UAE Government, 2016). According to Ali (2015), the construction industry accounts for 14% of the UAE’s Gross Domestic Product (GDP). Although, the demand for the construction projects in the UAE is increasing, especially after Dubai won hosting rights for the Expo 2020 (Mehran, 2016), translating into increase in demand for the construction workers. Mackenzie et al (2019) explained that investment in infrastructure continues to form a substantial part of the construction and projects sector in the UAE. The data provided by BNC’s Construction Analytics confirm this, as 3,200 projects are active in the Dubai’s urban construction sector alone, amounting to a combined estimated value of over US\$245 billion (Mackenzie et al. 2019).

Workers are the main fuel for successful running of the construction industry, and skilled workers are the heart of construction. Yi & Chan (2014) posited that construction industry is a labour intensive industry; hence labour productivity remains crucial issue for the profitability of construction projects (Liu et al., 2009). Likewise, skilled workers are quintessential for the successful growth of construction industry (Ahmed et al, 2017). In a study conducted by Aljassmi and Han (2014), it was realized that one of the major contributors to construction defects in the building sector was unskilled craft workers, owing to their poor level of the skill. Moreover, Yaw, et. al. (2003) posited that unskilled labour is the main responsible factor for construction delays and cost overrun.

In the UAE, particularly Dubai, Ren et al. (2008) confirmed that workforce employed in projects is of mixed nationalities, which bring different traditions, rules, habits, and religions. For example, the religious holidays include holy Friday for Muslims, Sunday holiday for Christians, and regular holidays and festivals for Indians. The impact of such a multi-national workforce to construction is significant (Ren et al. 2008). Therefore, construction labour market in the UAE has a unique

feature of craft workers' national diversity. Craft workers come from different backgrounds in terms of culture, education, and ethnicity (Ailabouni et al. 2007, Lohiya, 2012). In 2010, foreign workers (non-Emiratis) accounted for about 90% of the entire UAE workforce (De Bel-Air, 2015). Khaleej Times, (2016) mentioned that there are around 202 nationalities existing in the UAE labour market. The India-UAE corridor could be the second largest in the world, and Indian, Bangladeshi and Pakistani expatriates outnumbered Emirati citizens in 2015. Though, Lohiya (2012) opined that multicultural backgrounds and poor job security in the UAE construction labour market are among the factors that contribute to having unskilled craft workers (Lohiya, 2012). Yet further research work that will seek to understand the factors and circumstances that lead to continued hiring of unskilled craft workers in the UAE construction industry is important in order to mitigate the short and long-term effects on construction projects.

This research sets to inquire into the current state of craft workforce development in the UAE construction industry. Through this analysis, reasons influencing the unceasing employment of unskilled craft workforce will be identified. Within the UAE, this research was limited to completed and ongoing construction projects in Dubai metropolis only. This research focuses on the construction project managers to give their individual accounts of reasons for continued engagement of unskilled craft workers and the effect of specialized certificates on hiring the craft workers.

2. LITERATURE REVIEW

The construction industry refers to an extremely diverse sector which consists mainly of craft, professional and industrial services concerning the building, demolition, renovation and maintenance of the built environment. In many locales, construction markets tend to be divided into three broad sub-sectors: civil construction (e.g., roads, highways, water treatment plants, bridges etc.), industrial construction (e.g., oil & gas platforms and mining infrastructure) and residential and commercial construction (e.g., single-family dwellings, office buildings, condominium developments etc.). Occupationally, the sector includes array of skill and job categories, professionals, managers, for technical and manual jobs; ranging from Architects, Engineers and Project managers, to Carpenters, Electricians, Steel fixers and general labour workers (Sertyesilisik, 2016).

According to the International Standard Classification of Occupations, a job is defined as “a set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment”. As documented, occupation refers to the kind of work performed in a job. The concept of occupation is defined as a “set of jobs whose main tasks and duties are characterized by a high degree of similarity.” A person may be associated with an occupation through the main job currently held, a second job, a future job or a job previously held (Classification of Occupations 2012).

International Standard Classification of Education (ISCED) states that skill specialization is considered in terms of four concepts: 1) the field of knowledge required; 2) the tools and machinery used; 3) the materials worked on or with; 4) the kind of goods and services produced (ISCO, 2012). International Labour Organization's study states that workers are classified into three classes based on the skills and their respective academic standings. There are craft occupations that require skilled labour (high level of trainings), there are those that require semi-skilled labour (low level of trainings), and those occupations that do not require skilled labour (anyone can do the work with some guidance). However, Vereen (2013) states that highly skilled occupations are those requiring specialized education or training which take years to complete (i.e. carpentry, electrification, and pipefitting); and low skilled occupations are those requiring minimal or no training/instruction (i.e. general helping and roofing).

A 2008 survey of establishments indicated that foreign employees made up 89% of all managers and 99% of those in unskilled positions. 76% of foreign workers display a relatively diverse profile in general. As emphasized in the example of Dubai in 2015, 77% of the “blue-collar” categories (from “craft and related trade workers” to “elementary occupations”) employed half of the foreign males and 37% of females, while 18% and 14% more, respectively, were in “trade and services” occupations. On an average, 24% of Dubai foreign male residents and 40% of female expatriates were holding managerial and professional positions. Emirati nationals are absent from low-skilled categories, and 11% of males were employed in the military (Ren et al. 2008).

3. WHY HIRING OF UNSKILLED CRAFT WORKERS?

The lack of job security and poor wages, aging of the work-force, poor image and poor career pathways, among others, dominance of multifaceted cultural background of craft workers play a principal role in hiring of unskilled craft workers. In fact, contractors have lessened training of their craft workers while they heightened hiring of less skilled craftspeople to be competitive in securing jobs. (Makhene and Thwala, 2015). While the UAE's construction industry is almost entirely made up of non-citizens, nearly every foreign worker in the UAE construction sector - from the highest paid Architects, Engineers, Surveyors, and Designers to the lowest paid demolition workers, water carriers, and cleaners - is a migrant on a temporary work visa. UAE citizenship is only very rarely granted to foreigners (Sertyesilisik, 2016). Roughly 80% of the UAE's total population is comprised of migrants, both high and low skilled. In Dubai that figure is close to 90% (NCCER, 2013). Quickly identifiable problems in the recruitment of unskilled craftspeople include low wages, no clear-cut career path, and a continuing diminishing skilled craftspeople training programme. Low wages is a major reason the construction industry is having in retaining skilled labour workers (Makhene and Thwala, 2015; Albattah et al. 2016). Thus recourse is sought to unskilled craft labour.

4. METHODOLOGY

The authors conducted in-depth interviews with fifteen construction industry project managers. The questionnaire was prepared using previous studies in the literature review. The authors asked the participants number of questions related to the reasons for hiring unskilled craft workers in the construction industry, and the consideration of the specialized certificates as a factor for hiring the craft workers. These questions include the following: 1) What are the reasons for hiring unskilled craft workers in your company? 2) What are the reasons for having difficulty to find skilled/qualified craft workers in the UAE labour market? 3) What are the common nationalities at the UAE labour market? 4) Does your company take into consideration the specialized certificate as a factor to hire the craft workers? Are these specialized certificates a true measure for identifying the craft worker skill's quality? Moreover, can you say that anyone who have a specialized certificate is a skilled worker? 5) Do you provide training to the unskilled craft workers? Is it formal or non-formal training?

5. RESULTS AND DISCUSSIONS

There are two main parts in this section, which present the reasons for hiring unskilled craft workers in the construction projects, and the consideration of the specialized certificates as a factor to hire the craft workers.

5.1 Reasons for hiring unskilled craft workers in the construction projects

The participants' revealed number of reasons for hiring unskilled craft workers in the UAE, Table 1. Most of the participants agree that one of the main reasons was the shortage of skilled workers against the high demand, and the contractors need to hire those available to meet project deadlines. Further, one of the participants said *"Majority of the contractors in Dubai result to sub-contractors and recruit the tradesmen with basic skills and education. Once a project is completed, no contractors could maintain their labour force as they cannot bear huge cost of running salary while anticipating new job awards. When they are awarded a new job (especially Dubai Clients want their projects completed in an unreasonable period), they need to go out and find suitable agencies to supply men in order to keep their commitment to the client. When the demands increase for the labour supply agencies, the quality becomes poor."* Other reason was that some types of tasks require unskilled workers. Moreover, unskilled workers are cheaper than skilled workers who demand for high salary to accept offer. Therefore, to balance the project cost, some contractors mixed skilled and unskilled workers. In addition, there are no formal trainings or vocational schools in the UAE, while formal training is too costly for companies to afford.

All the participants agreed that majority of the craft workers in the UAE came from India, Pakistan and Bangladesh. According to one of the participants, when workers come to the UAE, they are most likely unskilled, but only learn on the job site to become skilled. However, some of them are hardly acquire the skills owing to communication challenges resulting from

language barriers and low education background. Moreover, recruiting companies are not very *honest* in qualifying foreign applicants for job contracts in the UAE; in some cases workers who are willing to come to the UAE pay the recruiting companies more commissions and kickbacks amounting to chunk (over 50%) of their projected wages out of desperate desire to secure job within the UAE construction market.

Table 1: Ranking the reasons for hiring unskilled craft workers

Reasons	No. of Participants
Shortage of skilled workers & Poor labour supply	7
Saving money (they are cheaper)	6
Some work require unskilled workers	4
The owner requires faster project completion	1

5.2 Consideration of the specialized certificates as a factor to hire the craft workers

According to the participants, some companies take into consideration the specialized certificates as a minimum requirement for hiring, at least for some trades. However, all of the participants agreed that specialized certificates are not usually a true measure for the workers' quality and experience as it always concentrates on theoretical part than the practical. In fact, most of the companies consider the workers based on their capability and experience that they will be tested before recruiting. Therefore, site performance is more dominant in determining a worker's skill more than a certificate.

Certificates are required in some crafts because they need highly skilled and knowledgeable workers to do the sensitive work perfectly. However, some workers come with a specialized certificate, but cannot practically showcase what the certificate portrays. One of the participants said *"we have seen workers with specialized certificate not performing in their trade. There are many institutions that train workers in crash and crude course and issue certificates within few weeks. Consequentially, these certificates are valueless."* Another participant sees value in some workers who have the specialized certificate, even if he/she did not have the required quality or skill. He said *"... because the person will be open minded and able to learn faster."* Further, some participants mentioned that they consider specialized certificates, but from numbered authorized agencies. One of them said *"It depends from where the certificate is issued. For example, in India, the Industrial training institute (ITI) issues certificate after two years of full time course on each trade. Another agency, which we consider from, is Scientific and Technical Center for Building (CSTB) from UK ... we wouldn't consider certificates from any unauthorized agency."* Therefore, if the workers have certificates from authorized agencies, construction companies get more productive work with a good quality, in addition to the safety in the jobsite.

To overcome the specialized certificates issue, most of the construction companies send their representative to test and then recruit the workers, because at the end the performance of the skilled worker will be the measure for keeping or terminating him/her. If any worker found not suitable or not doing the job as required, the worker will be treated as helper and will be paid a helper salary, or will be terminated and sent back to his/her country. On the other hand, most of workers are depending on their foremen as they follow his/her instructions. Therefore, construction companies require the Forman and the general Forman to be sufficient and qualified, and to have the needed certificate.

Some companies provide a formal training to the workers after hiring them, either if they have specialized certificate or not. One of the participants said *"Generally, specialize workers are skilled workers, However we trained them internally or externally as per our requirement as well."* Another participant said *"... So we provide formal training in our training center located at Jabal Ali for both skilled and unskilled workers."* However, not all the companies train their workers because it is require effort, time, and money that the companies are trying to avoid. One of the participants said *"It reduces your time and money to train your workers to carry out their works."*

6. CONCLUSION

Unarguably, skilled labour shortage is one of the challenges assailing the UAE built environment. Both clients and the contractors are therefore enjoined to work together to address this menace. One of the methods to accomplish this is to minimize the use of the low-bid process and move to a system that wills more incentive for contractors to have highly qualified craftspeople. Contractors and owners that find a way to attract and retain quality craftspeople will be considered to be the successful companies of the future.

Construction companies should also entrench the culture of routine capacity development, and skill acquisition training for their craft workers. Innovative retention and rewards strategies geared towards endearing, and retaining the few skilled craft workers need to be formulated. To ameliorate the adverse effects of multi-national workers hired to perform same trade, identified skilled workers can be paired with those of similar background who need hands-on training to upgrade their skillfulness.

Lastly, government and concerned organized private sectors are to ensure reliable data and regular record update of supply and demand of the UAE craft workforce. They need to expand provisions for funding for craft workers internship, mentoring, skills development and welfares.

REFERENCES

- [1] 202 Nationalities in labour market - Khaleej Times. (2016). Retrieved 15 December 2018, from <https://www.khaleejtimes.com/article/20060825/ARTICLE/308259952/1002>
- [2] Albattah, M., Shan, Y., Goodrum, P. M., & Taylor, T. R. (2016). "Relationships between cycles of economic expansion in construction and craft workers' job satisfaction and preferences". *Canadian Journal of Civil Engineering*, 44(1), pp. 29-36.
- [3] Ahmed, S., Houqe, I., & Sobuz, H. R. (2017). "Analysis of Skilled Worker Criteria of Construction Industry". *Journal of System and Management Sciences*. 7(2), pp. 53-78.
- [4] Ailabouni, N., Gidado, K., & Painting, N. (2007). Factors affecting employee productivity in the UAE construction industry. In *Proceeding Conference for Postgraduate Researchers of the Built and Natural Environment (PRoBE)*, pp. 33-46.
- [5] Ali, M. and S. B. (2015). "The Applicability of Just-In-Time in United Arab Emirates Construction Projects College of Engineering", *American University of Sharjah* 6(2), pp. 120-128.
- [6] Aljassmi, H. A., & Han, S. (2014). Classification and Occurrence of Defective Acts in Residential Construction Projects. *Journal of Civil Engineering and Management*, 20(2), pp.175-185. <https://doi.org/10.3846/13923730.2013.801885>
- [7] Mackenzie, A., Prestige, G., Kotb, S., Mechantaf, K., and Roberts, N. (2019). "Construction and projects in United Arab Emirates: overview". Retrieved from <https://globalarbitrationnews.com/construction-and-projects-in-united-arab-emirates-overview/>
- [8] Classification of Occupations. (2012). International Labour Organization, pp. 1-420.
- [9] De Bel-Air, Françoise. "A Note on Syrian Refugees in the Gulf: Attempting to Assess Data and Policies." Explanatory Note No. 11/2015, GLMM, <http://gulfmigration.eu>. (2018). Demography, Migration, and the Labour Market in the UAE Gulf Labour Markets and Migration. *GIGA Focus*, (7), pp. 1-24. <https://doi.org/10.1038/ncomms13396>
- [10] National Center for Construction Education and Research – NCCER. (2013). *Craft workforce development 2013 and beyond: A case for greater stakeholder commitment*.
- [11] Liu, H., Yu, Z., Zha, H., Zou, Y., Zhang, L. (2009). Robust human tracking based on multi-cue integration and mean-shift. *Pattern Recognition Letters*, 30(9), pp. 827-837. <https://doi.org/10.1016/j.proeng.2016.11.588>
- [12] Lohiya, G. (2012). "Team building in project management practice in the UAE construction industry". *International Proceedings of Economics Development & Research*, 43, pp. 31-35.
- [13] Makhene, D. and Thwala, W. (2015). "Skilled Labour Shortages in Construction Contractors: a Literature Review". *South Africa, CIDB*, pp. 128-136.

- [14] Mehran, D. (2016). "Exploring the Adoption of BIM in the UAE Construction Industry for AEC Firms". *Procedia Engineering*, 145, pp. 1110–1118. <https://doi.org/10.1016/j.proeng.2016.04.144>
- [15] Ren, Z., Atout, M., & Jones, J. (2008). "Root causes of construction project delays in Dubai". 24th Annual ARCOM Conference, 1-3 September 2008, Cardiff, UK, Association of Researchers in Construction Management, (September), pp. 749–757.
- [16] Sertyesilisik, B. (2016). "Embending sustainability dynamics in the lean construction supply chain management". *YBL Journal of Built Environment*, 4(1), pp. 60-78.
- [17] UAE Government. (2016). *Annual Economic Report 2016: 24th Edition*.
- [18] Vereen, S. C. (2013). "Forecasting Skilled Labour Demand in the US Construction Industry". A dissertation submitted to the Graduate Faculty of North Carolina State University.
- [19] Watson, M. (2012). "Concerns for Skills Shortages in the 21st Century: A Review into the Construction Industry, Australia". *Australasian Journal of Construction Economics and Building*, 7(1), pp. 45–54.
- [20] Yaw, F., Jacob, O., & Lynn, C. (2003). "Causes of Delay and Cost Overruns in Construction of Groundwater Projects in a Developing Countries; Ghana As a Case Study". *International Journal of Project Management*, 21(5), pp. 321–326. [https://doi.org/10.1016/S0263-7863\(02\)00055-8](https://doi.org/10.1016/S0263-7863(02)00055-8)
- [21] Yi, W., & Chan, A. P. C. (2014). "Critical Review of Labour Productivity Research in Construction Journals". *Journal of Management in Engineering*, 30(2), pp. 214–225. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000194](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000194)

Inclusive Employment Opportunity: The Stem of inclusive Growth in India

Jyoti Kumari Sharma

Balurghat College, West Bengal, India

jyotikumaris@yahoo.com,

Anil Bhumali

Raiganj University, West Bengal, India

anilbhumail@rediffmail.com

ABSTRACT

INCLUSIVE GROWTH consists of basic interrelated issues like education, health, employment, rural-urban infrastructure and financial inclusion- which are considered as basic elements of inclusive growth. These elements of inclusive growth allow people to “contribute to” and “benefit from”, economic growth on the whole on equitable basis. Of these elements employment with production activities act as an inclusive flow of goods & services in the country, helping inclusive growth. So, accordingly employment rate and economic growth are linked with each other, as employment contributes to economic growth with an increase in productivity of the working sector of the country. Similarly, an increase in economic growth creates new employment opportunities for its citizens, with new investment policies. Thus, EMPLOYMENT is considered as THE STRENGTH-SUPPORT OF ANY ECONOMIC GROWTH. As it is seen from everyone’s overall experience with respect to study & research, that only the employment systems that do well, provides the basic social security employment measures to all, with quality management, job safety, with efficiency and appropriateness of qualifications. This helps the citizens of the concerned country to act as the stem of inclusive growth to learn, examine, analyze and implement the policies needed for economic development of the country, in a best possible way. On this basis, this paper brings forward the facts and figures, explaining how countries can improve Quality, Efficiency and Equity with respect to employment opportunities, heading towards progressive economic growth with strong equality as the stem of inclusive growth, which raises a concept of INCLUSIVE EMPLOYMENT.

Keywords: Employment, Labour, Poverty, Occupation, Policies

1. INTRODUCTION

We know that employment opportunities are very important part of the economic, social and environmental development processes of any country. So, the employment opportunities under inclusive growth terms and conditions is a process providing jobs legally to all citizens of the country according to their merits and needs, who is willing to work at the prevailing wage rate and most important part of it is that job opportunities should be provided without any kind of discrimination.

Employment generation organization refers to various organizations which are established to meet the need of jobs, by generating secure jobs under legal terms and conditions. This explains the fact as to why employment is a key pillar of development.

In all these cases, according to International labour organization (ILO), a well functioning employment generation organization are the one which posses following characteristics:

1. Positive work environment with freedom of decision-making, manageable workload, attentive and supportive supervision, safe and comfortable working environment etc.
2. Attractive organizational culture and leadership principle with respect to equal opportunities, clear strategy and directions of work, employee participation, organizational integrity under value congruence, team work, organizational flexibility over external responsiveness, care for employees’ welfare etc.
3. The worldwide economic value of the employer’s practices with respect to wages paid on timely basis, performance based pay, fixed salary with social guarantees, additional benefits and incentives etc.

4. Purposeful work related training and opportunities for personal growth for employees' with development of self-confidence, stress management, positive thinking etc.
5. Recognition of work values and expectations for appreciation with respect to personalized reward for value efforts, with praise and promotional career opportunities.

In this way we see that economic growth is accompanied by an increase in productivity as well as employment growth. As growth is not means to an end; it reduces poverty by creating the job followed by income generation which is crucial for development. This implies that employment oriented growth provides social peace, self-determined living with clean and healthy environment.

So, on this basis of the recent studies made, it is seen that there requires a strong positive relationship between economic growth and inclusive employment generation, heading towards sustainable economic development of different intensity from one period to another and from one country to another. This shows that to make the economic development perspective of India more inclusive, it requires generation of better employment opportunities under inclusive terms, on the basis of both coverage and quality. Under this scenario, there arises the concept of "INCLUSIVE EMPLOYMENT OPPORTUNITY"

Inclusive employment opportunity (IEO) is a new approach, which can be defined as a development strategy, that aims at giving job opportunity to all job seekers at the prevailing wage rate following their merits and needs, without any kind of discrimination. Thus, Inclusive employment means that every jobseeker of a country gets job legally and successfully, along with persons having a disability, who wants employment. A job can open the world of various opportunities for a person's rational development. Under these perspectives, it is seen that inclusive employment opportunities are considered as the stem of inclusive which makes economic growth and development strong with stability from all sides. So, accordingly keystone to Human Resources services under Inclusive employment is that as all people can be contributing members of society and employment is an important part of a person's involvement in the community for progressive and successful economic growth and development of the concerned country.

2. TYPES OF INCLUSIVE EMPLOYMENT OPPORTUNITIES UNDER VARIOUS OCCUPATIONAL STRUCTURE

The Inclusive Employment opportunities under occupational structure are broadly categorized into three head /types:

- i. **Inclusive Primary occupations:** Primary occupation is mainly related to occupations done in the agricultural sector of the economy. For example -Farming, Animal husbandry, forestry, fishing etc. And as these occupational activities along with its products are used as an essential factor of human existence, carried forward directly from nature. So if all these occupational activities are given equal importance all jobseeker in employment generation activities and process, it becomes **inclusive Primary Occupations**.
- ii. **Inclusive Secondary occupations:** Industrial sectors of the economy with respect to manufacturing activities come under secondary occupation. They use primary sector products as their raw materials for manufacturing secondary products out of it. For example: Small-Scale, Large-Scale, cottage Industries etc. So if these activities of this sector are given equal importance to all jobseeker in employment generation activities and process, it becomes **inclusive secondary Occupations**.
- iii. **Inclusive Tertiary occupations:** Tertiary occupation speaks of the services sector of the economy, which works to carry forward the primary and secondary occupations activities with their managerial skills and operations. For example: Transports and communications, banking and financial services etc. When these activities are given equal importance all job-seeker in employment generation activities and process, it becomes **inclusive tertiary Occupations**.

3. INCLUSIVE EMPLOYMENT IN INDIA

Over the years it is seen that the occupational structure of the Indian economy has gone through a modest change, including a shift from the primary sector to secondary and tertiary sector. There has been seen few other factors like jobless growth,

including casual and informal work under the employment sector of India. The Indian employment structure followed till now is as follows:

a. ANCIENT INDIA.

In ancient India, there was no problem with respect to work and employment opportunities for people willing to work. Employment opportunities depended on attitude and aptitude of the people on the basis of three principles, that is as follows:

- “AHHARMA”, which means immoral behavior.
- “ALASYA”, which means laziness.
- “AGYAN”, which means ignorance.

These three were blamed for unemployment in India. Mostly employment opportunities were under the field of spinning, weaving, pottery making, bead making, seal making, terra-cotta, handicrafts, brick-laying, metal work etc. These occupations were differentiated based on community of work or employment and is not considered on individual terms.

b. MORDERN INDIA.

In modern India, government became the generator of employment based on popularity especially white-collared jobs, which depended on formal education gaining certificates, degrees, and diplomas under specialized field. So, here the occupation structure became individual based. The traditional occupation started to fall down with negligence to gain popularity with a pattern of occupations and employment, under industrialization and modernization. So, accordingly with respect to five-year plans, the change in Indian occupation structure can be analyzed from the table below:

Table 1: Occupational structure under five year plans of India, till 10th five year plan

Five-year plans	Aims & objectives	Occupational structure.
1 st five year plan (1951-56)	Agricultural development with price stability	Emphasized on the development of agriculture to create employment.
2 nd five year plan (1956-61)	Rapid industrialization	large-scale and heavy industries along with small-scale & cottage, heading towards creation of employment
3 rd five year plan (1961-61)	Combined progress of Agricultural and industrial sector	Employment generation in both agricultural and industrial sector in both rural and urban sector.
4 th five year plan (1969-74)	To make economy self reliant and self generating	Employment generation in the fields of mechanical, agricultural, electrical, water supply, etc; to reduce educated unemployment.
5 th five year plan (1974-79)	Removal of poverty with better distribution of income with justice.	Labour intensive technique project, for generating self-employment opportunities.
6 th five year plan (1980-85)	Modernization of technology with continuous decrease in unemployment	Employment generation in technological sector with development of ITC sector.
7 th five year plan (1985-90)	Increase employment opportunities	Employment generation in all sectors basically education, health, tourism-infrastructure etc.
8 th five year plan (1992-97)	High growth of agricultural allied sectors and manufacturing sector improving trade at every stage	Employment generation with respect transport and communication activities.
9 th five year plan (1997-2002)	Improve the quality of life with reduction of regional imbalance in economy	Employment generation with public-private partnership, in various activities like construction, retail trade, road transport etc; both in rural and urban areas.
10 th five year plan (2002-2007)	All round development improving the literacy rate, health facilities etc.	Evaluation of all previous employment generation programmes progress and expansion of employment generation in all the above mentioned areas like agriculture, industry, education, health, transport etc, with advancement of technology.

4. POLICIES AND PROGRAMMES RELATED TO EMPLOYMENT, HEADING TOWARDS INCLUSIVE EMPLOYMENT STRUCTURE IN INDIA.

During the **1st five-year plan**, full employment was considered as a corollary of development rather than direct objective. Thus, in 1st five year plan emphasized on maximization of output.

In the **2nd five year plan** government emphasized on the development of large-scale and heavy industries, along with small-scale and cottage, heading towards the creation of employment.

Then from the **3rd five year plan** government introduced & implemented **RURAL WORK PROGRAMME (RWP)**: It was introduced in **3rd five year plan**, to fully utilize the India's manpower resources & ensure substantial expansion in employment opportunities. So, accordingly this programme aimed at generating employment for **1 lakh persons** in terms of **100 days work** for each person during 1st year of this program. Following this practice in the end of **3rd five year plan**, it generated work for **2.5 million persons** under **civil work** of permanent nature.

In the **4th five year plan** following programmes were implemented to improve and increase the employment status of the country, these are as follows:

1. During **1970-71**, the **DROUGHT PRONE-AREA PROGRAMME (DPAP)** was started in **1970-71**, to provide employment through rural works in order for reducing the severity of drought conditions. As during this time **drought was identified in 74 districts and was grouped into 54 units.**
2. During **1971-72**, the **CRASH PROGRAMME FOR RURAL EMPLOYMENT (CPRE)** was introduced with the aim to generate additional employment to 1,000 persons on average through labour intensive and productive projects like road building, reclamation, development of land, flood protection, minor irrigation and afforestation, safe drinking water, pisciculture and anti-water logging.
3. During **1971-72**, the **SMALLFARMERS DEVELOPMENT AGENCIES (SEPA)** was started for generating employment, with additional income in rural areas. Later, in **1980**, this programme was **merged into Integrated Rural Development Programme (IRDP)**. Its objective was to make credit available to small farmers, enabling them to make use of latest technology to practise intensive agriculture and diversify their activities.
4. During **1971-72**, the **MARGINAL FARMERS and AGRICULTURAL LABOURERS DEVELOPMENT AGENCIES (MFALDA)** was also introduced and later in the year **1980**, it **merged** with **IRDP**. Under this policy, agriculture-work related families were assisted with subsidized credit support for agricultural and subsidiary occupations like dairy, poultry, fishery, horticultural operations etc.
5. During **1971-72**, the **PILOT- INTENSIVE RURAL EMPLOYMENT PROJECT** was also introduced in **1971-72** for **15 selected blocks**. It was to assess the dimensions of unemployment problems, its extent and probable cost of full employment.
6. During **1972-73**, the **PROGRAMME FOR EDUCATED UNEMPLOYMENT** was introduced, to **create nearly about 45,000 job opportunities** for **educated persons**. It was decided to be done by expansion and improvement of primary education, rural engineering surveys, setting up agro-services with irrigation and flood control projects, expansion of consumer cooperative stores, investigation and designing units of road projects, rural water supply, full utilization of natural resources etc.
7. During **1973-74**, the **HALF A MILLION JOB PROGRAMME** was introduced, to solve the problem of educated unemployment by formulating and implementing secured schemes of employment opportunities for a specific number of persons. For this a budget provision of 100 cores was given.

Later, it is seen that the **5th five year plan** mainly focused on selection of the **labour intensive technique project**, for generating self-employment opportunities. For this following employment generation program was introduced:

8. In **1977**, the **FOOD FOR WORK SCHEME** was introduced and implemented by Panchayati Raj Institution. Here community assets were paving of streets, school building, dispensary, internal drainage, drinking water wells, flood protection bonds etc, was taken into consideration to solve the problem of unemployment. So, accordingly it aimed at generating additional gainful employment for both men and women in rural areas, function of raising their standard of living. The **6th five year plan** mainly focused on two major goals, that is -
 - Reduction of under-employment.
 - To cut down-off, the long- term unemployment problems.

With respect to which the following programmes were introduced.

9. During **1978-79**, the **INTEGRATED RURAL DEVELOPMENT PROGRAMME (IRDP)** launched, to promote self employment of the poor households. It aimed at asset endowment in a variety of activities like animal husbandry in primary, weaving and handicrafts in the secondary sector, followed by services and business activities in the tertiary sector.
10. In **1980**, the **NATIONAL RURAL EMPLOYMENT PROGRAMME (NREP)** was introduced which aimed to achieve gainful employment by strengthening the rural infrastructure work programs like drinking water wells, community irrigation wells, village tanks, minor irrigation works, rural roads near school buildings, Panchayat ghars etc.
11. On **15th August, 1983**, the **RURAL LANDLESS EMPLOYMENT GUARANTEE PROGRAMME (RLEP)** was launched, which aimed to improve the employment opportunities for rural landless by creating durable assets for strengthening rural infrastructure. This was with an objective to provide a guarantee of employment to atleast one member of landless labour household, upto 100 days in a year. For achieving both of these objectives preference in employment was given to landless labourers, women, scheduled castes and scheduled tribes' workers.
12. In **1979**, the **SCHEME OF TRAINING RURAL YOUTH FOR SELF-EMPLOYMENT (TRYSEM)** was launched, with the aim of tackling unemployment of rural youth, by training about 2 lakh rural youth every year, enabling them to be self-employed. It was provided with the technical skills of generating self-employment in agriculture and allied activities, industries, services, business activities etc.

The **7th five-year plan** focused on generating gainful employment which was brought forward by implementing following single policy:

13. On **28th April, 1989**, the **JAWAHAR ROZAR YOJANA (JRY)** was launched, with the aim to create sustained employment by strengthening the rural infrastructure by creating community and social assets in favour of the poor for their direct and continuing benefits, by producing positive impacts on wage levels. This was to bring about an overall improvement in quality of life in rural areas through works given in required infrastructure like land development, construction of drainage, fields channels etc. JRY was especially targeted to help people below poverty-line. Preference was given to scheduled castes, the scheduled tribes and freed bonded labour. Under this atleast 30% of the employments were to be provided to women.

In **8th five-year plan** government of India focused on generating employment with the help of following policies:

14. On **2nd October, 1993**, the **EMPLOYMENT ASSURANCE SCHEME (EAS)** was launched taking preference of the objectives of the employment guarantee scheme of Maharashtra. Its aim was to provide gainful employment during the lean agricultural season in manual form and provide work to all able bodied adults in rural areas, who were in need and were desirous of work, but cannot find it. For this, with its launch, it covered 1,778 blocks of 261 districts in rural areas of India.
15. In **December 1997**, the **GOLDEN JUBILEE URBAN EMPLOYMENT SCHEME (SWARNA JAYANTI SHAHARI ROZGAR YOJANA)** was introduced. It aimed at promoting micro-enterprises and helping the rural poor into self-help groups. It was implemented as a centrally sponsored on the cost sharing ratio of 75:25 between the centre and the states.

Government of India in the **9th five-year plan** focused on generating employment through public-private partnership, for which following policies were implemented:

16. In **April, 1999**, the **JAWAHAR GRAM SMRITHI YOJANA (JGSY)** was launched to improve the quantity of life of the rural poor by providing them additional gainful employment. Its main objective was the creation of demand for village infrastructure, including durable assets for increasing the opportunities for sustained employment and generation of supplementary employment for the unemployed poor in rural areas. Here the preference was given to SC/ST families living below the poverty line and physically handicapped persons. The program was entirely implemented at the village panchayat level.
17. In **April, 1999**, the **SWARNA JAYANTI GRAM SWAROZGAR YOJANA (SGSY)** was introduced by Prime Minister Atal Bihari Vajpayee, to provide sustainable income to poor people living in rural and urban areas of the country with the help of the self-employment scheme. Thus, it aimed at establishing a large number of micro-enterprises in rural areas building upon the potential of the rural poor.

In **10th five year plan**, the most important employment act was implemented for all round development of the country, which is as follows:

18. EMPLOYMENT GUARANTEE ACT- 2005

The national common minimum programme of the UPA Government adopted in **September, 2004** has **pledged** the following regarding **provision of employment**:

“The UPA government will immediately enact a National Employment Guarantee Act. This will provide a legal guarantee for atleast 100 days of employment to begin with on asset-creating public works programmes every year at minimum wages to atleast one able-bodied person in every rural and urban, poor and lower middle class households”.

The Indian government, on the advice of the national advisory council, passed the National rural employment guarantee act. The **main features** of this act are:

- (i) Every household in rural India will have a right to atleast 100 days of guaranteed employment every year for atleast one adult member. The employment will be in the form of casual manual labour at the statutory minimum wage, and the wages shall be paid within seven days of the week during which work was done.
- (ii) Work should be provided within 15 days of demanding it and at the same time, the work should be located within 5 km distance.
- (iii) If work is not provided to anybody within the given time, he/she will be paid a daily unemployment allowance, which will be atleast 1/3rd of the minimum wages.
- (iv) Workers employed on public works will be entitled to medical treatment and hospitalization in case of injury at work, along with a daily allowance of not less than of the statutory minimum wage. In case of death or disability of a worker, an ex-gratia payment shall be made to legal heirs as per provisions of the workmen compensation act.
- (v) Five percent of wages may be deducted as a contribution to welfare schemes like health insurance, accident insurance, survivor benefits, maternity benefits and social security schemes.
- (vi) For transparency and accountability, all accounts and records of the programme will be made available for public scrutiny.
- (vii) The district collector/chief executive office will be responsible for the programme at the district level.
- (viii) The Gram Sabha will monitor the work of the Gram Panchayat by way of social audit.

Role of state government, with respect to implementation of the scheme was as follows:

- a) Only productive works that are based on economic, social and environmental benefits. This contributed to social equity and have the ability to create permanent assets will be taken up under the programme.
- b) The work shall be located in rural areas.
- c) The wages should be directly linked with/to quantity of work; with respect to it, it was decided that the concerned labourers shall be paid according to the schedule of rate fixed by the state government. For the unskilled labourers, this schedule was fixed, on the basis that seven hours of work shall fetch wages equal to statutory minimum wage fixed by the state.

5. STATISTICAL STATUS OF EMPLOYMENT IN INDIA

In every progressive economy, there has been a steady shift of employment and investment from the essential primary, secondary and tertiary sector activities. Thus, accordingly in India also the condition of economic progress brings out the fact that there is a close relationship between economic development and occupational structure of the economy. To measure the employment rate under inclusive employment opportunities following concepts are very important to be considered in details:

1. **LABOUR SUPPLY**: It refers to the amount of labour that the workers are willing to offer with respect to different wage rates.
2. **LABOUR FORCE**: It refers to the number of persons actually working or willing to work. It does not consider wage rate.
3. **WORKFORCE**: It refers to the number of persons who are actually working and does not consider willing to work but not employment working. That is,
Workforce = labour force - number of persons willing to work, but not Employed/working.
4. **RATE OF EMPLOYMENT**: It refers to the percentage of the labour force that is employed as per the total working age of the population (labour force) of the concerned country. **Rate of employment** = (total workforce/ total labour force) x 100.

Hence, with respect to, it we get another two concepts very necessary to measure if studying employment opportunities, that is:

- Number of people unemployed.
- Rate of unemployment

5. **NUMBER OF PERSON UNEMPLOYED**

= labour force – workforce.

6. **RATE OF UNEMPLOYMENT**=(number of persons unemployed/total labour force) x100

This can be viewed and analyzed through following statistical status, which are as follows:

Table 2: Growth rate of employment in India (percentage)

periods	Growth rate overall employment
1972-73 to 1977-78	2.75
1977-78 to 1983	2.36
1983 to 1987-88	1.77
1987-88 to 1993-94	2.37
1993-94 to 1999-2000	1.57
1999-2000 to 2004-05	2.48

Source: planning commission (as reproduced in economic survey, 1998-99, p.147) and 2006-07, p.208.

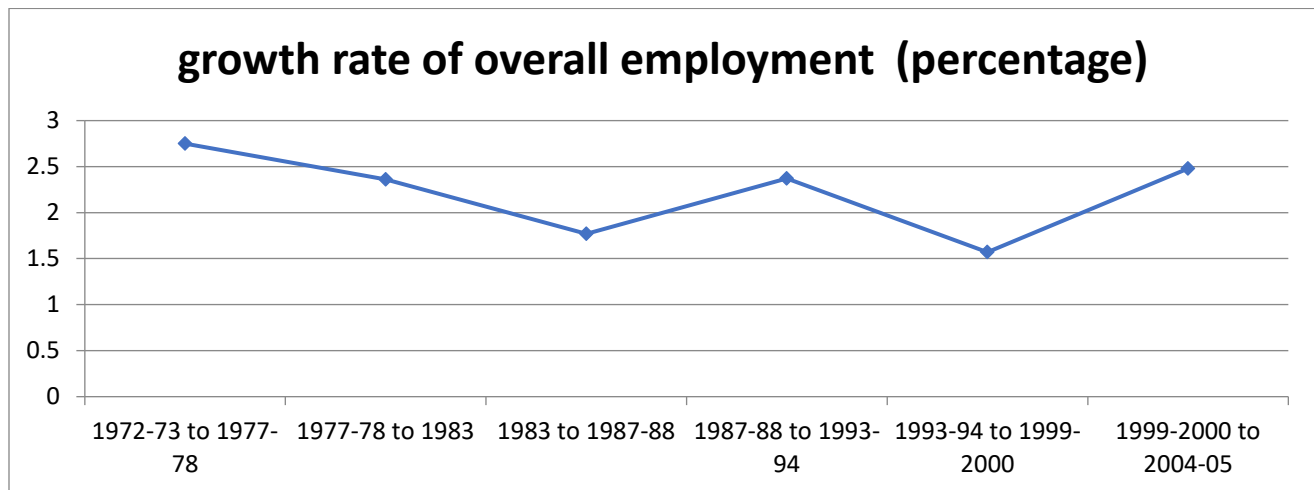


Fig. 1: Growth rate of overall employment in India (percentage)

Overall employment is a combination of both public and private sector employment which is defined as follows:

Public employment – It refers to employment under government sector with the aim of a country’s economic development and growth.

Private employment – It refers to employment under private sector of the economy, though they are also taken as a part of economic development of growth. But mostly they aim at profit-making.

From the above table and graph it is noticed that the growth rate of employment structure of India since 1972-73 are full of ups and downs. In the time period of 1972-73 to 1977-78 the overall employment rate was 2.75 %, it directly 1.77 % between 1983 to 1987- 88, then to 1.57 % during 1993-94 to 1999-2000. Again, it rose up to 2.48 % in the 20th century, during 1999-2000 to 2004-05.

Table 3: Status of employment (UPSS), 1983 to 2011-12

SHARE (%) IN TOTAL EMPLOYMENT OF:	1983	1993-94	1999-2000	2004-05	2009-10	2011-12
REGULAR WAGE WORKERS	13.5	13.2	14.0	14.3	15.6	17.9
FORMAL	-	-	5.4	5.6	6.4	6.8
INFORMAL	-	-	8.6	8.6	9.2	11.0
CASUAL WAGE EMPLOYMENT	29.0	32.0	33.2	28.9	33.5	29.9
SELF-EMPLOYMENT	57.5	54.7	52.8	56.9	51.0	52.2
CASUAL AND SELF EMPLOYMENT	86.5	86.7	86.0	85.8	84.5	82.1
ORGANIZED SECTOR	-	-	9.3	11.1	14.0	16.4
UNORGANIZED SECTOR	-	-	90.7	88.7	86.0	83.6

Source: -computed from unit level data of various NSSO rounds.

-Institute for human development (2014),

-India labour and employment report 2014. New Delhi: Academic foundation

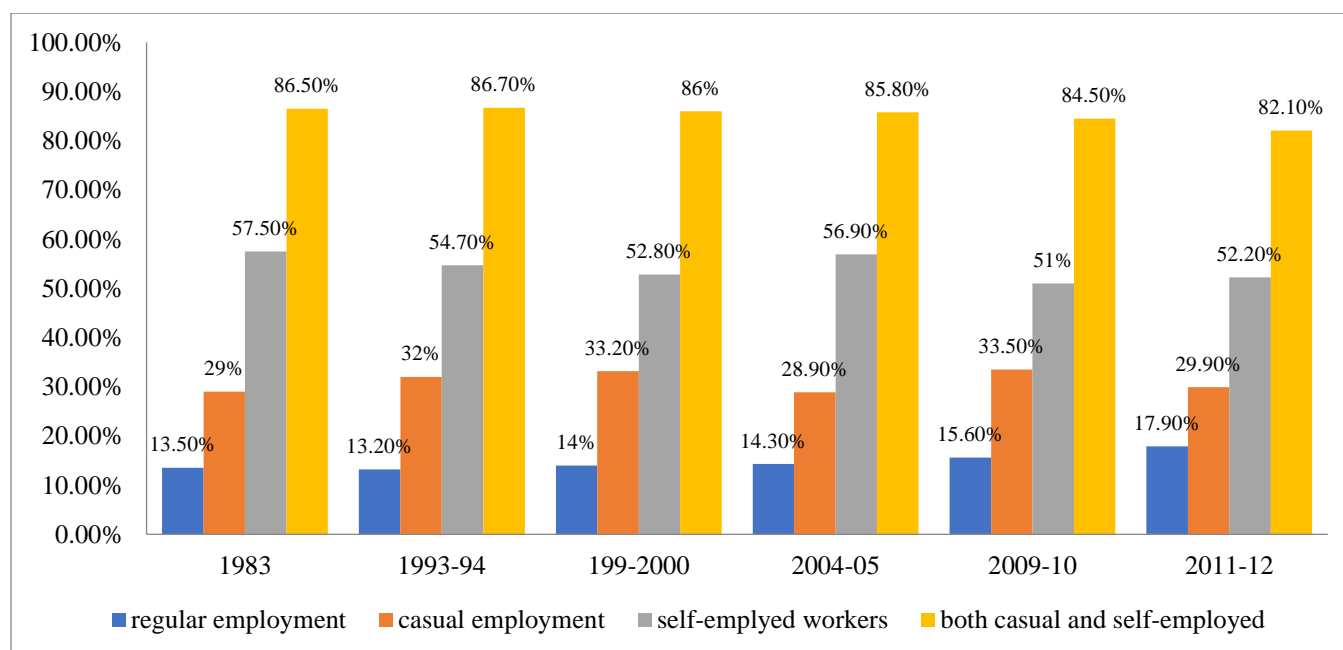


Fig. 2(a): Status of employment (UPSS) related to share (%) in total employment, with respect to regular employment, casual employment and self employed workers and casual-self employed, from 1983 to 2011-12

Regular employment, casual employment, self employed workers and hired workers are defined as follows:

Regular employment –They work under permanent basis of entitled to social security benefit.

Casual employment - They are on a temporary basis like part- time worker. They are not entitled to social security benefits.

Self-employed workers -These employment opportunities are with respect to their own business or profession. They can profit as a reward of their investment in self-employment business/profession.

Hired workers- Here workers are employed by others and are paid wages-salaries as a reward for their services rendered to the employer.

From the graph-figure: 2 a), related to data's given in table 2, it is noticed that percentage of employment related to regular wage, casual wage and self-employment has been increased over the years. Among these three types of worker self employed are greater than both regular waged and casual waged workers. If we consider this status of employment we see that, in 1983 regular waged workers were 13.5%, which increased to 14% during 1999-2000 and again to 17.9% during 2011-12. Whereas, when we check the status of Casual waged workers it is seen that, in the year 1983 it was 29%, which increased to 33.2% during 1999-2000, but it decreased to 29.9% during 2011-12. Following this trend we see that self-employment has always followed a decreasing trend, which is that in 1983 it was 57.5%, and then declined to 52.8% during 1999-2000. Again, during 2011-12, it decreased to 52.2 %

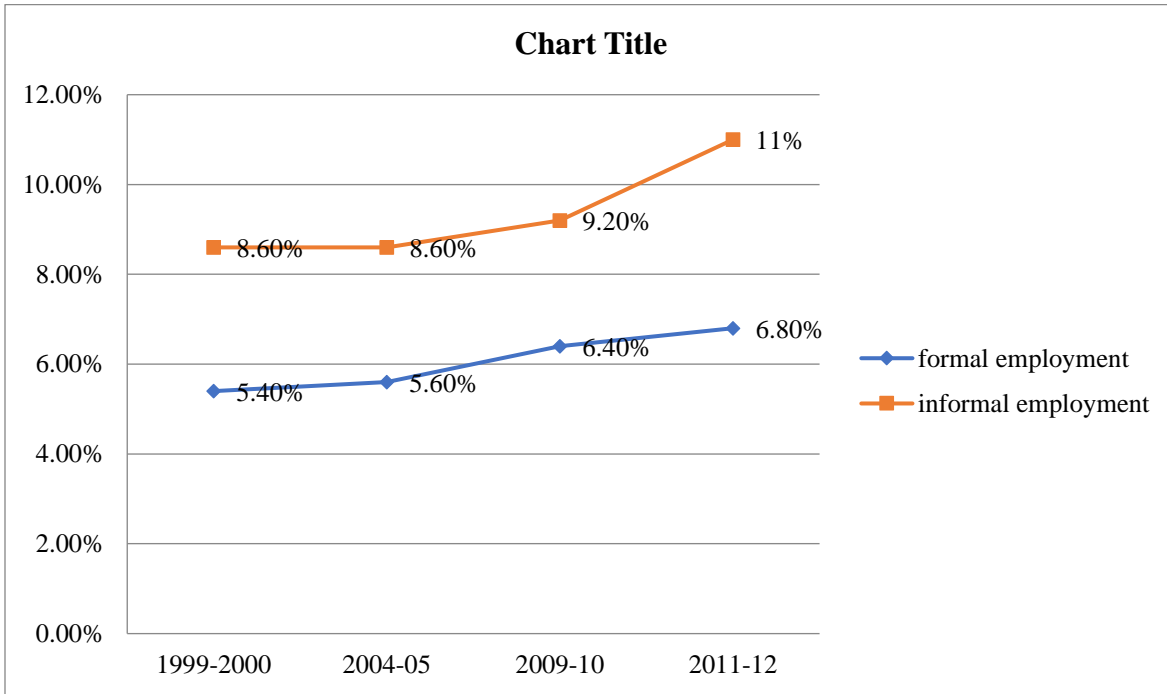


Fig. 2(b): Status of employment (UPSS) related to share (%) in total employment, with respect to formal and informal employment, from 1983 to 2011-12

Formal and informal employment is defined as follows:

Formal Employment- It refers to employment opportunities under organized sector, which is protected by various labor laws with respect to the uncertainties of the market. Here the labors are regular workers.

Informal Employment- It is employment opportunities under unorganized sector, unprotected by labor laws. Here the laborers are mostly casual workers like daily wagers.

From table 2 and its respective graph-figure 2 b), it is seen, though the percentage share of formal and informal sector has been increasing over the years; the percentage of workers employed in the informal sector have always been more than that of the formal sector. During 1999-2000, the percentage share of workers employed in the formal sector was 5.4%, which increased to 5.6% during 2004-05, then to 6.4% during 2009-10 and finally to 6.8% during 2011-12. Whereas, in the informal sector percentage share of workers was 8.6% during both 1999-2000 and 2004-05, then it increased to 9.2% during 2009-10 and finally, it increased to 11% during 2011-12.

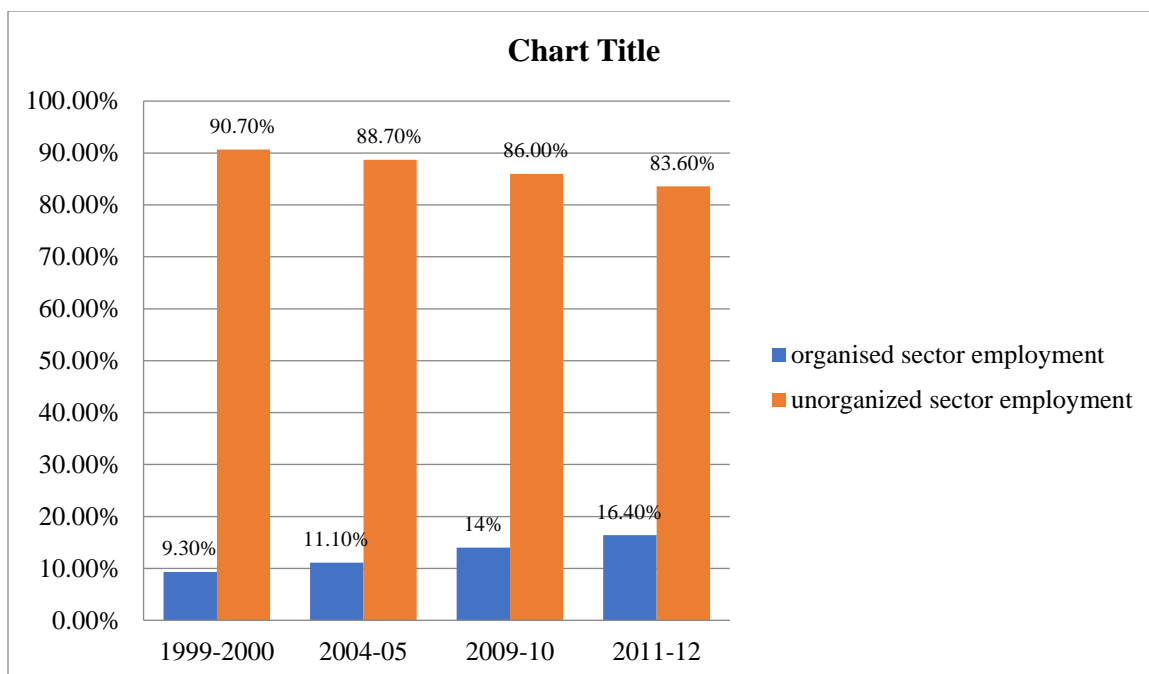


Fig. 2(c): Status of employment (UPSS) related to share (%) in total employment, with respect to organized and unorganized sector employment, from 1983 to 2011-12

Organized and unorganized sector employment are defined as follows:

Organized employment– Here job are provided under the management and control of the country’s government. Under this, employees’ entitled to social security benefits like PF’s, gratuity, pensions etc.

Unorganized employment – Here jobs are under private sector, which mostly does not provide any such social security benefits to their employees.

It is seen from the above figure 2c), with reference to table 2, that over the years, the percentage share of employment in unorganized sector is always greater than organized sector, where organized sector followed an increasing trend, the unorganized sector followed decreasing trend. During 1999-2000, it is seen that organized sector employment level as compared to unorganized sector was only 9.3%, which increased to 11.1% during 2004-05, then to 14% during 2009-19 and again to 16. 4% during 2011-12. And that, of unorganized sector was that it kept on decreasing over the years, it was 90.7% during 1999-2000, which decreased to 88.7% and 86% respectively during 2004-05 and 2009-10. Then it declined to 83.6% during 2011-12.

Table 4: Sector-wise growth of employment (UPSS) and emploment elasticity

SECTORS	EMPLOYMENT GROWTH				EMPLOYMENT ELASTICITY			
	1972-73 to 1983	1983 to 1993-94	1993-94 to 2004-05	2004-05 to 2011-12	1972-73 to 1983	1983 to 1993-94	1993-94 to 2004-05	2004-05 to 2011-12
Primary	1.70	1.35	0.67	-1.98	0.46	0.49	0.26	-0.42
Secondary (including mining and quarrying)	4.43	2.82	3.97	4.46	0.87	0.53	0.59	0.48
Tertiary	4.21	3.77	3.41	2.09	0.77	0.57	0.43	0.17
Total	2.44	2.02	1.84	0.45	0.52	0.41	0.29	0.04

Source: estimates based on various rounds of NSS data on employment and unemployment, adjusted by census population. Institute for human development (2014), India labour and employment report 2014.

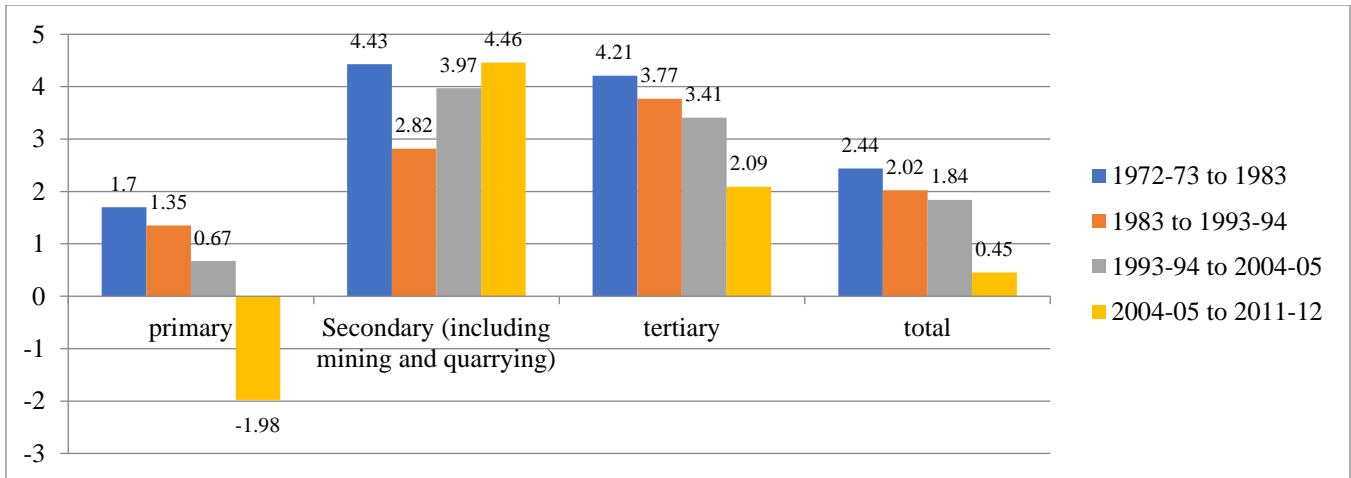


Fig. 3(a): SECTOR-WISE GROWTH OF EMPLOYMENT (UPSS)

It can be analyzed from the above table 4 and figure 3a), that employment growth rate has been declining over the years. It was 2.44% during 1972-73 to 1983, which decreased to 2.02% during 1983 to 1993-94, then to 1.84% during 1993-94 to 2004-05 and after that to 0.45% during 2004-05 to 2011-12.

Under this trend of employment growth in India, it is seen that employment of tertiary sector has been always more than other sector, though its growth rate was always declining over the years same as primary sector. During 1972-73 to 1983, primary sector and tertiary sector employment growth rate was 1.7 and 4.21 respectively, which declined to 1.35 and 3.77 respectively during 1983 to 1993-94, then to 0.67 and 3.41 respectively during 1993-94 to 2004-05. Later, during 2004-05 to 2011-12 primary sector employment growth rate turned out to be negative that is -1.98. Whereas, the employment growth rate of secondary sector in India has always been increasing, which was 4.46 during 2004-05 to 2011-12, except during 1983 to 1993-94 when it declined to 2.82 from 4.43 which was during 1972-73. During 2004-05 to 2011-12, the employment growth rate was highest in the secondary sector with 4.6, followed by the tertiary sector which was 2.09.

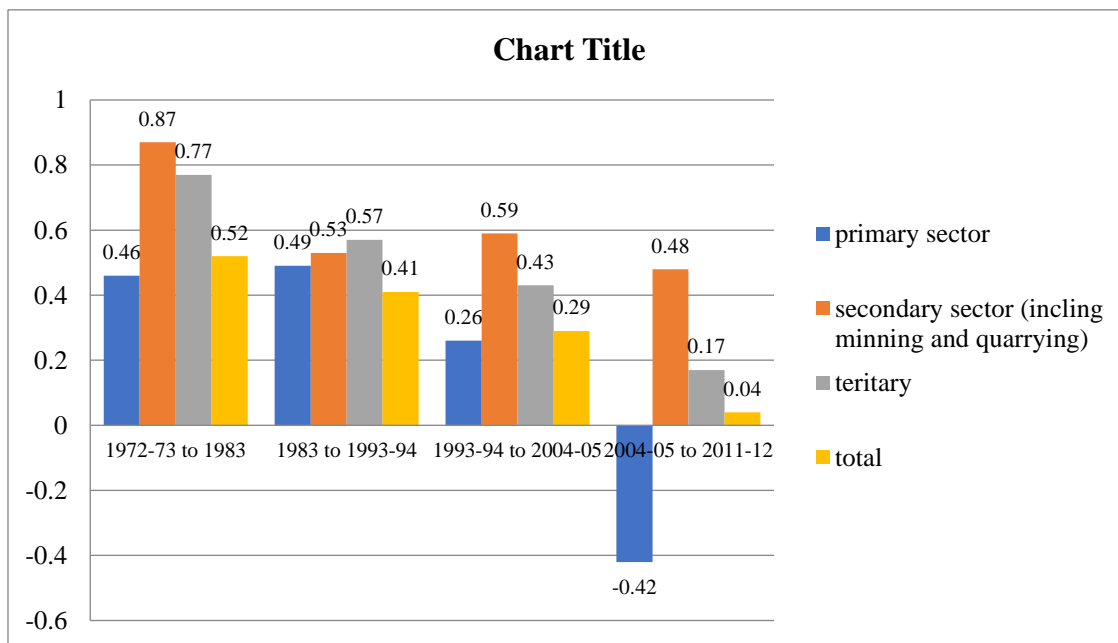


Fig. 3(b): SECTOR-WISE EMPLOYMENT ELASTICITY (UPSS)

The above table 3 and figure 3b), depicts that as per the employment growth rate analyzed above, it is seen that the employment elasticity of India has also been declining over the years. During 1972-73 to 1983, primary sector and tertiary sector employment elasticity was 0.46 and 0.77 respectively, of which primary sector increased to 0.47 and tertiary sector declined to 0.57 during 1983 to 1993-94, then both declined to 0.26 and 0.43 respectively during 1993-94 to 2004-05. Later, during 2004-05 to 2011-12 primary sector employment elasticity declined to a negative value, that is -0.42 and tertiary sector declined to 0.17. The employment elasticity of secondary sector in India has also been decreasing over these years, which was 0.87 during 1972-73 to 1983 and then it declined to 0.53 during 1983 to 1993-94. During 1993-94 to 2004-05, it increased to 0.59 and then again declined to 0.48 during 2004-05 to 2011-12. The total of employment elasticity in India was 0.52 during 1972-73 to 1983, which decreased to 0.41 during 1983 to 1993-94, then to 0.29 during 1993-94 to 2004-05 and after that to 0.04 during 2004-05 to 2011-12.

Table 5: percentage shares of employment (UPSS) and GDP in India

sectors	Sectoral share in employment					Sectoral share in GDP				
	1972-73	1983	1993-94	2004-05	2011-12	1972-73	1983	1993-94	2004-05	2011-12
primary	73.92	68.6	63.98	56.3	48.9	41.1	35.5	28.4	19.0	14.1
Secondary (including mining and quarrying)	11.3	13.8	14.96	18.78	24.37	24.4	25.8	26.8	27.9	27.5
Tertiary	14.78	17.6	21.07	24.92	26.73	34.5	38.7	44.8	53.0	58.4
Non-agricultural	26.08	31.04	36.02	43.7	51.1	58.9	64.5	71.6	81.0	85.9

Source: estimates based on various rounds of NSS data on employment and unemployment.

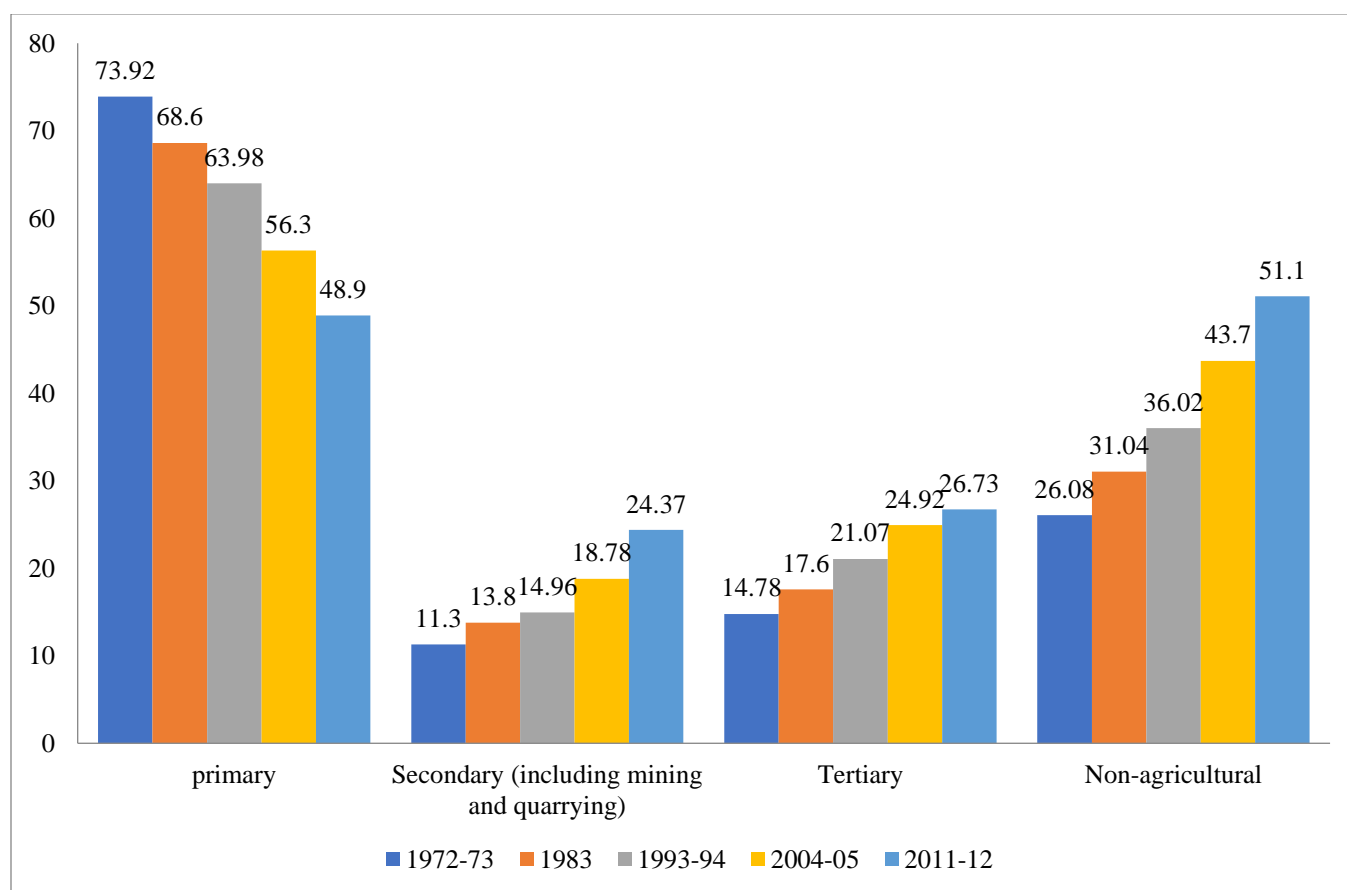


Fig. 4(a): sectoral share of employment (UPSS)

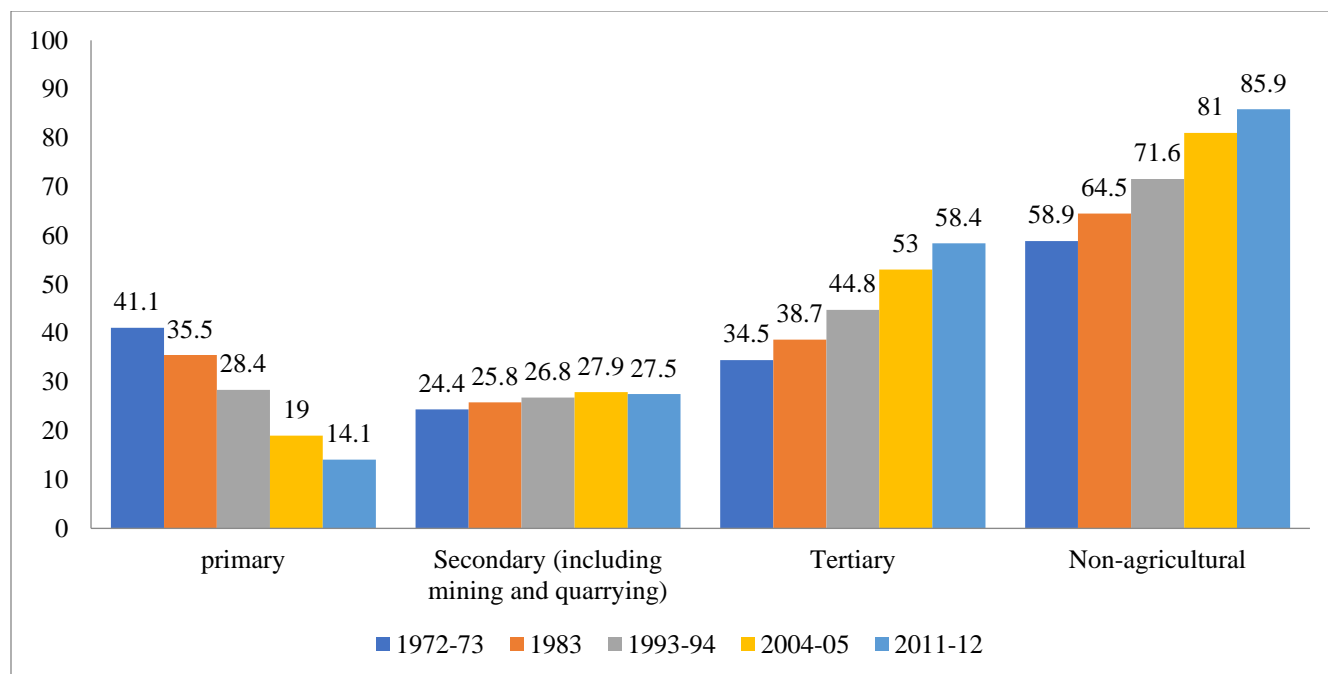


Fig. 4(b): sector-wise GDP growth

It can be analyzed from table 4, accompanied by figure 4 a) and b) that though the sectoral share of employment has been always more of primary sector; GDP growth is high in non-agricultural sector of India. In 2011-2012, it is seen that the employment share of non-agricultural sector was 51.1 percent, that is more than 48.9 percent, 24.37 percent, 26.73 percent of primary, secondary and tertiary sector respectively.

Table 6: distribution of working force by industry division in India (percentage)

Industry division	1972-73	1983	1993-94	2009-10
AGRICULTURE				
Agricultural forestry, fishing and hunting	74.0	68.1	63.9	53.2
INDUSTRY				
Mining and quarrying	0.4	0.6	0.7	0.60
Manufacturing	8.8	10.7	10.6	11.0
Electricity, gas and water	0.2	0.3	0.4	0.30
Construction	1.8	2.3	3.2	9.6
Sub-total	11.2	13.9	14.9	21.5
SERVICE				
Wholesale and Retail trade, restaurants and hotels	5.0	6.9	7.6	10.8
Transport, storage and communication	1.8	2.5	2.9	4.3
Other services	7.8	8.8	10.7	10.3
Sub-total	14.6	18.2	21.2	25.4
Activities not classified	0.2	0.4	-	-
Total	100.0	100.0	100.0	100.0

Source: NATIONAL SAMPLE SURVEY ORGANIZATION 27th, 32nd, 38th, 43rd, 46th, 50th & 66th rounds with reclassification of shares of agriculture, industry and services as given in IAMR manpower profile in India (2004), planning commission-eleventh five year plan

The same was for GDP growth, which was 85.9 percent share of non-agricultural sector, greater than 14.1 percent, 27.5 percent, 58.4 percent of primary, secondary and tertiary sector respectively. It is also seen that primary sector, shares of both employment and GDP growth has always a declined over the years from 1972-73 to 2011-12, whereas percentage share of both employment and GDP growth has followed an increasing trend of growth in secondary, tertiary and non-agricultural sectors of India.

With reference to the above table, when we check the workforce of India, we see that since 1972-73, mostly Indians were engaged in doing agro-based work. That is, they were mostly doing agriculture sector jobs as compared to industry and service sectors. But with the passage of time their interest in agro-based work decreased. This is analyzed from the data's, that during 1972-73, that workforce engaged in agriculture sector was 74%, when decreased to 68.1%, then to 63.9% and again to 53.2% in the years 1983, 1993-94 and 2009-10 respectively.

Further, when we analyze, the percentage of workforce engaged in the industrial sector, it is seen that the highest number of Indians was engaged in manufacturing jobs followed by construction jobs. As in the manufacturing sector, during the years 1972-73, the workforce was 8.8%, which increased to 10.7% in 1983, then to 10.6% during 1993-94 and finally to 11% during 2009-10. Whereas, in construction jobs, during 1973-74 the workforce was 1.8%, which increased to 2.3%, then to 3.2% and finally to 9.6% in the years 1983, 1993-94 and 2009-10 respectively.

For mining and quarrying the percentage of workforce was 0.4% in 1973-74 which increased to 0.6%, then to 0.7% and again to 0.6% in the years 1983, 1993-94 and 2009-10 respectively. A similar case was noticed for electricity, gas and water field jobs, which are the percentage of workforce, were 0.2% in 1973-74 which increased to 0.3%, then to 0.4% and again to 0.3% in the years 1983, 1993-94 and 2009-10 respectively.

When we consider the service sector, it is noticed that the percentage of Indian working under it, always increased over the years and the best field of work was wholesale and retail trade were the percentage of workers engaged in it were 5% in 1973-74, which increased to 6.9%, then to 7.6% and finally to 10.8% in the years 1983, 1993-94 and 2009-10 respectively. Transport, storage and communication fields also had the same sequence, which is the percentage of workforce engaged in it were 1.8% in 1973-74, which increased to 2.5%, then to 2.9% and again to 4.3% in the years 1983, 1993-94 and 2009-10 respectively.

The percentage of workforce other jobs in service sector were 7.8% in 1973-74 which increased to 8.8%, then to 10.7% and again to 10.3% in the years 1983, 1993-94 and 2009-10 respectively.

Table 7: jobs in different sectors (in lakh)

Sectors	Total jobs in 2016	Change January 2016 – January 2017	Percentage change
Manufacturing	101.2	1.0	0.9
Construction	3.7	(-) 0.3	(-) 6.8
Trade	14.5	0.3	1.8
Transport	5.8	0.2	3.1
Acc. & Restaurants	7.7	(-) 0.1	(-) 0.9
IT/BPO	10.4	0.2	2.1
Education	50.0	0.7	1.3
Health	12.1	0.4	2.9
Total	205.2	2.3	1.1

Source: quarterly employment survey, Labour Bureau, march 2017.

With reference to table 6, related to availability of jobs in India in different sectors (in lakh) during the year 2016 and it changes in 2017. It is seen that in the year 2016, maximum jobs were available in the manufacturing sector, followed by education sector, which was 101.2 lakh and 50 lakh respectively. Whereas, the availability of jobs in all other sectors of India was below 25 lakh. When we analyze in descending order, it is noticed that in the trade sector, it was 14.5 lakh, then in health sector, it was 12.1 lakh, then in IT/BPO field it was 10.4 lakh. Accordingly, in Acc and restaurant field, it was 7.7 lakh, followed by transport and construction sector where it was 5.8 lakh and 3.7 lakh respectively.

When we analyze the changes in availability of jobs in India in-between January 2016-2017, highest number of change was 1 lakh which took place in the manufacturing sector, then 0.7 lakh jobs increased in the education sector, followed by 0.4 lakh

jobs increase in the health sector. Further 0.3 lakh jobs increased in the trade sector, then 0.2 lakh jobs increased in both IT/BPO and transport fields. Whereas the availability of jobs declined in both Acc-restaurant and construction sectors, which is that it decreased by 0.1 lakh and 0.3 lakh respectively.

Table 8: Employment and unemployment scenario in India.

Methods	1999-2000	2004-05	2009-10	2011-12
a) Persons in labour force (in millions)				
US	407.0	469.0	468.8	483.7
CDS	363.3	417.2	428.9	440.4
b) Persons and person days employed (in millions)				
US	398.0	457.9	459.0	472.9
CDS	336.9	382.8	400.8	415.7
c) Unemployment rate (in percentage)				
US	2.2	2.3	2.0	2.2
CDS	7.3	8.2	6.6	5.6

Source: various survey rounds of NSSO on employment & unemployment in India.

Note: US (principal + subsidiary) measures employment in persons, CDS measures employment in person days.

National sample survey organization (NSSO) uses three methods to measure employment status, which are as follows:

1. **Usual status (US) approach:** It is with reference to the period of a year, which is 365 days preceding the date of survey.
2. **Current Weekly Status (CWS) approach:** It is with reference to a period of seven days of a week, preceding the date of survey.
3. **Current Daily Status (CDS) approach:** It is with reference to each day of the week, preceding the date of survey.

With reference to the table: 7, NSSO report on employment and unemployment status in India since 1999-2000 to 2011-12 is prepared and given on the basis of Usual Status (US) and Current Daily Status (CDS) approaches of measuring the employment rate.

As per the US approach the employment and unemployment scenario in India was as follows:

- Persons of the labour force were 407 million during 1999-2000 which increased to 469 million in 2004-05. In 2009-10, it decreased to 468.8 million, followed by an increase of 283.7 million persons employed during 2011-12.
- Persons and person days employed status was that, it kept on increasing, which was that during 2009-10, it was 398 million, then 457.9 million in 2004-05, 459 million in 2009-10 and finally 472.5 million in 2009.
- The unemployment rate of India was 2.2% during 1999-2000. This increased to 2.3% in 2004-05, then decreased to 2% in 2009-10 and again increased to 2.2% in 2011-12.

As per the CDS approach the employment and unemployment scenario in India was as follows:

- Persons of the labour force were 363.3 million during 1999-2000 which increased to 417.2 million in 2004-05. In 2009-10 to 428.9 million, followed by an increase of 440.4 million persons employed during 2011-12.
- Persons and person days employed status was that, it kept on increasing, which was that during 1999-2000, it was 336.9 million, then to 382.8 million in 2004-05, 400.8 million in 2009-10 and finally 415.7 million in 2009.
- The unemployment rate of India increased from 7.3% during 1999-2000 to 8.2% in 2004-05. Then it kept on decreasing, which was that it declined to 6.6% in 2009-10 and finally to 5.6% in 2011-12.

Table 9: Distribution of employment generation across states (2010-11)

Serial No.	states	No. of households provided employment in 2010-11 (in millions)	Persons days employment created in 2010-11 (in millions)	Percentage of women employed	Percentage of households with 100 days employment
1	Andhra Pradesh	6.02	301.46	57.0	13.2
2	Assam	1.54	43.35	24.8	3.2
3	Bihar	2.53	103.84	29.1	8.0
4	Chhattisgarh	2.57	109.33	43.7	6.9
5	Gujarat	1.12	46.18	45.7	7.3
6	Haryana	0.24	8.43	34.7	3.9
7	Himachal Pradesh	0.45	20.92	55.6	6.1
8	Jharkhand	1.83	80.44	32.2	7.7
9	Karnataka	2.22	109.82	45.2	5.9
10	Madhya Pradesh	4.03	176.75	41.8	9.1
11	Maharashtra		18.42	48.6	8.6
12	Orissa	2.00	97.58	39.3	10.2
13	Punjab	0.29	7.78	38.2	2.0
14	Rajasthan	5.34	259.48	68.1	6.4
15	Tamil Naidu	5.97	263.73	76.8	7.4
16	Uttar Pradesh	8.11	311.50	15.2	5.8
17	Uttarakhand	0.50	20.28	43.9	5.4
18	West Bengal	5.32	143.11	31.6	2.5
	India	53.47	2278.92	46.5	7.5

Source: computed by authors based on the data available in the public domain at www.nrega.nic.in

With reference to the above table, when we check the status of Indian status in providing jobs to India's citizens. It is found that in 2010-11, Andhra Pradesh was the best in providing jobs to the households. It provided jobs to 6.02 million Indian households, followed by Uttar Pradesh, which provided jobs to 8.11 million. Under this category, Haryana had the worst condition with only 0.24 million households employed in it. Conditions of Punjab, Himachal Pradesh and Uttarakhand was also not good as only 0.29 million, 0.45 million and 0.50 million of their households were employed respectively in these states.

When we consider persons days employment created in during 2010-11, ranking turned to be opposite, here Uttar Pradesh turned to be best by providing 311.56 million jobs of it, followed by Andhra Pradesh, which provided 301.46 million jobs. Here Rajasthan provided 263.73 million jobs and Tamil Nadu provided 259.48 million jobs. Here Punjab was having least person days employment, which is 7.78 million.

With respect to women employed in each state, it is seen that in 2010-11 Tamil Nadu had maximum women employed under it, which is 76.8% of Indian women, and then was Rajasthan which had employed 68.1% of them. Then 55.6%, 45.7% and 43.7% of Indian women were employed in the state of Himachal Pradesh, Gujarat and Chhattisgarh respectively. Under this Uttar Pradesh had the least percentage of women employed, which is 15.2%

Under the category of jobs related to 100 days employment in the same year, it is noticed that the Orissa had highest number of employment, which is 10.2%, followed by Madhya Pradesh with 9.1% of it. And in West Bengal only 2.5% of households were employed under 100 days' work employment in 2010-11.

6. NEED AND IMPORTANCE OF INCLUSIVE EMPLOYMENT OPPORTUNITIES IN INDIA

Employment opportunities are very important for economic development of the country. As the job opportunities in both government and private sector, whether it full-time, part-time, self-employed etc, creates happiest atmosphere in the life of individuals (citizens), heading towards increase the productivity of the country leading to growth in GDP. So, accordingly we need to check the points as to how inclusive employment opportunities in India can increase employment opportunities for Indian citizens along with reduction in corruption, removal of terrorism and thus helps in poverty alleviation from India.

On this basis, comes the necessity of inclusive employment opportunities in India to build happy and prosperous environment in India. Thus, the following factors show the need and importance of inclusive employment opportunities in India, which are as follows:

- i. **ECONOMIC DEVELOPMENT:** Employment rate is strongly linked with economic growth activities, which are interrelated issues of economic development. As employment contributes to economic growth with an increase in productivity of the working sector of the country. Similarly, an increase in economic growth creates new employment opportunities for its citizens, with new investment policies. This takes place as any employed person of the country always aims to work hard to achieve his/her goals. This improves the productivity of any business, adding to the productivity of the country. In this way, the positive effect of employment also brings new investment in the market. Thus, this process leads to economic development of the country at a high level in a progressive manner.
- ii. **SOCIAL DEVELOPMENT:** It is seen that every citizen of the country suffers from high level of tensions, if they don't have jobs which could provide them salary, to carry on their daily livings. So, accordingly when people get jobs on inclusive terms, they work hard to earn income to live their life happily in a productive manner, which in turn improves their standard of living in the society. Thus, when people are satisfied with their salaries-giving them income to live their life, they also start participating in social development activities like donations for academic societies motivation programme and training activities with respect to employment. So, accordingly educational and professional promotional trips in and out of country, sports clubs, NGOs, economic surveys-developmental research programmes etc, for progressive and sustainable economic growth and development of the country. In this way inclusive employment opportunity motivates social development.
- iii. **REDUCTION OF CORRUPTION:** Economic surveys have shown that basically corruption starts when any deserving citizens don't have job giving them money or when they feel cheated by not getting the deserve job as per their qualifications. On this basis, when under inclusive employment opportunities, jobs are provided without any discrimination-heading towards equal opportunities deserving candidates as per their qualifications. They start behaving positively by participating in research and innovations to make country fruitful and developed. Thus, in order to stop corruption, inclusive employment opportunities for deserving candidates of the country act as a necessity in the employment providing activities of both government and private sector of the concerned country.
- iv. **REDUCTION OF POVERTY:** Inclusive employment opportunities as per the needs of citizens help to reduce poverty both directly and indirectly. As employment directly gives financial stability to those who are employed and also provides security to all doing jobs including people below poverty-line. And indirectly, employment teaches people how to live and survive with success in a respectful manner under their working atmosphere. In this way both direct and indirect benefits inspire people to work hard exploring new ideas heading towards personal development by handling their daily-life finance and also leads towards national development with progressive productivity of the employed citizens of the country.
- v. **REDUCES, REMOVES AND STOPS TERRORISM:** It is seen from the daily news and surveys that when well educated and intelligent people don't get jobs as per their qualification and at the same time they see that people without qualifications are getting high level jobs. These people who find themselves cheated by the authorities, start using their intellect in wrong ways, that is to survive, they may become thieves, terrorists, extremists etc, which proves dangerous for the country. Thus, to stop creation of social crises with respect to these criminal activities, the inclusive employment opportunities can act as an effective measure for reducing-removing-stopping terrorism by providing equal job opportunities as per the qualifications and needs of the citizens of the country.

So, accordingly the above fact shows that inclusive employment opportunities is a fundamental requirement for economic growth heading towards progressive and sustainable economic development of India. Thus, in India, this can take place practicing following processes:

- Improvement of economic framework conditions heading towards economic development through increase in productivity leading to rise in India's economic growth and social development with increase in standard of living of Indians.

- Removing the bureaucratic obstacles by removing corruption and terrorism through equal opportunities, jobs with respect to qualification of deserving candidates-citizens of India.
- Establishment of promotional structure of inclusive employment opportunities with new investment in the job sector heading towards public and private sector partnership to give job without discrimination.
- Reduction of poverty by establishing poverty-oriented financial systems, by providing inclusive jobs with financial stability and security as per need of Indian citizens.

In this way inclusive employment opportunities give an opportunity for jobs on equal terms with respect to their qualification, to share the benefits of economic growth enhancing the right competencies for dynamic and sustainable economic development of the country.

7. CHALLENGES FACED BY INDIA TO IMPLEMENT INCLUSIVE EMPLOYMENT OPPORTUNITIES.

Inclusive employment opportunities good connections are important, no matter who is looking for a job. Statistics on disability in India vary widely and its accuracy is always questionable. It is seen that still all the statistical figures point out the gaps in the employment system of India, with respect to job for people with disabilities, job on the basis of merit following equality for all etc. This shows that there exist of a lot of challenges at both micro and macro level of India related to inclusive employment opportunities, which brings forward the fact that there is a need in the Indian government system, to step up their efforts to reach their goals of “**right to employment on the basis of both merit and needs**”, following the principle of equality in the both respective fields. We know that Job opportunities develop with social connections. The reality is that it’s not just employment specialists that suggest someone to get a job. But people who live in a residential setting with residential team also play an important role in maintaining successful employment. So, accordingly inclusive employment is a team effort between persons, their parents, residential specialists, employment specialists and businesses.

Thus, the challenges faced by in under these terms and conditions can be divided into two types:

1. **Challenges at macro level:** It refers to challenges related to generation of productive (decent) work for all sections, regions, sectors etc; including the entire socio-economic groups.
2. **Challenges at micro level:** It refers to challenges faced by individual-citizens in getting employment under all legal terms and conditions.

There are certain specific **micro level challenges** with respect to **implementation inclusive employment** in India, which is as follows:

- a. To set “getting ready to work” mindset for all jobs with respect to jobseekers.
- b. How to harmonize the expectation of the business world with regulations of the human services system.
- c. How to ensure that, parents are also on board, with respect to inclusive employment of their child.
- d. What if the person’s work schedule doesn’t match their family’s schedule or their residential employee’s schedule?

In broader sense of **macro level challenges** with respect to **implementation inclusive employment** in India, are as follows:

- a. Rapid population growth along with slow economic growth in India. This leads to low employment generation in all sectors, regions and for all socio-economic groups of India.
- b. Lack of generation of productive work in India, particularly for
 - For poorer sections of population
 - Backward regions
 - Lagging sectors etc.
- c. The Inclusion of small enterprises and producers preferably in a decentralized framework of employment in India.
- d. Problems related to controlling inequalities and disparities with respect to employment generation in India.
- e. Many Indian Employment generation programmes, lacks long-term perspective in designing and in implementation.

- Weak planning components available under employment generation schemes like: Lack of perspective planning.
 - Lack of convergence.
 - Lack of multi-level planning.
- f. Basically, in most of places of India, the role of various institutions and social mobilization is not recognized.
- g. Lack of commitment and poor supervision along with low monitoring, in the field of work from both Indian employee and employer.
- h. Lack of proper and fruitful political strategy to address and solve structural issues in the field of employment generation in India.
- i. Evolution and use of corruption, in the field of getting and giving employment in most of areas of India.
- j. Still, there exists many educational and employment training system which is inappropriate, along with low technological advancement in many of the employment sectors of India.

8. MEASURES WHICH ACT AS A NECESSITY FOR IMPLEMENTING INCLUSIVE EMPLOYMENT OPPORTUNITIES IN INDIA.

To overcome these challenges we need to assist people to find employment, focusing on their abilities, on the basis of what they can do and assisting them to find the place where they can do it well. We also have to focus on the fact that just because someone has been unsuccessful in one situation, it doesn't mean they will be unsuccessful in another. It is also our duty-job to provide support to assist a person with a disability to find the right job match which will ultimately lead to them, as contributing members of the community.

So, under inclusive employment as we move forward with system change, it's important to keep a positive attitude about overcoming the barriers, that hold people with disabilities back from showcasing their talents and skills which getting paid. Thus, the measures which can help to achieve inclusive employment opportunity in India are as follows:

- i. Measures to make inclusive employment a reality and advanced strategy of development in India:** Keystone to human service under inclusive employment believes that all people can be contributing involvement in the community. In some situations, a person may need more support than others, but it is a fact that employment is a goal for all working age youth and adults.

Under this following measures should be adopted:

- a) **Creation of employment opportunities leading to economic development:** Inclusive Employment opportunities for citizens in India can help to reduce corruption, remove terrorism, which plays an important role in poverty alleviation from the country. That's why inclusive employment is necessary to build a happy and a prosperous environment in India.
- b) **Community engagement and team work, to set the mind of people with respect to inclusive employment opportunities:** Team work is very essential to support any person to change their mindset and adjust in life of the workforce. Inclusive employment is a team effort between persons, their parents, residential specialists, employment specialists and business-work organization, which will surely empower the persons to make a right choice for self development heading towards economic growth and development of the country's employment system as a whole.
- c) **To give knowledge about inclusive employment opportunities for an efficient increase in citizens standard of living:** We know that employment opportunities is the best way to improve the standard of living, as the employed person get money from it, which motivates them to work hard to achieve their goals. Thus, inclusive employment is a very important movement from segregated settings to inclusive settings with respect to employment opportunities, to improve the productivity of the company by raising investment on standard of living of the citizens.
- d) **Reduction of social tensions with the help of job satisfaction:** Money and hunger are the biggest reason of social tensions. When people get money for their hard work, they feel happy and thus, they start to work harder than before, increasing the productivity of companies they work for. At the same time to share their happiness,

they start spending time with their family, friends and relatives. Thus, it's really important to provide inclusive jobs to citizens followed with job satisfaction in terms of their salary-income, helping them to live life with efficient social growth and development.

- e) **Reduction of level of corruption in the employment sector:** From the survey made we have seen that India is famous for corruption. It is because when people don't have money or not getting what they deserve, they feel cheated. In this way, if the deserving candidate doesn't have a platform or a job, then they start doing/following corruption.

So to reduce corruption inclusive employment opportunities are very important for providing jobs to all in order of their deserving status in both private and government sectors of India.

ii. Measures to support inclusive employment opportunities as a developmental strategy in India: In any society, mostly unemployment rates for persons having problems and disability is very high. So, to bring in development in society, reducing unemployment, we need to adopt inclusive employment with respect to following measures:

- a) **Market-oriented labour training system, both vocational and technical education:** Employment policy should be linked with development of quality management with respect to their qualifications. This is most efficiently possible under inclusive employment opportunities, which increases the efficiency of employees on the basis of giving job with respect to their qualification. This brings positivity in the work and is combined with management training, which increases the efficiency of workforce followed by increase in productivity of country, under all business and industrial sectors.
- b) **Microfinance leading to secure livelihood of labour:** Many poor people do not have any access/facilities to any kind financial services, which they need frequently. Thus central bank of India should overcome these challenges by adopting the inclusive growth strategy with respect to financial services under employment sector. So, accordingly by creating, setting and enabling credit reference agencies, in terms of micro-finance associations, small loans should be made available as per needs heading towards accreditation of development income of labour. In this way problem of secure livelihood can be solved by monitoring these agencies work from time to time.
- c) **Insurance facilities heading towards local and regional economic development:** Insurance is a sustainable means for preventing tragedies with respect to extreme illness or extreme situation related to low income. Thus, it is necessary to advise the insurance supervisory authorities, to promote insurance plan, policies and facilities following the principle of inclusive growth in the employment sector.
- d) **Preventing migration with the help of stability in employment-financial sector:** We know that a stable financial system ensures proper allocation and agglomeration of capital. This reduces the risks related to migration of citizens for employment in other countries. And at the same time motivates other countries citizen to migrate to our country for work.

Thus, we should aim to establish environmentally and socially sustainable economic practices related to financial stability, to reeducate migration, promoting inclusive employment opportunities for all.

- e) **Increasing the quality of employment-infrastructure facilities, along with consumer protection heading towards sustainable development:** Sustainable development of organizational quality infrastructural systems, safeguards-protect the employees' benefits. This boost up growth and development of employment, increasing the quality of commercial production. Thus, this measure should be adopted under inclusive employment strategy, to safeguard the macroeconomic stability with respect to economic growth and development.
- f) **Increase in trade under regional economic integration:** Globalization is a very part of economic development, entering into regional economic communities to bring numerous advantages to concerned country. This also enhances their competitiveness with strategies related to trade policy. So, this measure should be adopted, to increase the benefits of employment of the concerned country with respect to international agreements, regional economic integration etc, increasing the sale of prods through trade. Thus, increasing the opportunities of inclusive employment through a partnership of national and regional level should be adopted.

Thus, if the government of any country wants to develop of the demography of the country, with improvements in the unity of people, by increasing employment facilities, preventing child labour etc. This could be only done if the people of the country

stay healthy and fit, creating a new path for natural resource development and innovation. So, accordingly for rational success of these goals, the government should work hard to provide inclusive jobs with career development opportunities to all jobseekers of India.

9. CONCLUSION

Full employment with inclusion is an important part of economic, social and environmental development process and procedure of any country. This is because employment provides financial freedom and decision making power. Under this efficient team work and community engagement is very essential to encourage people to maintain their employment opportunities on an inclusive basis. Inclusive employment opportunities depicts that it truly wants to support people to have a meaningful life, valued roles and access to all opportunities. So that everyone has access to inclusive employment involving identification of their skills and interest, finding position by doing meaningful work, earning pay checks and receiving benefits. Thus, it's really important to provide inclusive jobs with job satisfaction in terms of salary-income to live efficient life followed by social growth and development. When job seekers see that government is working transparently with the objective of inclusive growth, providing equal opportunities in terms of their qualification, they start to work positively with their active participation in the process of social development. Thus, this positive behaviour reflects research and innovation that makes the country fruitfully developed. Hence, in this, it proves the fact that **“INCLUSIVE EMPLOYMENT ACTS AS A STEM OF INCLUSIVE GROWTH.”**

REFERENCES

- [1] Davie Campbell. “7 Benefits of Inclusive Employment practices.” ALTUS Dynamics (2018) Available on <https://www.employerdisabilityinfo.ie/>.
- [2] World Press (2016). “INCLUSIVE EMPLOYMENT- Changing minds and lives through keystone’s employment services.” Available on <https://inclusiveemployment.worldpress.com/>
- [3] Technical Resources Division (2011). “Policy paper on Inclusive Employment- Handicap international: Resource techniques.pdf”, pp: 1-78. Available on <https://www.hiproweb.org/>
- [4] Shenoy M (2011): “Persons with disability and the Indian labour market: Challenges and opportunities”, publication of International Labour Organization (ILO).pdf. pp. 1-38.
- [5] Chapman T and Saran S (2018). “India: Inclusive Growth and the employment challenges.” Available on <https://www.oecd-forum.org/>
- [6] Sharma A (2018). “Hiring and creating a culture that is inclusive to persons with disability: A toolkit.” Available on <https://www.peoplematters.in/>
- [7] Press information Bureau, Government of India, Ministry of Finance (2018). “Promoting Inclusive Employment- Intensive industry and Building resilient infrastructure are vital factors for economic and development, Says the Economic Survey.” Available on <https://pib.nic.in/>
- [8] Dr. Narendra Kumar Illurun and K Suddha (2017). “Inclusive growth in India: Challenges ahead and Prospects”, National Journal of Advanced Research, Vol 3, Issue 1, January 2017, pp. 45-49. Available on <https://www.allnationaljournal.com/>
- [9] Kannaujia S. (2016). “Inclusive and sustainable growth in India: Issues and challenges”, published by International Journal of Applied Research.pdf, pp. 581-585. Available on <https://www.allresearchjournal.com/>
- [10] Sanghi S and Khurana S (2018). “National Employment Policy for India: A perspective”, Available on <https://niti.gov.in/>
- [11] JATELINE (2010). “15 effective steps taken by government to increase employment in India”, Available on www.preservearticles.com
- [12] The Economics Times (2017). “Unemployment in India to marginally in 2017-18: Report”, Available on <https://economictimes.indiatimes.com/>
- [13] Goyal M (2017). “What needs to be done and is being done to employ more Indians, and to make them employable.” Available on <https://economictimes.indiatimes.com/>
- [14] S Vijaykumar (2016). “Challenges ahead for Inclusive Growth in India”, published by IJRDMs.pdf, Vol. 6, No. 1, January-June 2016, pp. 31-38.
- [15] Pettingar T (2017). “Policies for reducing unemployment”, Available on <https://www.economicshelp.org/>

Mindfulness and Life Satisfaction of Selected Faculty Members of Laguna State Polytechnic University

Rowena A. Reyes

Laguna State Polytechnic University – San Pablo City Campus
corepsyche2000@yahoo.com

ABSTRACT

This study describes the relationship between the levels of mindfulness and life satisfaction of selected faculty at LSPU-SPCC. Descriptive Correlation Design was utilized. Using random sampling technique, 35 faculty members were selected from different colleges. Majority of the respondents were between ages 21-30 and 41-50, married, have one child, Catholic and working as part-time instructors. They received an overall mean of 65.37 in terms of mindfulness which falls within high level, suggesting high level of awareness of their external as well as internal environment. In terms of life satisfaction, respondents gained 119.48 overall mean score which is within low level. When it comes to relationship between profile and mindfulness, only age and gender factors received significant results implying that these can influence the level of mindfulness. Regarding the relationship between profile and Life satisfaction, only age and civil status received significant results. Furthermore, there is a positive relationship between mindfulness and life satisfaction of the respondents.

Keywords: awareness, life-satisfaction, mindfulness.

1. INTRODUCTION

With busy work schedule and increasing life demands, almost everyone find less time to rest and take notice of what is happening outside as well as inside of themselves which might lead to anxiety, discontent and even depression. “Being at the present” may address this concern. Kabat-Zinn described mindfulness as paying attention in a particular way, on purpose in the present moment and nonjudgmentally (Bodhipaksa, 2017). It is a way of life, being aware and connecting to one’s feelings at the present moment which may give a person a sense of fulfillment or satisfaction especially when things are happening in accordance to what he/she desires.

Life satisfaction is a related concept to mindfulness. According to Summer as cited by Prason, R. and Chaturvedi, R. (2016). Life satisfaction is a positive evaluation of the conditions of your life and it measures up favorably against your standards and expectations. This may be assessed in terms of mood, satisfaction with relations with others and with achieved goals, self-concept, and perceived ability to cope with daily life.

2. OBJECTIVES OF THE STUDY

The study aims to investigate whether mindfulness has relationship with life satisfaction of the respondents. The findings may be helpful in optimizing mindfulness and life satisfaction which can lead to better physical and mental health among faculty members of LSPU San Pablo City Campus.

3. CONCEPTUAL FRAMEWORK

There are diverse definitions of mindfulness. According to Jon Kabat-Zinn as mentioned by J. Gu et al. (2014) the most commonly used operational definition is that mindfulness is the quality of consciousness or awareness that arises through intentionally attending to present moment experience in a non-judgmental and accepting way. It originates and is currently used in western studies to develop and improve psychological functioning and well-being.

The term life satisfaction is complex and generally subjective. The term is sometimes used interchangeably with happiness. It can be defined as one’s evaluation of life as a whole by looking at the bigger picture rather than the feelings and emotions that are experienced at the moment. According to Ackerman (2018), life satisfaction theory can be better understood utilizing the PERMA model by Martin Seligman who is the founder of positive psychology. His model is based on the idea that there are

five factors to consider to determine life satisfaction and these include Positive Emotions, Engagement, Relationships, Meaning and Achievement.

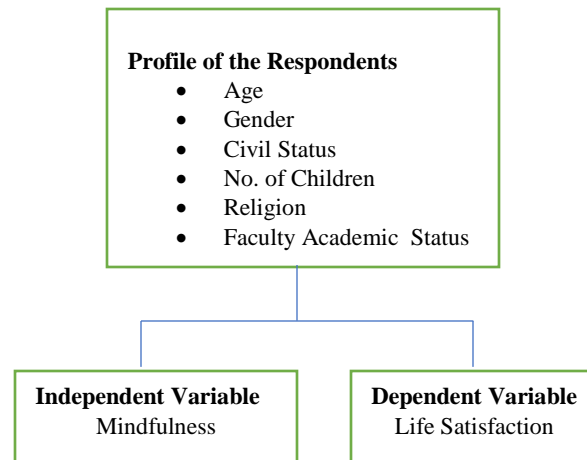


Fig. 1: Research Paradigm

4. STATEMENT OF THE PROBLEM

This study aims to promote health and wellness among faculty members of LSPU San Pablo City Campus. The researcher also wishes to determine the level of mindfulness and its relationship with life satisfaction of the respondents. It specifically sought to answer the following questions:

- i. What is the profile of the respondents in terms of :
 - a) Age
 - b) Gender
 - c) Civil Status
 - d) Number of children
 - e) Religion
 - f) Faculty Status (Full-time / Part-time)
- ii. What is the perceived level of mindfulness of the respondents?
- iii. What is the perceived level of life satisfaction of the respondents?
- iv. Is there a significant relationship between the profile of the respondents and the perceived level of mindfulness?
- v. Is there a significant relationship between the profile of the respondents and the perceived level of life satisfaction?
- vi. Is there a significant relationship between the level of mindfulness and life satisfaction of the respondents?

5. LITERATURE REVIEW

5.1 Mindfulness

Mindfulness is a state of active, open attention on the present. When a person is mindful, he/she observes his/her thoughts and feelings from a distance without judging them good or bad. Instead of letting your life pass you by, mindfulness means living in the moment and awakening to experience (www.psychologytoday.com).

In simple terms, mindfulness can be described as “paying attention on purpose”. In order to be mindful, one has to be aware of oneself not just simply habitually aware. For instance, a person who is aware that he is eating is not the same when he is eating mindfully. When a person is eating unmindfully, he may be aware of what he is doing but he may also be thinking so many things at the same time he may be doing other things like watching TV, talking or reading at the same time. In this case, only a small part of the person’s awareness is absorbed with eating and he may be barely aware of the physical sensations and even less aware of his thoughts and emotions. Purposefulness is a very important part of mindfulness. Having the purpose of staying with an experience (e.g. eating) or a particular emotion implies actively shaping the mind (Bodhipaksa, 2007). In mindfulness,

an emotion or experience is not judged. If judgement had been made, the person notice them but simply let go of them. There is no reaction only acceptance of whatever arises. There is stillness and balance of mind where contentment can grow.

In the study of Bester, et al (2016) a non-experimental research design was used to investigate the role of mindfulness in the relationship between life satisfaction and spiritual well being amongst South African elderly residents (N=122) from two retirement villages in Bloemfoentein. Mindfulness was also a moderator in the relationship between life satisfaction and spiritual wellbeing. These findings can inform social work interventions aimed at optimising life satisfaction and spiritual wellbeing amongst the elderly. Brown and Ryan (2003), considered mindfulness as an attribute of consciousness which promote well-being. The trait mindfulness was positively correlated with life satisfaction, emotional intelligence, openness to experience, attentiveness, impulsiveness and receptivity to experience. This is made possible with the development and psychometric properties of the dispositional Mindful Attention Awareness Scale (MAAS).

In a recent study by Kong, Wang and Zhao (2014), three hundred and ten participants with an age range of 18-50 completed the Mindful Attention Awareness Scale (MAAS), the Core Self-Evaluation Scale (CSES) and the Satisfaction with Life Scale. The goal of this study is to test the model relationships between dispositional mindfulness, core evaluations and life satisfaction. Results indicated that mindfulness significantly predicted the scores in self-evaluations and Life satisfaction.

According to Goh (2017), researchers from Brown University conducted a study in gender differences in meditation in college-aged men and women. They followed seventy-seven undergraduate students (36 woman, ages 18 to 24) as they completed a 12 week mindfulness intervention. The students participated in seminars, weekend retreats, and meditation labs, which included formal focused attention and open monitoring forms of meditation (3 hours per week, totalling 36 hours). Before and after the 12 week program, students completed questionnaires that measured their positive and negative emotions, their mindfulness, and their self-compassion. Results revealed that everybody increased in mindfulness and self-compassion, and both genders reported less negative emotions, but the same level of positive emotions.

When the authors examined the results according to gender, however, they found interesting results. Women's negative mood decreased more, and their mindfulness and self-compassion improved more, compared to men. Women's boosted mood was directly associated with enhancements in all five facets of mindfulness skills—the tendency to notice thoughts and emotions without judging or identifying with them—and all six subscales of self-compassion skills: more self-kindness and less tendencies to self-judge and over-identify with emotions. For men, the improvements in mindfulness and self-compassion reported after the 12-week program were not directly associated with improvements in negative emotions. Additionally, men improved in mindful non-judgement and non-reaction but did not improve in their ability to mindfully observe and describe.

5.2 Life Satisfaction

There are many explanations and definitions of life satisfaction. Life satisfaction is a key indicator of subjective well-being and may be assessed in terms of mood satisfaction with relations with others and with achieved goals and self-perceived ability to cope with daily life. It is an overall assessment of feelings and attitudes about one's life at a particular point in time ranging from negative to positive. It is one of three major indicators of well-being: life satisfaction, negative affect and positive affect (Diener, 1984). It is assumed that the less the incongruity between the individual's desires and achievements, the more life satisfaction he/she has. Life satisfaction is the way people evaluate their lives and how they feel about their directions and options for the future. It is having a favourable attitude of one's life as a whole rather than an assessment of current feelings. Furthermore, life satisfaction may also include antecedents in the work domain, family domain and personality traits.

Prasoon and Chaturvedi (2016) mentioned in their paper review that life satisfaction has been conceptualized as a cognitive constituent of subjective well-being. High satisfaction suggests that the quality of life is good while low satisfaction marks serious shortcomings of some kind. Likewise, as cited by Prasoon and Chaturvedi, Bradley and Corwyn claimed that life satisfaction reflects both the extent to which basic needs are met and the extent to which a variety of other goals are viewed as attainable. Based on this viewpoint, one can say that by realization of more goals, satisfaction with life also increase. Furthermore, Beutell (2006) as mentioned by Prasoon and Chaturvedi, considered that life satisfaction is related to better physical and mental health, longevity, and other outcomes that are considered positive in nature. He believed that improved levels of life satisfaction might give rise to better health in the future.

6. MATERIALS AND METHODS

6.1 Research Design

The research design that was utilized in this research study was Descriptive Correlation Design to determine the relationship between mindfulness and life satisfaction of the faculty members from LSPU-SPCC.

6.2 Population and Sample

There were thirty five (35) LSPU SPCC Faculty members from different colleges included in this study. The researcher utilized random sampling technique in selecting the respondents. Questionnaires were also given and answered by the respondents during their vacant period.

6.3 Data Gathering Procedure

Initially, they were given letter of consent before conducting this research study. The respondents were given personal data sheet and questionnaires which they answered during their vacant period.

6.4 Data Gathering Instrument

Test administration utilized two paper-and-pencil tests. The first instrument adopted was the Mindful Attention and Awareness Scale (MAAS) by Kirk Warren Brown, Ph.D. and Richard M. Ryan, Ph.D. This instrument includes 15 statements that corresponds rate on how frequently they engage in the activities described, on a scale from 1=almost always to 6= almost never. The higher the agreement indicates a lesser tendency to enter a mindful state. In other words, the higher the raw score indicate a greater tendency towards mindfulness. This measure was found to be a good measure of mindfulness, with high reliability and moderate to strong correlations with the related constructs of reflection, rumination, and self-consciousness as well as an existing measure of mindfulness.

The second instrument adopted was the Life Satisfaction Survey (LSS) by Ed Diener. It has similar scale and manner of scoring with the first instrument used in this study. The higher the agreement suggests higher overall sense of fulfilment and happiness in life of the individual. (Ackerman, 2018).

These two questionnaires were both frequently used in other studies which increased its validity and reliability. The results of these questionnaires were properly recorded and evaluated. Frequency, Percentage, Mean and Pearson r were utilized for statistical treatment.

6.5 Statistical Tools

The following statistical tools were utilized to determine and interpret the results in this study:

Frequency. This was used for the tabulation of gathered data describe the respondents' profile data.

Percentage. This statistical tool was used to get the proportion of the number of respondents that will represent in the variables to be measured.

Mean. This was used to know the value of scores within a range of scores.

Pearson r. This was used to determine the correlation between two variables in the study.

7. RESULTS AND DISCUSSION

7.1 Profile of the respondents

7.1.1 Age of the respondents

Table 1: Age of the Respondents

Age of the Respondents	Frequency	Percentage
21-30	12	34
31-40	7	20
41-50	12	34
51-60	4	12
TOTAL	35	100%

Table 1 shows the age of the respondents. Among the 35 respondents, 12 or 34% were between 21-30 years old, 12 or 34% belong to age bracket between 41-50 years old, 7 or 20% were between 31-40 years of age, and lastly 4 or 12% were between 51-60 years old.

7.1.2 Gender of the respondents

Table 2: Gender of the Respondents

Sex of the Respondents	Frequency	Percentage
Female	24	69
Male	11	31
Total	35	100%

Table 2 shows that among the 35 respondents, majority of the respondents were female with 24 or 69% and male have 11 or 31%.

7.1.3 Civil Status

Table 3: Civil Status of the Respondents

	Frequency	Percentage
Single	12	34
Married	22	63
Widowed	1	3
TOTAL	35	100%

Table 3 indicates that among the 35 respondents, majority of the respondents were married with 22 or 63%, followed by with single status with 12 or 34% and lastly widowed with 1 or 3%.

7.1.4 Number of Children

Table 4: Number of Children

Number of Children	Frequency	Percentage
0	12	34
1	13	37
2	2	6
3	7	20
4	0	0
5	1	3
TOTAL	35	100%

Table 4 shows that many of the respondents have only one child with 13 or 37%, followed by respondents who have no children with 12 or 34%. There were also respondents who have three children with 7 or 20% followed by respondents who have two children with 2 or 6% and lastly respondents who have five children with 1 or 3%.

7.1.5 Religion of the respondents

Table 5: Religion of Respondents

	Frequency	Percentage
Catholic	23	66
Non-Catholic (INC, Born Again/Christian, Protestant and Jehovah's witness)	12	34
TOTAL	35	100%

Table 5 shows that among the 35 respondents, majority of the respondents were Catholic with 23 or 66% and Non-Catholics were 12 or 34%.

7.1.6 Faculty Academic Status

Table 6: Faculty Academic Status

	Frequency	Percentage
Full time Faculty	19	54
Part- time Faculty	16	46
TOTAL	35	100%

Table 6 reveals that most of the respondents were full time faculty members with 19 or 54% while part time faculty members were 16 or 46%.

7.2 Perceived Level of Mindfulness of the respondents

Table 7: Perceived Level of Mindfulness of the Respondents

Respondent Number	Raw Score	Level	Respondent Number	Raw Score	Level
1	57	Low	19	80	Very High
2	57	Low	20	80	Very High
3	64	High	21	78	Very High
4	67	High	22	64	High
5	67	High	23	64	High
6	60	Low	24	69	High
7	53	Low	25	59	Low
8	62	High	26	78	Very High
9	63	High	27	51	Low
10	79	Very High	28	68	High
11	79	Very High	29	55	Low
12	36	Very Low	30	63	High
13	63	High	31	60	Low
14	76	Very High	32	55	Low
15	70	High	33	78	Very High
16	82	Very High	34	80	Very High
17	52	Low	35	59	Low
18	60	Low	OVERALL MEAN	65.37	High

Table 7 indicates that respondents received an overall mean of 65.37 in terms of mindfulness which is considered within high level. Results suggest that these individuals can be described having high level of awareness of their external as well as internal environment which may be brought by their advanced age and emotional maturity which enable them to make right decisions or apply the proper solutions to their problems. They feel responsible enough of their own personal actions and decisions. In general, many of the respondents have high level of mindfulness. Although they are busy, many of them are able to manage their responsibilities and duties not only as teachers but also the different roles they play as a parent, spouse, head of the family and friend. These people may appear that they do things automatically but still find time to pay attention to things and details in accomplishing any task because they are aware of their goals and purpose.

7.3 Perceived Level of Life Satisfaction of the respondents

Table 8: Perceived Level of Life Satisfaction

Respondent Number	Raw Score	Level	Respondent Number	Raw Score	Level
1	143	Very High	19	133	High
2	137	High	20	125	High
3	102	Low	21	119	Low
4	112	Low	22	109	Low
5	119	Low	23	121	High
6	116	Low	24	106	Low
7	124	High	25	58	Very Low
8	145	Very High	26	119	Low
9	106	Low	27	114	Low
10	116	Low	28	126	High
11	125	High	29	120	Low
12	118	Low	30	120	Low
13	122	High	31	118	Low
14	129	High	32	134	High
15	101	Low	33	125	High
16	134	High	34	134	High
17	118	Low	35	118	Low
18	116	Low	OVERALL MEAN	119.48	Low

Table 8 shows that respondents gained an overall mean of 119.48 in terms of level of life satisfaction which is within low level. This may be because many of the respondents are part-time instructors. Because of their position as part-time instructors they may consider themselves not fully financially secure and have not received other benefits that regular faculties are entitled to. Also, some of the respondents are young adults (between 21-30 years old) who had just begun their careers and still looking for greener pasture which somehow influenced their life satisfaction.

Majority of the respondents have low level of life satisfaction. As mentioned earlier one of the reasons may be because many of the respondents are part-time instructors and married who have their own families. Although they have passion in their jobs the financial security they are receiving may not commensurate to the expenses they need to provide for their families which at times may also affect family relationships. These concerns may cause them stress and make them experience difficulty to maintain balance in their lives.

7.4 Relationship Between Respondents' Profile and Level of Mindfulness

Table 9 shows the relationship between respondents' profile and mindfulness. Among the profile age and gender factors received significant results. This means that age and gender can influence the level of mindfulness of the individual. As the person advances in age, the more experiences the person gains either positive or negative experiences which suppose enable him/her gain maturity. These experiences make the person more aware or conscious of his/her environment and help gain more insight and new perspective. This enables him/her to come up with appropriate solutions and cope with day-to-day undertakings.

Table 9: Relationship Between Respondents' Profile and Level of Mindfulness

Profile	r-value	p-Value	Interpretation
Age	0.33	0.00	Significant
Gender	0.21	0.04	Significant
Civil Status	0.16	0.10	Not Significant
No. of Children	0.13	0.08	Not Significant
Religion	0.17	0.06	Not Significant
Faculty Status	0.11	0.13	Not Significant

Possible explanation for the results of this study concerning the age differences is maturational change/developmental interpretation which posits that as individuals age, they develop increasingly adapt ways of managing their emotions, and therefore are less judging about themselves and others. It means that older adults are able to be more present "here and now", because they are not interrupted by intensity of their emotions. This is also supported by the results of a longitudinal study of Charles et al (2001) wherein 2,704 participants in four generations of families were utilized and where they found that negative affect decreased with age, and that older people had a tendency to regulate their emotions more effectively. Likewise, according to Sturges as cited by Charles et al (2001) savouring is another psychological construct that can be used to explain mindfulness. Because older adults have greater tendency to savour the moment, control emotions, and remain focussed on the present, they tend to be more mindful, which can be one of explanations for our results. In terms of gender, majority of the respondents included in this study are females. Many studies mentioned that females are more reflective and sensitive of their feelings. They are more aware of their thoughts and feelings which enable them to be more conscious in doing things that they need to attend to.

7.5 Relationship Between Respondents' Profile and Life Satisfaction

Table 10 shows the relationship between respondents' profile and Life satisfaction. Among the profile, only the age and civil status received significant results. As the person gets older, they may become wiser and more knowledgeable which make them see life in a better perspective. Since they had gain more experiences and success in some aspects in their lives the level of their life satisfaction may also increase.

Table 10: Relationship Between Respondents' Profile and Life Satisfaction

Profile	Value of Test Statistics	p-Value	Interpretation
Age	0.38	0.02	Significant
Gender	0.18	0.08	Not Significant
Civil Status	0.26	0.03	Significant
No. of Children	0.15	0.07	Not Significant
Religion	0.18	0.06	Not Significant
Faculty Status	0.13	0.11	Not Significant

Results also revealed that civil status has positive relationship with life satisfaction since majority of the respondents in this study are married. This result is the same on the findings gathered by Botha and Booyesen (2012) in their study. Using the 2008 National Income Dynamics Survey, they found out that life satisfaction is significantly higher for married compared to widowed individuals. In the overall and female samples, married people are more satisfied compared to those from all other marital status groups. Married men are not significantly more satisfied than men from other marital statuses as a whole. Marriage is positively associated with life satisfaction among women, but not among men.

According to Gove et al (1990), as mentioned by Botha and Booyesen, social causation proposes that marriage makes people more satisfied due to the protective emotional and relational factors normally associated with marriage. Married people are believed to be generally healthier and earn substantially higher incomes compared to people in other marital status groups. Furthermore, married couples as parents may also experience a sense of pride and life satisfaction especially if they have raised their children properly and have seen them successful in their lives.

7.6 Relationship Between Mindfulness and Life Satisfaction

Table 11: Relationship Between Mindfulness and Life Satisfaction

Source of Variation	r-value	p-value	Interpretation
Mindfulness vs Life Satisfaction	0.53	0.01	Significant

Table 11 shows that there is a relationship between mindfulness and life satisfaction of the respondents. Results reveal that there is a positive relationship between these variables. This suggests that the higher is the level of mindfulness of a person the higher the chance that he or she will also have higher level of life satisfaction. Being aware of one’s thoughts and feelings without judging them good or bad and being alert to the external environment can lead a person to live at the moment. This also gives the person a chance to experience comfort and relaxation which may result into clarity of mind that enables the person to make good decisions leading to success and satisfied life.

8. CONCLUSION

- i. When it comes to relationship between respondents’ profile and mindfulness, only age and gender factors received significant results. This means that age and gender can influence the level of mindfulness of the individual.
- ii. When it comes to the relationship between respondents’ profile and life satisfaction, only the age and civil status received significant results.
- iii. There is a relationship between mindfulness and life satisfaction of the respondents. Results reveal that there is a positive relationship between these variables.

ACKNOWLEDGEMENT

The author wants to give immense gratitude and appreciation for the people who had spend their time and contributed their knowledge and effort to make this study possible.

First and foremost, the author, would like to thank the Almighty God, for giving her the strength, courage and wisdom to come up with this study

To Dr. Portia Marasigan, co-chairperson of this forum, for inviting the author to present her study in this forum.

To Mrs. Angela Regalado, for helping with the statistical analysis and data.

To Ms. Elaine Apat, for her words of encouragement and never ending support;

To the author’s siblings and friends who had given their advises and support,

To the respondents, the Faculty members of Laguna State Polytechnic University – San Pablo City Campus, for giving their precious time and honestly answering the questionnaires. They were the ones who made this study complete and successful.

REFERENCES

- [1] Ackerman, C. (2018) “Life Satisfaction Theory and 4 Contributing Factors (Incl. SWLS Scale)”, [Online] Available: <https://positivepsychologyprogram.com/life-satisfaction/#Life-Index>

- [2] Alispahic, S and Hasanbegovic-Anic E. (2017) “Mindfulness: Age and Gender Differences on a Bosnian Sample”, Department of Psychology, Faculty of Philosophy, University of Sarajevo, Sarajevo, Bosnia and Herzegovina <https://psyct.psychopen.eu/article/view/224/html>
- [3] Bester, I., Naidoo, P., & Botha, A. (2016). “The Role of Mindfulness In the Relationship Between Life Satisfaction and Spiritual Wellbeing Amongst the Elderly”. Department of Psychology, University of the Free State, Bloemfontein, South Africa socialwork.journals.ac.za/pub/article/view/503
- [4] Bodhipaksa (2017) What is mindfulness? <https://www.wildmind.org/applied/daily-life/what-is-mindfulness>
- [5] Botha, F. and Booysen, F. (2012) *Acta Academica* 45(2):150-178 · January 2013 “The relationship between marital status and life satisfaction among South African adults [accessed Jun 25 2018].
- [6] Brown, K.W. & Ryan, R.M. (2003). “The benefits of being present: Mindfulness and its role in psychological well-being”. *Journal of Personality and Social Psychology*, Vol 84(4), Apr 2003, 822-848.
- [7] Charles, Reynolds, & Gatz (2001) Age-Related Differences and Change in Positive and Negative Affect over 23 Years. *Journal of Personality and Social Psychology* 80(1), pp. 136-51 February 2001.
- [8] Goh, C. (2017). *Mindful: Healthy Mind, Healthy Life*. May 31, 2017
- [9] Gu, J., et al. (2015). “How do Mindfulness-based cognitive therapy and Mindfulness-based stress reduction improve mentalhealth and well-being? A systematic review and meta-analysis of meditation studies”, *Clinical Psychology Review*
- [10] Kabat-Zinn, J. (2017) “Defining Mindfulness. *Healthy Mind, Healthy Life*”, <https://www.mindful.org>
- [11] Kong, F., Wang, X. & Zhao, J. (2014). Dispositional mindfulness and life satisfaction: the role of core self-evaluations. *Personality and Individual Differences*, 56:165-169. Available: <http://www.elsevier.com>[Accessed: 02/10/2014].
- [12] Mindfulness. *Psychology Today* <https://www.psychologytoday.com/us/basics/mindfulness>
- [13] Prasoon, R. and Chaturvedi, R. (2016) “ Life Satisfaction: A Literature Review.” *The Researcher-International Journal of Management Humanities and Social Sciences* July-Dec 2016, 1(2).
- [14] The Mindful Attention and Awareness Scale (MAAS) [https://ggsc.berkeley.edu/images/uploads/The_Mindful_Attention_Awareness_Scale_-_Trait_\(1\).pdf](https://ggsc.berkeley.edu/images/uploads/The_Mindful_Attention_Awareness_Scale_-_Trait_(1).pdf)

Non-Technical Skills: Input to Bachelor of Science in Business Administration Graduates' Employability

Elaine Joy C. Apat¹, Julieta A. Sumague²

^{1,2}Laguna State Polytechnic University, Laguna, Philippines

¹elaine.apat@gmail.com

²juliearjona07@gmail.com

ABSTRACT

This study was conducted to determine the non-technical skills of the Bachelor of Science in Business Administration graduates as input to their employability. The respondents used are supervisors in the company, in terms of industry they are working, majority are in the banks and Business Process Outsourcing (BPO) and are regular employees. Results of the study showed that among the non-technical skills which are communication, cooperation and working with others, interaction, decision making and action, and self-management are highly observed. On the work retention and promotion potential as variables in employability are strongly agree. Findings showed that test of correlation between non-technical skills on communication, interaction, and decision making and action to the employability is not significant. The proponents concluded that there is a positive correlation between non-technical skills on communication, interaction, decision making to the employability while in cooperation and self-management have no significant relationship to employability.

Keywords: Business Administration Graduates, employability, non-technical skills, education

1. INTRODUCTION

“Education is our passport to the future, for tomorrow belongs to those who prepare for it today”, a quote from Malcolm X that explain a deeper meaning of how important the education is to every person in the world. Education can take you anywhere. It is as vital to the point it became a right of every child. A better future does not just exist instead effort and preparation are needed. Education facilitates learning, a process of acquisition of knowledge, skills, values, and habits. Educational stages are subdivisions of formal learning, typically covering early childhood education, primary education and tertiary (or higher) education. Each stage taught the student into different things. Started from simple counting, reading, computing, then go beyond comprehension, harder mathematical equations and learnt from different subjects for the preparation for their college.

While employees with a high school education may secure jobs with good benefits college graduates typically fare better entering higher-level careers with greater salaries. They are also more likely to receive promotions earn raises and develop reasoning and communication skills that can be applied to their jobs. Securing a job is very difficult often, college graduates are challenged for job hunting and securing it. College graduates tend to transfer jobs from time to time once they are not satisfied and if the workplace sees that their employee is lacking for some skills needed to their job requirement. A bachelor's degree in business can prepare students for many different jobs in the business marketplace. The degree itself is globally competitive and it is indeed always in demand all around and outside the country. In today's competitive market you know employers are looking for more in their business management hires: more know-how, more abilities, and more potential. But what specific knowledge and skill sets do employers prize more in prospective employees? Most of the employers today are looking for skills that focused on the communication, interpersonal, and self-management.

2. LITERATURE REVIEW

There is a clear set of definable competencies, in terms of things that a person knows how to do or facts that they have committed to memory, in areas like medicine nursing, business, law and accountancy. In some other fields, habits of thinking, the ability to take a critical approach to a problem and then choose and implement the right research strategy to solve it are more important than functional competency or facts. In addition, no matter how closely, universities/colleges and employers are there will always be tensions when it comes to competencies, skills, and attitudes towards work issues. Employers tend to want things to be done their way while universities expect students to develop and exercise critical judgement. Either employers or universities may be ahead in terms of technical or theoretical innovation. Of course, university programs leaders should always keep their finger on the pulse of change in the field(s) their students hope to seek work in. According to Waltz (2015), Universities and

Colleges need to respond and often employers need to help of researchers to shape and understand developments. Making sure students know how to do what will be expected of them-for example, having the ability to use key software packages or analytical tools-there is a must if university programs are to claim relevance to students' later job success. Non-technical skills or soft skills are necessary for career enhancement of an individual since these skills are personal traits that enhance the individual's interaction, communication skills, and job performance (Dhobale 2009). Moreover, according to Rainsbury et al (2002), soft skills often referred to as interpersonal, human, people or behavioral skills and place emphasis on personal behavior and managing relationships among people. Modern professional practice requires not only technical/hard skills, but also high-level generic or soft professional skills. As a result, companies nowadays may not only concern with technical skills of the business administration graduates, but they expect the future employees to have appropriate soft skills. I addition, according to Higher Education Academy Engineering Subject Centre (2010), soft skills and personal attributes make graduates more likely to gain employment and be successful in their chosen occupations. Moreover, companies may not be concerned with the technical skills of their entry-level managers because they will train them according to their company standards, but most companies want their future managers to have the soft skills to be successful within the organization's environment (Weber 2009). However, hard skills or technical skills must be disregarded. It deals with the data and administrative skills as defined by Villiers, (2010). It refers to the technical knowledge and abilities that an individual should have to carry out the tasks associated with the position.

Development of the non-technical skills is what educators want to pursue for the demand of the employers for the Business Administration graduates to have. Technical skills can be learned in a long period of time compared to non-technical skills can be learned for months or so. As the Australian Learning and Teaching Council (2009), non-technical skills are deemed very important to employers according to a recent report into the changing skills set for professional business administration graduates. In the study of Jackling and Lange (2009) they investigated the emphasis placed on technical and generic skills development from both the graduates and employers' perspective. Their study found that employers required a broad range of generic skills that graduates indicated were not being adequately taught in business courses. Employers' perspective the greatest areas of skills divergence were those of team skills, leadership potential, verbal communication, and interpersonal skills of graduates. This study is anchored on the skills theory of David Burkus which state that skills theories are leader-centric and focus on what characteristics about them are effective. The two primary theories to develop skills theory were Katz' three-skill approach and Mumford's skills model of leadership also known as a capacity model. Three-skill approach argued that effective leadership required three skills: technical, human, and conceptual skills. Katz even mentioned the higher someone was in the organization, the less technical skills were required to fill the position and more conceptual skills were required, the lower the position in the organization more technical skills and less conceptual skills were required. However human skills are always required no matter the level or the position in the organization.

3. CONCEPTUAL FRAMEWORK

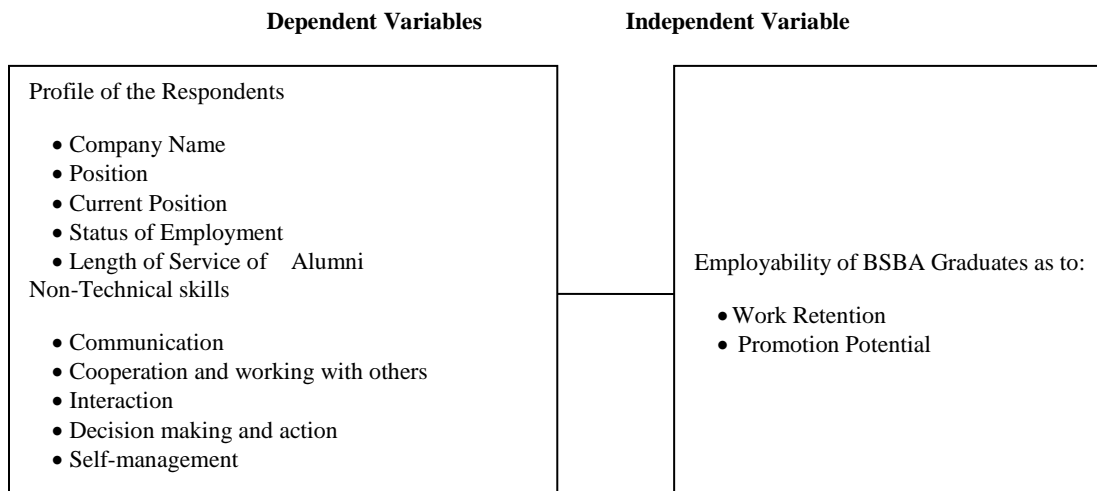


Fig. 1: Research Paradigm

4. STATEMENT OF THE PROBLEM

This study was aimed to determine the non-technical skills of the BSBA graduates of LSPU-SPCC. Specifically, it was sought to answer the following questions:

1. What is the profile of the respondents in terms of:
 - 1.1 company name
 - 1.2 position
 - 1.3 current position of alumni
 - 1.4 status of employment of alumni and
 - 1.5 length of service of the alumni?
2. What is the level of their non-technical skills as to:
 - 2.1 communication (listening, clarity, sharing information, assertiveness)
 - 2.2 cooperation and working with others
 - 2.3 interaction
 - 2.4 decision making and action and
 - 2.5 self-management (motivation, confidence, initiative)
3. What is the level of employability of BSBA graduates as to:
 - 3.1 work retention and
 - 3.2 promotion potential?
4. Is there a significant relationship between the non-technical skills and the employability of BSBA graduates?

5. HYPOTHESIS

There is no significant relationship between the non-technical skills and the employability of Bachelor of Science in Business Administration graduates.

6. RESEARCH METHODOLOGY

This paper is a descriptive research and used purposive sampling technique and is limited to Supervisors or Heads of Bachelor of Science in Business Administration graduates from the year 2014 to 2018. Researchers chose 30 different organizations either public or private. Self-made questionnaires were made and given to evaluate the graduates with non-technical skills and employability. Frequency count was used to determine the profile of the respondents. Mean was used to measure the non-technical skills of BSBA graduates and their employability. Pearson-r was used to identify the significant relationship between the non-technical skills and employability. For Part II of the survey questionnaire Point Likert Scale 4-Highly Observed; 3-Observed; 2-Slightly Observed; and 1-Not Observed were used to measure the non-technical skills of BSBA graduates. On the other hand, rating such as; 4- Strongly Agree; 3-Agree; 2-Disagree; and 1-Strongly Disagree were used to measure the employability of BSBA graduates

6.1 Part I: Profile of the Respondents

The respondents of the study in terms of position in the company consist of 9 as supervisory, 12 as senior staff, and 9 as junior staff: in terms of industry they are working, 7 is in BPO, 13 in banking, 2 in education, and 8 in sales and manufacturing; in terms of status of employment, 22 are regular employees, 5 are probationary, and 3 are contractual; and in terms of length in service, 11 are working for 3 years, 10 for 2 years, 5 for 1 year, and 4 for less than 1 year in service.

6.2 Part II: Non-Technical Skills

The table shows that all the indicators in communication skills are highly observed having a mean of 3.37 as the lowest and 3.57 as the highest and with an overall mean of 3.47. It can be implied that communication is an skills element and plays an important task in the business world. More so in the most progressive companies, managers are looking for peoples' ability to communicate clearly and openly, and to listen and respond empathetically.

Table 1: Communication (listening clarity sharing information assertiveness)

Indicators	Mean	Verbal Interpretation
Demonstrate effective verbal communication and listening skills.	3.47	Highly Observed
Comprehends and follows verbal instructions.	3.37	Highly Observed
Listens to others in an active and attentive manner.	3.57	Highly Observed
Shares relevant information to supervisors and co-workers.	3.40	Highly Observed
Shows self-confidence in expressing opinions.	3.57	Highly Observed
Overall Mean	3.47	Highly Observed

Table 2: Cooperation and Working with Others

Indicators	Mean	Verbal Interpretation
Manages and resolves conflict to a team atmosphere.	3.60	Highly Observed
Emphasizes the importance of having a collective sense of mission.	3.53	Highly Observed
Suggests new ways of doing things.	3.47	Highly Observed
Respects input and ideas from other sources and people.	3.50	Highly Observed
Controls emotions in a manner appropriate for work.	3.67	Highly Observed
Overall Mean	3.55	Highly Observed

The table displays that all indicators in cooperation and working with others also are highly observed with a total mean of 3.33. Cooperation is essential in all aspects of life and nearly every job in business today entails at least some joint efforts by members to work together. This makes cooperation an essential skill in most sectors of the work world.

Table 3: Interaction

Indicators	Mean	Verbal Interpretation
Loves doing his/her job with the supervisors and colleagues in the department he/she belongs.	3.47	Highly Observed
Participates and supports the department especially when it conducts different activities.	3.33	Highly Observed
Effectively participates in the meeting or group settings.	3.23	Highly Observed
Respects input and ideas from other sources and people.	3.27	Highly Observed
Brainstorms/develops option and ideas with co-workers.	3.43	Highly Observed
Overall Mean	3.50	Highly Observed

The table presents that four of the indicators in interaction are highly observed while only one is observed with an overall mean of 3.23. According to Centko (1995) as cited by Laurence Ong, revealed that positive interpersonal interaction is the key to success while working or otherwise lack of interpersonal skills would affect our work efficiencies. It is very important when we can increase awareness on our interpersonal relationship with colleagues will affect our daily work.

Table 4: Decision Making and Action

Indicators	Mean	Verbal Interpretation
Seeks out and utilizes resources.	3.07	Highly Observed
Open to new experiences and takes appropriate risks.	3.27	Highly Observed
Breaks down complex tasks/problems into manageable pieces.	3.50	Highly Observed
Shows promptness and firmness in deciding on important matters.	3.30	Highly Observed
Participates in the organization's decision making.	3.33	Highly Observed
Overall Mean	3.29	Highly Observed

The table shows that the first indicator is observed with a mean of 3.07 while the rest are highly observed having a mean of 3.27 as the lowest and a mean of 3.50 as the highest. According to Hewitt (2002), in modern businesses that always keep their employees well informed about all important affairs of their organizations and involve them in decision making at all levels can utilize the talents of the employees.

Table 5: Self-Management (motivation confidence & initiative)

Indicators	Mean	Verbal Interpretation
Works on complex matters.	3.37	Highly Observed
Accepts responsibility for mistakes and learns from experiences.	3.33	Highly Observed
Demonstrates assertive but appropriate behaviour.	3.43	Highly Observed
Asks pertinent and purposeful questions.	3.47	Highly Observed
Prompt in showing up to work and meetings.	3.33	Highly Observed
Overall Mean	3.39	Highly Observed

Table depicts that all the indicators on self-management are highly observed with 3.33 as the lowest and 3.47 as the highest with the overall mean of 3.31. It can be implied that though self-management is difficult to learn abilities in business in the workplace, and in our personal life it is one of the management best practices for those people who are decided to become more productive employees.

6.3 Part III: Employability

Table 6: Work Retention

Indicators	Mean	Verbal Interpretation
Takes the opportunities to learn new skills or knowledge.	3.63	Strongly Agree
Accepts responsibility for mistakes and learns from experiences.	3.67	Strongly Agree
Feel free to speak his/her mind, shares ideas and addresses conflict.	3.63	Strongly Agree
Contributes to the attainment of company's goals and objectives.	3.50	Strongly Agree
Knows what are expected from him/her.	3.53	Strongly Agree
Overall Mean	3.59	Strongly Agree

Table shows that all the indicators on work retention is interpreted as strongly agree. The result shows that modern corporate requirements are looking specifically for those candidates who can add value to their organization with their soft skills and the ability to develop and use soft skills (Serby Richard 2003). Whereas according to Denton (2000), employees who are happy and satisfied with their jobs are more dedicated towards their work and always put their effort to improve their organizational customers' satisfaction.

Table 7: Promotion Potential

Indicators	Mean	Verbal Interpretation
Performs at an acceptable level of competence	3.60	Strongly Agree
Demonstrates ability to perform at the next higher-grade level	3.53	Strongly Agree
Possesses skills that are desirable for higher-level jobs.	3.43	Strongly Agree
Takes on more responsibility when opportunity arises.	3.70	Strongly Agree
Earns the trust of the colleagues and supervisor.	3.57	Strongly Agree
Overall Mean	3.57	Strongly Agree

Table shows that all indicators on potential promotion are interpreted also as strongly agree with a mean of 3.43 as the lowest and 3.70 as the highest with an overall mean of 3.57.

Table 8: Correlation Between Non-Technical Skills and Employability

Non-Technical Skills	R-Value	P-Value	Verbal Interpretation
Communication	0.45	0.01	Strongly Agree
Cooperation and Working with Others	0.33	0.07	Strongly Agree
Interaction	0.41	0.02	Strongly Agree
Decision Making and Action	0.40	0.03	Strongly Agree
Self-Management	0.17	0.36	Strongly Agree

7. SALIENT FINDINGS

Non-technical skills on communication, interaction, and decision making have a significant relationship with an R-value of 0.41 and 0.40 and P-value of 0.01, 0.02, and 0.03 respectively. Development of the non-technical skills is what educators want to pursue for the demand of the employers for the Business Administration graduates to have. Technical skills can be learned in long period of time compared to non-technical skills that can be learned for months or so. As the Australian Learning and Teaching Council, (2009) non-technical skills are deemed very important to employers according to recent report into the changing skills set for professional business administration graduates. While cooperation and working with others and self-management have no significant relationship to employability with R-value of 0.33 and 0.17 and P-value of 0.07 and 0.36 respectively.

8. CONCLUSIONS

Based on the findings of the study the proponents concluded the following:

1. There is a positive correlation between the non-technical skills or soft skills on communication, interaction, and decision making to the employability. Therefore, students of the Bachelor of Science in Business Administration may equip themselves with non-technical skills or soft skills demanded by the profession. These three skills pave the way for career promotion and professional advancement. In any way both employers and employees may benefit from enhancing further these skills.
2. Both the non-technical skills on cooperation and self-management have no significant relationship to the employability.

REFERENCES

- [1] Burkus D, "Leaders Team and Develop their Skills and Style", (2010)
- [2] Denton J, "Using Web-based projects in a system design and development course", Journal of Computer Information Systems, Vol.40 No.3, (2000), pp.85-87
- [3] Dhobale RS, "Developing Soft Skills in Students", Retrieved January 2009 from <http://108.cgpublisher.com/proposal/64/index-html>
- [4] Education is important. Retrieved from: <http://www.positivityblog.com/quotes-on-education/>
- [5] Future Jobs of BSBA Graduates. Retrieved from: <http://online.lsua.edu/articles/business/five-jobs-bsba-degree.aspx>
- [6] Hewitt J, "High Performance Workplaces: The Role of Employee Involvement", (2000), www.berr.gov.uk/files/file26555.pdf
- [7] Jackling B, "Meeting Expectations of Employers", An International Journal, Vol.18, No.4/5, 2009, pp.369-385
- [8] Ong L, "A Study of the Importance of Non-Technical Skills for Accounting Fresh Graduates in Malaysia"
- [9] Rainsbury et al, "Professionals' Perception of Soft Skills Needed", 2002.
- [10] Richard S, "Importance of Soft Skills: The Incorporation of Soft Skills into Accounting Curricula", Emerald Group Publishing Limited, (2013)
- [11] Waltz M, "Developing Soft Skills in Students", <http://108.cgpublisher.com/proposals/64/index-html>

Abstracts

Competency-Based Skills and Training Needs of Hotel and Restaurant Employees Towards Key Position in Muscat, Oman: An Inquiry to the Customer

Roland Getaruelas

Gulf College Oman, Sultanate of Oman

roland_getaruelas@yahoo.com

ABSTRACT

The purpose of this study is to determine what the type of competency-skills and training needs of a hotel and restaurant employees in order to advance into managerial position, develop and understanding of the current situation of the hospitality employees, an investigate of their achievements, accomplishments, deficiencies and shortcomings of these women and men in order to ensure that they can make it to the top. Becoming a leader does not necessarily mean that you are in-charge of others but instead you are enhancing your ability to inspire, support and confidence among the people who are needed to achieve the company goals, therefore in order to achieve this, employees must be well-define and strong competency. Findings revealed in this study that trainings and development, attitude, education as well as previous working experience in the same industry were all rated as important, it can make an individual to be more qualified, competent and effective to hold position in the hospitality industry.

Keywords: Becoming a Leader, Competency, Managerial Position, Training needs of Men and women, key Position in Hotel and Restaurant Industry.

A Comparative Study of Culinary Practices of Homegrown Cooks and Chefs in Contemporary Philippine Cuisine of Heirloom Recipes of Calabarzon

Ninevetch Grace O. Marco
Laguna State Polytechnic University Laguna, Philippines
go7172@yahoo.com

ABSTRACT

This study aimed to analyze the heirloom recipes of CALABARZON from the assessment of the homegrown cooks who are continuously practicing traditional methods and chefs who are currently working in restaurants. Guided by a conceptual framework, the study evaluated through descriptive method in utilizing to the limitations of single design addressing a question and theoretical perspective at different levels of the heirloom. Field survey identified the gaps supported by interviews conducted to select homegrown cooks and chefs for a more in-depth analysis to the data gathered. Based from the findings of the study, the assessment of chefs and homegrown cooks are significantly different from each other. In comparing the results, the chefs have different perspectives from the homegrown cooks regarding heirloom recipes that perhaps in connection to their experience and education. Results also highlighted some important considerations in preservation actions proposing as to how heirloom recipes can be integrated to the Contemporary Philippine Cuisine.

Keywords: Heirloom recipes, Culinary practices, homegrown cooks, chefs, Contemporary Philippine cuisine,

Using Brief Cognitive Restructuring and Cognitive Defusion Techniques to Cope with Negative Thoughts

Portia R. Marasigan

Laguna State Polytechnic University, San Pablo City, Laguna, Philippines
bing_marasigan2001@yahoo.com

ABSTRACT

This study aimed to compare the effectiveness of using brief cognitive restructuring and cognitive defusion techniques in coping with negative thoughts of college students of Laguna State Polytechnic University. The study used quasi experimental design and assigned thirty respondents in the group which was treated with cognitive restructuring and another thirty respondents in the group that was treated with cognitive defusion. t-test was used to test for the significant difference. Based from the findings of the study, there is significant difference between the mean scores of the pre-test and post-test of the restructuring group. Also, there is significant difference between the mean scores of the pre-test and post-test of the defusion group. Furthermore, mean score of the defusion group is significantly different with the mean score of restructuring group in terms of the post-test but in terms of pre-test, the mean scores of the two groups do not differ significantly.

Key word: Cognitive Restructuring, Cognitive Defusion, Negative Thoughts

Exploratory Analysis of Sustaining Organic Farming in Laguna Province

Marivic Baliton Abinsay

San Pablo Colleges

bec_baliton@yahoo.com

ABSTRACT

This study was conducted to assess the status of organic farming, internal environment and regulatory environment of organic farming. A total of 86 organic farmers in selected municipalities in Laguna participated in the study. The research design used was the descriptive method. Percentage and weighted mean were used in the data analysis. The findings indicated that the status on the number of years in organic farming is 3 to 5 years; size of farm is less than one hectare; vegetables are the most planted commodity; and organic farming practices are done manually. The internal environment in terms of operational sustainability and market sustainability is perceived as sustainable, while the regulatory environment in terms of standardization and certification is perceived as sustainable. Results suggest the need to intensify organic farming practices in the province of Laguna, strengthen the methods and procedures use in organic farming;

Keywords: sustainable, organic farming

Sustaining Ecotourism Environment at MTS Banahaw-San Cristobal Protected Landscape: Alignment to Global Climate Change

Maria Donnalyn E. Briñas
San Pablo Colleges
tourism.sanpablo@yahoo.COM

ABSTRACT

This study was undertaken to determine the extent of influence of climate change in designing ecotourism program for Mts. Banahaw-San Cristobal Protected Landscape (MBCSPL). The site is located at Barangay Kinabuhayan, Dolores, Quezon, a popular tourist destination among religious fanatics, mountain climbers, and campers during Lenten season. The results of this study will be used as a guide in helping and establishing sustainable management of other ecotourism sites in the country. This study is generally descriptive in nature and used simple statistical tools in analyzing the data information generated from interviews with key informants like the Protected Area Superintendent (PASU) and other DENR officials, members of the Protected Area Management Board (PAMB), Barangay Captain, recognized leaders, and other members of the local community. Among the environmental problems identified by the study, the presence of settlement inside the protected area that practice unsustainable and destructive livelihood activities was created posed so much pressures on the resources of the park. These areas were planted with high value crops like vegetables, making them highly prone to soil erosion. The location of the community, including the religious and camp sites being in escarpment areas, made them highly vulnerable to flash flooding and landslide. Management strategies are necessary to address these environmental problems, and to make them safe for settlement and ecotourism development. For ecotourism development, the following management strategies are recommended: Basic tourism infrastructure and facilities are regularly undertaken to protect the area for further destruction like reforestation, patrol activities and provision of livelihood. This study recommended augmentation by other facilities and structures to make it more suited for economic development: (a) strong community participation; (b) applying environmental protection and rehabilitation schemes like agro forestry, reforestation to help mitigate adverse impact of climate change; (c) installing warning signs in landslide and flash flood prone areas; (d) conducting intensive environmental campaign and strict law enforcement; (e) encouraging green tourism and diversifying ecotourism activities; (f) instituting effective visitor management schemes; (g) provisioning of sustainable financing mechanism; and (h) implementing a monitoring and evaluation scheme.

Keywords: Sustainable development, Environment, Ecotourism.

Financial Inclusion, Women Empowerment and Entrepreneurship: A Special Emphasis to India

Gargi Banerjee

NSHM Durgapur, West Bengal, India

gargi.banerjee@nshm.com

ABSTRACT

Women population comprises of half of the population of a country. Therefore, a country's progress and growth depend on the contribution of its women population as well. Individuals who create business and employment are entrepreneurs. Entrepreneurship is actually the ability to develop and sustain a business associated with risk and ultimately make profit. Every entrepreneur aims to make profit for his own concern. Entrepreneurship is also associated with conversion of new innovation and technology into business which ultimately generates employment and profit in the economy and thus the entrepreneurs contributes towards the growth of an economy. According to Schumpeter innovation in business is the primary reason for increased investment and business ups-and-downs in an economy. Recently, women entrepreneurship in India is also making a mark in the society. Many Indian women are empowered to do business on their own. Women in the present scenario in Indian society has started taking initiative to make a start up with their career as entrepreneurs with small business. Women are also successful in their field of business. The women in our society are progressive and capable of sustaining a business. Hence, we also focus on the women entrepreneur's contribution to the society. In this paper we try to focus on the aspects of women empowerment and its impact on the society of India. Women in India are mostly home-makers but few are progressive as they are properly educated and also knows how to execute their knowledge. Empowerment of women means when a woman is having economic liberty and financial decision-making authority. Nearly half of the population of a country are females and hence it is extremely necessary to make this population involved in economic activity of a country. But there is of course gender based discrimination in the society. Here we try to focus on the aspects of women empowerment through entrepreneurship in India as well as how women are financially included to be economically independent.

Keywords: Entrepreneurship, Women empowerment, Financial Inclusion

Assessment of Service Quality in Selected Branches of Bangko Kabayan, Inc.

Nelda A. Rosima

Batangas State University, Lipa City Philippines.

neldarosima@yahoo.com

ABSTRACT

Improvement of every financial institution is based on the quality of service they provide. In the Philippine economy, most of the bank's clients preferred financial institutions that can render quality service. The study aimed to determine the effectiveness of service provided by Bangko Kabayan, Inc. in terms of tangibility, responsiveness, reliability, empathy and assurance. The study utilized descriptive method of research to assess the service quality they provided. Two hundred clients were selected through quota sampling who served as respondents. Based on the results, there are significant differences when it comes to empathy, reliability, responsiveness and assurance when grouped according to sex, kind of service availed and monthly income of respondents. However, there is no significant difference in the demographic profile of the respondents when grouped according to age and civil status in terms of five dimensions. The results revealed that the company is highly effective in providing quality service related to assurance and reliability and effective when it comes to tangibility, responsiveness, and empathy.

Keywords: Assurance, Empathy, Reliability, Responsiveness, Rural Bank, Service Quality, Tangibility

The Competitiveness of the Philippines Local Pharmaceutical Company Using Porter's Five Forces Analysis

Mac Gene Kevin S. Dela Cruz¹, Adoree A. Ramos², Jane Marie P. Marcelo³

^{1,2,3}ACTS Laguna, Philippines

¹delacruz.mgkevin@gmail.com, ²avril_shaine@yahoo.com, ³ms.janemarie.marcelo@gmail.com

ABSTRACT

Philippines Vonwelt Inc. focuses on local manufacturing of pharmaceutical products, food supplements and household products. Pharmaceutical industry is in a fiercely competitive industry with domestic and international players striving for market dominance. In order to survive, the company should gain competitive edge. This paper analyzed the competitiveness of Vonwelt Inc. using Porter Five Forces Analysis. The data were gathered through questionnaire and interview from the managers/experts of Vonwelt Inc. pharmaceutical company. The company is characterized with high entry barrier due to the huge initial investment needed, patents and proprietary knowledge, cost advantage enjoyed from economies of scale, government regulations, research and development of cost related to new drugs and improvement on already existing ones. The findings also revealed that Vonwelt Inc. has a favorable advantage in terms of bargaining power of buyers and bargaining power of suppliers. However, it lacks a favorable advantage concerning threat of substitutes and rivalry among competitors. The results of the analysis helped the company shape the forces in their favor which can also be adopted by other local pharmaceutical companies.

Keywords: porters five forces, pharmaceutical, competitiveness

Risk Communication Management towards Disaster Resiliency in Davao City, Southern Philippines

**Cayamanda, Karen Joyce Gonzales¹, Merlyne M. Paunlagui²,
Rowena D.T. Bacongus³, Maria Ana T. Quimbo⁴**

¹PhD Development Studies, UP Los Baños and Assistant Professor, UP Mindanao

²Assistant Professor, CPAf, UP Los Baños

³Professor IV, CPAf, UP Los Baños

⁴Professor III, CPAf, UP Los Baños

kgcayamanda@up.edu.ph

ABSTRACT

Communicating risk is a challenging task for policy and decision makers knowing that risk perception varies across different people based on the social context and their experiences with the disaster. Risk communication is commonly done by governments and institutions who disseminate information using different channels and assorted tools. It plays a central role in risk management and help raise preparedness among the local communities. This paper presents the risk communication system and protocols of Davao City reflecting the transmission process of the information about disaster and how it is cascaded to the local communities. It aims to describe the role of the institutional structures and communication system and its transactional processes involved in communicating risk information. Further, this is an initial stage of the mixed method approach of a study conducted among the flood vulnerable communities of Davao City.

Keywords: risk communication management, flood risk amplification communication theory, strategic risk communication, risk reduction, flooding

The Implementation of The Russian Model of the World in the Way Social Existence

Dureeva N. S.¹, Dureev S.P.²

Institute of Humanities of SFU

natalya-nsd@yandex.ru

ABSTRACT

In the modern information society, one of the urgent problems is the choice of an alternative way of development and the model of formation. The choice of the General strategy of search of this way causes this or that model of the world. Thus, the universalist model of the world leads to the individualistic path of development of society, and the cosmic one leads to the collectivist one. The Russian model of the world of Lad, being one of the alternatives to the implementation of the cosmic model of the world, determines the conciliar society based on spiritual development and the accumulation of social and historical experience.

Keywords: society, world model, methodology, development

Proceedings of the 4th International Conference on Management, Engineering, Science, Social Science and Humanities (iCon-MESSSH'19)



Dr. R.C. Singh is Professor of Physics in School of Basic Sciences and Research, Sharda University (India). Dr. Singh obtained his doctorate from Banaras Hindu University (BHU), Varanasi in theoretical Condensed Matter Physics. He obtained his B.Sc. (Hons.) and M.Sc. degrees also in Physics from Banaras Hindu University. Dr. Singh has published more than 20 research papers in peer-reviewed international journals and conference proceedings. He has authored one book and co-edited Five conference proceedings. His area of research interest includes study of phase transitions in molecular liquids using density-functional theory; Time-series analysis using wavelets and Biometrics. Dr. Singh is a reviewer of several international journals and has attended and organized many national and international Conferences, Seminars, Workshops and Short-Term programme. Dr. Singh has successfully completed three Research Projects sponsored by the Department of Science and Technology (Govt. of India), New Delhi.

Dr. Singh has extensively travelled to many countries for delivering talks, research and promoting Indian education abroad. Some notable visits include a short tenure at The Abdus Salam International Centre for Theoretical Physics (ICTP), (Italy); Technical University of Munich (Germany); Fraunhofer Institute (Germany); University of Kaiserslautern (Germany); University of Osnabrueck (Germany); Doppler Institute of Mathematical Physics, Prague (Czech Republic); Istanbul Aydin University (Turkey); University of British Columbia, Vancouver (Canada); Homerton College, Cambridge (UK) and Cambridge University (UK). While on his tours for research and academic discussions, Dr. Singh has also used these opportunities to build collaborative arrangements with Institutions abroad and his University in India. His focus on multi-lateral exchange of ideas and collaboration in research has paid rich dividends in terms of reputed Scientists visiting India and Indian students joining international teams in pioneering areas of basic research.

Dr. Singh has been awarded Research Associateship by Council of Scientific and Industrial Research (CSIR), New Delhi and Short Term Visitor status in The Abdus Salam International Centre for Theoretical Physics (Italy). He was conferred the "Bharat Vidya Shiromani Award" by the International Institute of Education and Management, New Delhi, and the "Pride of International Education Excellence Award" which was presented during Indo-Nepal Friendship Summit in Kathmandu by the Intellectual People and Economic Growth Association, New Delhi. He is also recipient of the "Star of Asia Award" by International Business Council, New Delhi and the Global Achievers Foundation, New Delhi conferred on him "Bharat Vibhushan Samman Puraskar" which was presented by Hon'ble Chief Minister of Uttarakhand Shri Harish Rawat at Dehradun. Recently, National & International Compendium, New Delhi presented "Lifetime Achievement Award" to Dr. Singh for his contribution in the field of education.

Administrative experience of Dr. Singh has been diverse. He was the Head of the Department of Applied Sciences, Chief Hostel Warden, Chief Proctor, Dean Students Welfare, Dean Academics, Founder Controller of Examinations of Sharda University, Director Academics and Director of Engineering Institutions during 1997-2015.

Dr. Singh has established himself as a mentor, teacher, leader and an innovator. His responsibilities include providing leadership in research as well as planning for academics at Undergraduate and Postgraduate level. He is known for his exemplary contribution through his dedication, commitment, innovative approach and high integrity. He is a blend of Indian values and international exposure and has dedicated himself to the cause of technical education, meaningful science and research and an astute administrator with interest of students as the foremost priority. Dr. Singh is a strategist, a methodical planner and a composed implementer and has the uncanny ability to create a team of leaders.



Dr. Rohit Khokher is a Professor of Computer Science and Engineering and working as Chief Technology Officer (CTO) in Vidya Prakashan Mandir (P) Ltd., India. He obtained his Master Degree in Computer Systems Engineering from University of South Australia, Australia and Ph.D. from Sharda University, India. Dr. Khokher has a rich experience of industry, academics and administration.

He has made significant contribution in area of his research at national and international level through research publications, attending and organized national and international seminars, conferences and delivering talks in more than 1000 Schools, Institutes and Universities around the globe. Dr. Khokher has visited many universities and academic institutions in Australia, Mauritius, Singapore, Dubai, Indonesia, Thailand etc. for delivering talks and academic collaborations. Dr. Khokher is associated with many professional bodies, which include Society for Research Development (Life Member), Computer Society of India (Member), International Association of Computer Science and Information Technology, Singapore (Member), etc. to promote innovative ideas and research through out the globe.

Dr. Khokher is known for his virtues as a: mentor, teacher, leader, manager, an orator and an innovator. He not only professes the values of Indian culture but he himself practices many of the fundamental principles of humanity and society, while dedicating himself to the cause of technical education, meaningful science and research.



Professor Rajendra Kumar is Head of Computer Science & Engineering Department at Vidya College of Engineering, Vidya Knowledge Park, Meerut (Since 2007).

He has twenty-one years of teaching and research experience. He has also served at Bundelkhand Institute of Engineering & Technology, Jhansi (1998-1999) and Meerut Institute of Engineering & Technology, Meerut (1999-2007).

He has been Member of Board of Studies of Uttar Pradesh Technical University, Lucknow (now Dr. APJ Abdul Kalam Technical University, Lucknow). He is Life Member of Society for Research Development; member of Computer Society of India, IIENG, AASCIT, IAENG Hongkong, IACSIT Singapore, IDES, UACEE, SCIEI, and many more.

He is Reviewer and member of Editorial Board of several Journals worldwide. He has published and presented several research papers in Countries like Singapore, Malaysia, United Arab Emirate, Thailand, Indonesia in different International conferences.

He is author of five text books Theory of Automata, Languages & Computation from McGraw Hill Education, Computer Graphics from Vikas Publishing, Human Computer Interaction from Firewall Media, Information and Communication Technologies for University Science Press, and Modeling and Simulation Concept from University Science Press. He has published two monographs from Lambert Academic Publishing Germany entitled Latent Fingerprint Matching, and Instruction Level Parallelism. Apart from this, he has published study material for Maharshi Dayanand University, Rohtak; Mahatma Gandhi University, Kerala and Chaudhary Devi Lal University, Sirsa. He has edited four proceeding books of international conferences held in Kuala Lumpur (02), Bangkok and Bali.

His research area includes Theoretical Computer Science, e-commerce, Biometric systems, Compiler Design, Multimedia Systems and Software Engineering.

