# WCMRI

**WORLD CONFERENCE ON MULTIDISCIPLINARY RESEARCH & INNOVATION**

## 2023
### HYBRID EVENT

**28th-29th October, 2023 | Singapore**

Organized by

**INSTITUTE FOR ENGINEERING RESEARCH AND PUBLICATION (IFERP)**

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# TABLE OF CONTENTS

# THEME OF THE CONFERENCE

"Pursuing A Critical Stance at the Foreign, Economic, Cultural & Academic Policies that are Impacting Innovation in Multidisciplinary Research Worldwide"

– WCMRI

| SINGAPORE

# PREFACE

We are delighted to extend a warm welcome to all participants attending the 2nd World Conference on Multidisciplinary Research & Innovation (WCMRI), taking place in Singapore on October 28th-29th, 2023. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Science and Technology. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for WCMRI 2023 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Science and Technology. All submitted papers were subject to rigorous peer-reviewing by 2–4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Science and Technology but also serve as a valuable summary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the conference.

Since June, the Organizing Committees have received more than 100+ manuscript papers, covering all aspects of WCMRI 2023. After review, approximately 50+ papers were selected for inclusion in the proceedings of WCMRI 2023. We would like to thank all participants at the conference for their significant contribution to its success. We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

# ABOUT WCMRI

For two thousand years, the advancement of knowledge has taken a path of increasing specialisation. Man has approached the comprehension of the world through the deconstructing of it into much smaller fragments that have given rise to all the disciplines that exist today along with their respective subdisciplines in order to be able to foretell, or at least explain, the behaviour of nature, humanity, and society.

One of the primary motives of the World Conference on Multidisciplinary Research & Innovation (WCMRI-2023) to be held in Singapore on the 28th & 29th of October 2023 is to spur unique discoveries in terms of countering conventional challenges faced in everyday engineering activities and technologies. Technology is progressing at a very fast pace, which currently is weighing heavily on the earth's bounty of natural resources and causing serious damage to the environment. The price for this large-scale and mass expansion in all forms of daily life is being paid for in the form of climate change.

Today, dangerous pollution levels and global environmental degradation endanger the very existence of life on our planet. Now, more than ever, there is an urgent need for professionals from all sectors of engineering and science to come together and work together to find sustainable solutions to sustain economic growth without harming the environment in any way whatsoever.

It is crucial to note that we have a critical need to solve societal problems in a world subject to many forces – the most pressing example today is the consequence of a failure to fully understand all the forces unleashed by the free movement of capital and globalisation.

Until recently, we had an urgent focus on climate change, where we need to look at, among other aspects, how oceans and rivers are impacted by excessive land use and the effects of rapid industrialization, atmospheric elements and solar radiation. These subsystems are connected in time and space and incorporate multiple feedback mechanisms.

The complexity presented in each of these real-world examples requires multidisciplinary research that spans the natural and social sciences if we're to acquire the kind of predictive ability that could inform decision makers.

Finally, we know that the tools we have to analyse the globe are most often transformational when extracted from outside the field that they were discovered by, such as the discovery of X-rays by physicists and their influence on medicine, or the creation of the Internet by the U.S military and its influence on communication in society in general.

When it comes to the current global knowledge landscape, there are influential drivers for innovation through multidisciplinary research to be carried on. The 'World Conference on Multidisciplinary Research & Innovation (WCMRI)' which will take place on the
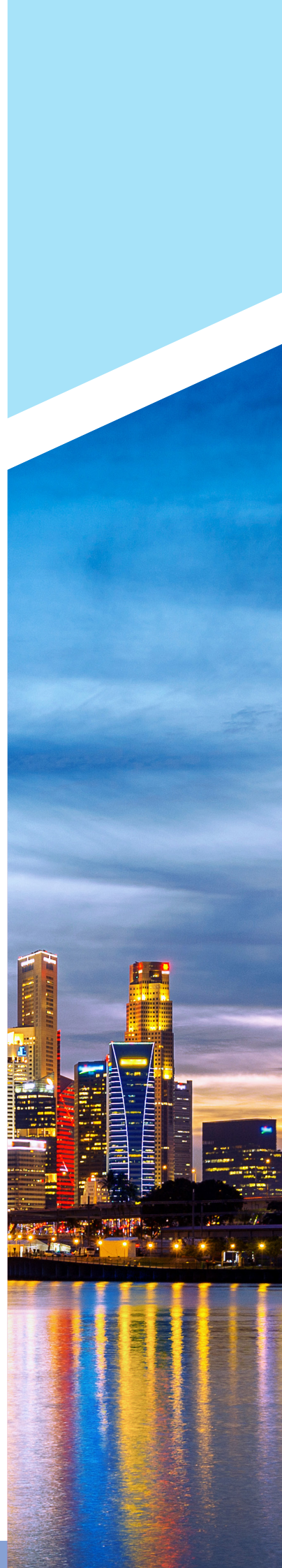
28th & 29th of October, 2023, in Singapore, will seek to continue to raise awareness on these drivers and thereby continue to promote the innovation that takes place as a result of multidisciplinary research. Interdisciplinary research either requires an individual researcher to gain a deep understanding of two or more disciplines and master their language and methodologies, or more frequently requires multidisciplinary teams to come together and create a common base of understanding and framework for discovery and research innovation.

## | Benefits of Conference:

Truly original ideas cannot be forced, but arise spontaneously and unpredictably, even for the inventors themselves. However, personnel departments – now aptly called "human resources" – prefer people who create in an orderly fashion, bit by bit, on schedule. Reflecting this commodity-focused mindset, they prepare annual performance interview forms that are more suited to measuring the performance of auto salespeople than scientific researchers.

Corporates go on endlessly about how they foster creativity and innovativity research. In many companies, one can constantly hear about the company's "vision", but, of course, the vision actually clashes head-on with the conservative managerial mindset. The bandwagon that all companies have jumped on is combinatorial chemistry. The idea is to stop thinking altogether – check your brain at the gate – and just do random compounds. The chance of a particular compound being active is very low, but if you craft enough compounds you might get a hit that can be developed into a useful drug.

As it's creativity that is the origin of innovation, it can be considered an essential component of multidisciplinary R&D success, and that creativity in multidisciplinary projects should be the point of focus. For this, the multidisciplinary researcher must be able to discern the types of creativity. At the 'World Conference on Multidisciplinary Research & Innovation (WCMRI)', participants will learn about the following five types of scientific creativity and how to use them to their advantage –

The formulation of a new idea (or set of new ideas) that opens up a new cognitive framework or brings theoretical claims to a new level of sophistication (basic assumptions give rise to theory, e.g. specific relativity theory of Einstein).

The discovery of a unique empirical phenomenon that fosters new theorising (observation gives rise to theory, e.g. Darwin's theory of evolution).

The development of a brand new methodology, by means of which theoretical problems can be tested empirically (theory gives rise to method).

The invention of a new instrument that opens new research perspectives and new fields of research (technique gives rise to new possibilities).

The new synthesis of formerly dispersed ideas into general theoretical laws allows the analysis of various phenomena within a common cognitive framework (simple ideas give rise to general theory, e.g. general systems theory).

# WCMRI

# ABOUT IFERP

Institute For Engineering Research and Publication (IFERP) is a non-profitable professional association meant for research and development in the field of Engineering, Science & Technology. IFERP is on its way to digitize innovation processes through our professional networking services and thus Providing an Integrated Virtual Scientific Community, mutual engagement, exploring Potential of researchers, creating a cooperative and collaborative academic environment.

IFERP is a paramount body which has brought technical revolution and sustainable development in the field of Engineering, science and technology.IFERP fulfills the need of professionals even for their end to end research & development. IFERP supports the professional growth of its members by providing opportunities for professional networking, life-long learning and career development. Our members, associates, students & staff together made a few milestones achieved through our R&D activities in nook & corners of the world.

IFERP is a forum where innovations & research interest could be supported and developed prioritizing our mutual interest. Our forums & Associates consist of Professional leaders, Engineers, Academicians, Delegates, Scientists, students, Universities, Institutions, Industries, Organizations & Associations connecting each other with a mission to work as wizards of science for defending the earth. IFERP connects engineers, exchange global innovation and act as a bridge between Researchers & Academicians.

## Our Mission

▶▶ To assure quality of incubation and innovation processes from nook and corner of world.

▶▶ To connect professionals at a integrated platform for growth to divert knowledge and skills towards sustainable application of professional education.

▶▶ To ensure excellent opportunities for sharing and gaining knowledge through our professional activities and scientific conferences.

▶▶ To work with organisations to upgrade scopes of professional studies and research by monitoring further opportunities and applications.

## Our Vision

▶▶ Of a united platform to explore research with opportunity to innovate multidisciplinary scopes and applications of professional studies.

▶▶ Of a conglomerate of scientific and academic associations working for humanity.

▶▶ Of digitalising innovation processes through our professional networking services.

# MD'S MESSAGE, IFERP

**Mr. A. SIDDTH KUMAR CHHAJER**

MD & Founder,
IFERP, Technoarete Groups

On behalf of Institute For Engineering Research and Publications (IFERP) & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers.

The goal of the 2nd World Conference on Multidisciplinary Research & Innovation (WCMRI) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in the field of Science and Engineering.

This conference creates solutions in different ways and to share innovative ideas in the field of Science and Engineering. WCMRI 2023 provides a world class stage to the Researchers, Professionals, Scientists, Academicians and Students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

WCMRI 2023 will explore the new horizons of innovations from distinguished Researchers, Scientists and Eminent Authors in academia and industry working for the advancements in Science and Engineering from all over the world. WCMRI 2023 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the field of Science and Engineering.

# CEO'S MESSAGE, IFERP

**Mr. RUDRA BHANU SATPATHY**

CEO & Founder,
IFERP, Technoarete Groups

IFERP is hosting the 2nd World Conference on Multidisciplinary Research & Innovation (WCMRI) this year in month of October. The main objective of WCMRI 2023 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts.

Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader. I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

# SPEAKER'S BIOGRAPHY

**Dr. LEE CHING HAO**

Lecturer, School of Engineering, Faculty of Innovation & Technology, Taylors University, Malaysia

Dr. Lee Ching Hao is a seasoned academician with over seven years of experience in the field of engineering higher education. He currently holds the position of lecturer in the Department of Mechanical Engineering at Taylor's University in Malaysia. In this role, he actively contributes to the development of new course subjects and enhances the content related to Engineering Fluid Mechanics, Electronics, and Microprocessors. Furthermore, he supervises both postgraduate and undergraduate projects that focus on Green composite research.

Dr. Lee Ching Hao's commitment to environmental sustainability and innovation is evident through his various initiatives. In 2023, he received a "Bronze" innovation award in a competition. Notably, he has taken the initiative to collect used face masks from the local community, resulting in the collection of more than 50 kilograms of these masks. This effort has prevented the unethical disposal of these masks.

In addition, Dr. Lee Ching Hao is actively involved in researching ways to recycle multilayered plastic and aluminum food sachets, which are typically considered non-recyclable on a global scale. These research efforts aim to transform these sachets into usable products, contributing to a more sustainable future.

# SPEAKER'S BIOGRAPHY

### Dr. HASSANUDIN BIN MOHD THAS THAKER

Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia (IIUM), Malaysia

Dr. Hassanudin Mohd Thas Thaker is an experienced Associate Professor of Financial Economics with a demonstrated history of working in the higher education industry. Skilled in International Trade and Finance, Crowdfunding, Islamic Finance, Financial Technology and Affordable Housing/Property. Strong education professional with a Postgraduate Certificate in Academic Practice (PGCAP) from Lancaster University, UK and obtained fellowship of Higher Education of Academy (FHEA) in 2021. An active researcher with contributions appearing in numerous international journals of finance and economics, reviewer and highly engaged in the industry grants. He had been awarded with: (i) Best Paper Award, (ii) Distinguished Paper Awards, (iii)Outstanding Paper- Academic Excellence Award by Emerald Group Publishing, (iv) the Vice-Chancellor& Research: Award for Achievement in Research and the Editor & Choice Article Award. His H-Index in now more than 20 while i10- index is more than 30. Currently, Dr. Hassanudin is an academic member at the Kulliyyah of Economics and Management Sciences and Deputy Director of Governance at the Office of Knowledge for Change and Advancement, International Islamic University Malaysia (IIUM). He has been invited by central banks from Malaysia and Indonesia, Asian Development Bank Institute (ADBI), State Government, universities etc. to share his research findings on current issues like housing markets, fintech, digital economy, ESG etc. He is also holding and completed some local and international grants awarded by industry and Ministry of Higher Education of Malaysia. In addition, he was the recipient of travel grant to the Harvard University, United States in 2018. He is a regular co-organizer of international conference such as 10th, 11th and 12th Foundation of Islamic Finance Conference since 2019. He is also appeared in local media and radio stations covering issues in finance and economics.

# SPEAKER'S BIOGRAPHY

## Dr. ROHIT BANSAL

Professor, Department of Management Studies, Vaish College of Engineering, Rohtak, India

Dr. Rohit Bansal is working as Professor in Department of Management Studies in Vaish College of Engineering, Rohtak. He has authored &amp; edited 28 books with renowned national &amp; international publishers. In addition to, he has published 150 research papers and chapters in journals of repute including Scopus indexed as well as edited books. He has also presented papers in 50 conferences and seminars. His area of interest includes organizational behaviour, marketing management, human resource management, digital marketing, e-learning. He is on editorial advisory board as a member in 110 national and international peer reviewed journals. He served as member of advisory committee in many international conferences. He has acted as session chair in many international conferences. He has been awarded many times for contribution to academics and research.

# SPEAKER'S BIOGRAPHY

**Dr. TEIK-CHENG LIM**

Professor, Associate Professor, School of Science and Technology, Singapore University of Social Sciences, Singapore

Teik-Cheng Lim won a Faculty of Engineering Annual Book Prize for his undergraduate studies at the National University of Singapore (NUS) and was awarded the NUS Research Scholarship to pursue his PhD in the same university. He is currently Associate Professor and Head of PhD (Engineering) Programme at the Singapore University of Social Sciences. He is listed in the World's Top 2% Scientists by Stanford University.

# SPEAKER'S BIOGRAPHY

**Mr. DIPAK SINGH**

Director – Data & Analytics, Indus Net Technologies (INT), India

**Introduction:** Dipak is a dynamic and accomplished Data Scientist with a diverse background in finance, insurance, retail, and pharmaceuticals. He is known for his extensive expertise in analytics, business modeling, and forensic accounting. With over a decade of experience, Dipak has made significant contributions to various domains, making him a sought-after expert in his field.

**Education:**

Chartered Accountant (CA) from The Institute of Chartered Accountants of India (ICAI)
Certified Forensic Professional (ICAI)
Graduate in Commerce from St. Xavier's College, Kolkata

Professional Experience: Dipak's professional journey has been marked by excellence and versatility:

Data Science & Analytics: Dipak has honed his skills in data analytics, machine learning, and artificial intelligence. His insights have proven invaluable to clients across multiple sectors, including manufacturing, retail, insurance, food services, FMCG, and IT.

Accounting and Auditing: As a Chartered Accountant, Dipak possesses a deep understanding of financial systems and auditing practices. His financial acumen has helped businesses thrive.

Forensic Accounting: Dipak's certification as a Certified Forensic Professional underscores his commitment to combating financial fraud and misconduct. He played a pivotal role in drafting India's first Forensic Accounting and Investigation standards.

Conference Topics: Dipak is a versatile speaker who can contribute valuable insights on a wide range of topics, including:

Data Analytics and Its Impact on Business Decision-Making
Leveraging Machine Learning for Financial Forecasting
Forensic Accounting: Uncovering Financial Irregularities
Navigating the Intersection of Finance and Technology
The Future of AI in the Insurance Industry

Achievements: Dipak has received recognition for his contributions to the fields of data science and finance. He is known for his dedication to advancing best practices in forensic accounting, and he continues to be a driving force behind industry standards.

Engaging Speaker: Dipak's passion for his work shines through in his engaging speaking style. His ability to simplify complex concepts makes him an ideal speaker for both technical and non-technical audiences.

Conclusion: Dipak's unique blend of expertise in data science, accounting, and forensic investigation makes him a valuable asset to any conference. His insights and experience are sure to leave a lasting impact on your audience, providing them with valuable takeaways they can apply in their respective fields. Invite Dipak to your event for a dynamic and enlightening session.

# SPEAKER'S BIOGRAPHY



**Dr. ABBAS FADHIL ALJUBOORI**

Professor, University of Information Technology and Communications, Baghdad, Iraq

Prof. Dr. Abbas Fadhil Aljuboori is working currently at Media Technology Engineering, College of Engineering, University of Information Technology and Communications, Iraq. He has a Ph.D. in Computer Science from Dongguk University, South Korea. Fulbright Visiting scholar – University of Central Oklahoma – Edmond – USA –2017. International Advisory Board Member for CT University in India. He worked as a Vise President for Administrative Affairs and Head of Smart Cities Center at University of Information Technology and Communications, Baghdad, Iraq. Faculty Staff Member at Al Zahra College for Women, Muscat, Oman. Researcher and Manager in the Advanced Institute of Convergence Information Technology (AICIT) – South Korea, Head of Computer Science Department – University of Kerbala. Vice President of Iraqi Universities Accreditation and Quality Assurance Council for Computer Science and IT. His field of Interest are in Data Mining, Web Applications, Big Data, Data Security, Information Systems, Social Media Analysis, and Smart Applications. He is a Member of several of Academic and Professional Societies. He is an Editor-in-Chief, Editorial Board Member and Reviewer of many eminent International Journals and Conferences worldwide.

# SPEAKER'S BIOGRAPHY

**WCMRI**



**Dr. NORMA ALIAS**

Associate Professor, Department of Mathematical Sciences, Faculty of Science UTM, Malaysia

Associate Professor Dr. Norma Alias received her Ph.D. in Industrial Computing (Supercomputer) at Universiti Kebangsaan Malaysia. She is the Committee of Synthetics Biology RG and Future Ready Educator 4.0. Handling 30 webinars per year at the local and international levels. She is among 40 UTM research excellence in the year 2006, Venus Distinguished Women Award and a mentor for SUNSHINE++ program. She is chair for 4 international conferences, MSMK Chief Editor and Associate Editorial Board for 38 international journals. Her research encompasses big data analytics on high-performance computing, validation of complex mathematical model, solving grand- challenge applications in nanotechnology, IoT, AI-smart digital towards Industry 5.0.

# SPEAKER'S BIOGRAPHY

**Dr. HOUDA CHIHI,**

Chief Engineer, Tunisie Telecom, Tunisia

PhD in telecommunication, senior researcher at Innov'COM Laboratory of Sup'COM Tunisia, Techwomen Fellow 2019, senior engineer at Tunisie Telecom. Her research field includes wireless communication, signal processing, vehicular communication, green communication, mobile communication, V2X, AI. She is a member of ISOC chapter Tunisia, member of African Union Expert Cybersecurity Group, member of NCSG ICANN and reviewer in many IEEE conferences. After her PhD she worked as a temporary assistant in many engineering schools well ranked in Tunisia such as Sup'COM, ISET'COM, ESPRIT, ISAMM, ISI.

# SPEAKER'S BIOGRAPHY

## Mr. FRANCIS TEO

Chief Executive Officer,
Solomo Technologies Pte. Ltd.,
Singapore

Francis Teo is a seasoned professional with a proven track record in driving digital transformation, pioneering AI-driven marketing solutions, and architecting advanced blockchain systems. With over a decade of experience, Francis is at the forefront of helping organizations navigate the complex terrain of today's digital landscape. His unique blend of expertise and certifications in various domains sets him apart as a true industry leader.

Association Leadership:

CoOrganizer for International Business Federation 2017, 2018, 2019, 2020, 2021, 2023
Organizer for International Business Summit and Expo 2023

Professional Expertise:

Digital Transformation: Francis specializes in guiding organizations through the intricacies of digital transformation. He possesses a deep understanding of how businesses can harness technology to stay competitive, enhance efficiency, and adapt to ever-evolving market dynamics.

AI Marketing Automation: With a focus on small and medium-sized enterprises (SMEs), Francis is a pioneer in the field of AI-driven marketing automation. He has a knack for tailoring AI-powered marketing strategies that help SMEs achieve higher ROI, optimize customer experiences, and streamline their marketing operations.

Blockchain Architecture: As an advanced blockchain architect, Francis is well-versed in designing and implementing cutting-edge blockchain solutions. His work spans industries, including finance, supply chain, and identity verification, where he ensures the security, scalability, and efficiency of blockchain systems.

Certifications: Francis holds a multitude of certifications, including TOGAF, SAFe (LPM/POPM/SSM), BCG, and IASA Business/Solution Architect certifications. These credentials underscore his commitment to industry best practices and methodologies, making him a reliable partner in complex projects.

Government Grants and Public Listed Companies: Francis has a knack for helping public listed companies secure government grants to support their digital initiatives. His expertise in navigating the regulatory landscape and identifying funding opportunities sets him apart in this specialized area.

# SPEAKER'S BIOGRAPHY

**Dr. LORENC DANAJ**

Legal lawyer& Lecturer of Penal Law Science, University of Vlora, Albania

Dr.Lorenc Danaj is a Lecturer at University of Vlora. He has operated as Dean of Human Science Faculty in "Ismail Qemali "Vlora, University. He helds a doctoral degree in Law and justice, specifically in Penal Science. Now is a lecturer at University of Vlora. After his Dean mandate ended he has operated as a Chief of the Department of Law Science. He is a member of "Chamber of Lawyer "in Tirana where he is operating with his work as a legal lawyer.

Meanwhile he is an author in many papers with impact factors showing also the collaboration with colleagues of law and other sciences. His passions are the penal cases and sports.

# SPEAKER'S BIOGRAPHY

**Mrs. SONAL GULATI**

Assistant Professor, Department of Management, NDIM, India

Mrs. Sonal Gulati is working as Professor in Faculty of Data Analytics and Data scientist , Department of Management, New Delhi Institute Of Management, India.She delivered many keynote sessions on data analytics and data scientist. She well know for her training programs on various Universiteis and industry for faculty development training sessions. She conducted online and offline faculty training session's . Mrs. Sonal Gulati excellent speaker and trainer in Data science.

# SPEAKER'S BIOGRAPHY

**Dr. STEPHEN AYOADE FADARE**

Associate Professor, College of Sports,
Physical Education and Recreation,
Mindanao State University (Main) Marawi
Marawi , Philippines

Dr. Stephen A. Fadare is a highly respected academic and passionate educator, currently serving as an assistant professor at Mindanao State University (Main) Marawi. He specializes in sports psychology, recreation for the special population, and coaching female football. He completed his doctoral studies in educational management, a Master of Arts in Education Management, and a Master of Arts in Physical Education at Saint Louis College. His extensive research and groundbreaking insights have earned him recognition and respect within the academic community. He is committed to fostering an engaging learning environment for students, employing innovative teaching methods, encouraging critical thinking, and promoting active participation in research. His strong interpersonal skills and ability to connect with students have consistently resulted in positive feedback and exceptional student performance. Dr. Fadare also actively engages in community outreach programs and serves as an editorial board member, peer reviewer for reputable journals, mentor, and advisor to aspiring scholars. His achievements have been recognized through numerous awards and accolades.

# MODERATOR

**Dr.CHERIE BAUTISTA-APOLINARIO**

Professional Lecturer in Masters &
Doctorate Program, Pacific
Intercontinental College &
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**Dr. Lee Ching Hao**

Lecturer, Mechanical Department, Taylor's University Selangor, Malaysia

**Rhodora D Lintot**

Faculty, College of Business, Entrepreneurship and Accountancy (CBEA), Rizal Technological University Quezon, Philippines

**Dr. Stephen Ayoade Fadare**

Associate Professor, College of Sports, Physical Education and Recreation, Mindanao State University (Main) Marawi Marawi, Philippines

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Engineer, Sembcorp Marine Integrated Yard Pte Ltd, Offshore Fixed Platforms, Singapore

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**Teik-Cheng Lim**

Associate Professor, Composite mechanics, Mechanical metamaterials, Plates, Singapore University of Social Sciences, Singapore

**Dr. Rose Mary A. Velasco**

Associate Professor, Doctor in Information Technology, Isabela State University Echagu, Philippines

# COMMITTEE MEMBERS

**Dr. Norkhairunnisa Mazlan**

Associate Professor, Nanocomposite, Universiti Putra Malaysia, Selangor, Malaysia

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Associate Professor, Faculty of Business and Communication, Universiti Malaysia Perlis (UniMAP)perlis, Malaysia

**Dr. Mohd Rosdzimin Abdul Rahman**

Associate Professor, Department of Mechanical Engineering, Universiti Pertahanan Nasional MalaysiaKuala Lumpur, Malaysia

**Dr. Hayatul Safrah Salleh**

Associate Professor, Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu Terengganu, Malaysia

# ABSTRACT'S INDEX

# 2<sup>nd</sup> World Conference on Multidisciplinary Research & Innovation (WCMRI)

## 28<sup>th</sup>-29<sup>th</sup> October, 2023 Singapore

| Singapore

# ABSTRACTS ▶▶

# Cognitive Competence of Prospective Elementary Teachers on Realistic Mathematic Education through Cooperative Learning

**Puji Lestari**
Yogyakarta State University, Yogyakarta, Indonesia

**Bambang Saptono**
Yogyakarta State University, Yogyakarta, Indonesia

**Sekar Purbarini Kawuryan**
Yogyakarta State University, Yogyakarta, Indonesia

**Rahayu Condro Murti**
Yogyakarta State University, Yogyakarta, Indonesia

## Abstract

Having cognitive competence in mastering learning theory and designing learning is one of the important competencies for prospective teachers to have. The description of prospective teacher competence is important for lectures to follow up. One approach to learning in mathematics is Realistic Mathematic Education (RME). RME is a student-centered approach to learning mathematics adopted from the Netherlands and holds to the principle that mathematics is a human activity. This learning approach has been implemented massively in the last few decades in Indonesia and has had a positive impact so this approach is important to teach. However, there are still many prospective elementary teachers who do not know and understand what and how to implement RME itself. Because of the importance of the cognitive competence that prospective elementary teachers must have regarding this RME approach, further research is needed on this matter. The aim of this study is to describe how the cognitive abilities of prospective elementary teachers on RME approach with the application of cooperative learning. The method used in this study was descriptive qualitative with observation and survey data collection techniques which were analyzed using cognitive levels according to PISA and Anderson on 50 prospective elementary teachers in Yogyakarta State University or in Bahasa Universitas Negeri Yogyakarta (UNY) 4th semester students. The results of this study were that most students had a fairly good theoretical understanding of RME. Although to apply it in learning mathematics requires more training, especially in designing contextual problems and how to evaluate them with various other approaches in learning mathematics.

## Keywords

Cognitive Competence, Cooperative Learning, RME

# Lesson from COVID-19: Next Pandermics Preparedness from Buddhist Approach

**Pattamawadee Sankheangaew**

Department of Religion and Philosophy (English Program), Mahachulalongkornrajavidyalaya University, Lam Sai, Thailand

## Abstract

This paper has two objectives 1) to study the influence of digital and new technology on COVID-19 diagnosis and healthcare 2) To study COVID-19 from Buddhist Philosophical Perspective 3) To guide pandemics preparedness and primary care from Buddhist approach. COVID-19 stands for corona (CO), virus (VI), disease (D), or SARS-CoV-2, is a respiratory virus first identified in December 2019 in Wuhan, China (WHO, 2019). It is an epidemiological crisis that caused the deaths and sudden destruction of wealth and health of people around the world. Many countries responded to the crisis with what could only be called urgent prevention and treatment. In the 21st century, our society is based on digital and new technology that can control and prevent the COVID-19 pandemics. However, these ways for solving the problem of COVID-19 pandemics are rising an epistemological crisis too. There are some problems with the COVID-19 diagnosis. From Buddhist philosophy perspective, COVID-19 teaches us the coronavirus is causing us to experience some heightened forms of the three marks of our existence which are the impermanence (aniccā), the suffering (duhkha), and the non-self (anatta). The establishment of scientific expertise and innovation has shown its value and educating the public about testing, diagnosis, communication, treatment, and vaccine development to prevent the next pandermics.

## Keywords

COVID-19, COVID-19 Diagnosis, Buddhist Approach, Three marks of existence, Preparedness

# Dynamics of School Management and Its Translations Into School Climate

**Dr. Gary Vincent L. Mengullo**

Oras National High School, Department of Education, Division of Eastern Samar and Leyte Normal University, Philippines

## Abstract

School climate which refers to the learning environment of a particular academic institution has been of great interest to educators, researchers, and educational policy makers since the turn of the twentieth century (Bear, Yang, Gaskins, Blank, & Chen, 2014). The study is grounded on Social Capital Theory and Ecological Systems which was introduced by Robert Putnam and Urie Bronfenbrenner. Through the multiple-case study among 27 participants from different secondary schools, the researcher explored participants' experiences with the development of positive school climate. Conducted a series of interviews with each participant, the researcher investigated their different school management practices and leadership styles that contributed to the existence of positive school climate. The researcher triangulated interview data have seen in the instrument being used in this study. Results indicated that school management practices such as Teaching and Learning, Institutional Environment and Relationships are important considerations in building a positive school climate. Based on experiential trend of the 27 Cases, principals do not employ on one particular definite leadership style, but it depends upon a particular situation. School heads use different leadership styles, sometimes a combination of two different styles or more, but with the common goal and that is to build a conducive environment for all the students, teachers, and other stakeholders. Findings suggested that there is no dominant leadership style used by the principals and that there is a degree of flexibility on the leadership styles which lead to the development of Flexible Leadership Model (FLM). Furthermore, participants promote different strategies such as Monitoring and Evaluation, Problem Analyses, Incentive System, Financial Management, Professional Development, Consultative, Security System and Stakeholder's Support in developing the overall positive school climate. While the study has solid foundation on management practices and school climate situation in the Division of Eastern Samar, further investigation is needed to determine the usefulness of the Flexible Leadership Model (FLM) derived from this study and how the school climate within the Philippines happen.

## Keywords

School Management Practices, School Climate, Multiple Case Study, Flexible Leadership Model (FLM), Cross-Case Analysis

# Study of Oligarchical Performance in Indonesian State - Owned Enterprises: Agency Theory and Javaness Culture Perspectives

**Haryani**
School of Economics, STIE – Dharmaputera, Indonesia

**Muchamad Syafruddin**
Department of Accounting, Diponegoro University

**Andrian Budi Prasetyo**
Department of Accounting, Diponegoro University, Indonesia

## Abstract

In a different principal-agent setting, this research investigates wheter audit quality influence on oligarchical performance in Indonesian State - Owned Enterprises (ISOE) through earnings management as a mediating variable. In this setting, agency relationships are contractual people of Indonesia to the President of Republic of Indonesia (R.I). According to the State-Owned Enterprises Act, No. 19, 2003, then President Of Indonesia Republic (R.I) delegate of the authority to the Minister of RI, Board of Commissioners, and Board of Directors. The Board of Directors is the central group that determines the company's performance, but does not have full authority and power. Authority and power is spread and divided into partises, such as internal firm, Labor Union, Board of Commissinoers, Minister of RI, President of RI, even Leaders of Political Parties and in certain social environment called Javanese Culture. Hence, in conducting firm, board of directors have to accommodated and considered all the parties. Thus, performance of BOD is performance of a compromise among all interested parties, we called oligarchical performance. In design and methodology approach we obtain and use data from annual reports of ISOE ended 2021 that were analyzed using partial least square and carried out with the help of software WarpPLS 5.0. The result of research show that there are mediation of earnings management on impact of audit quality on oligarchical performance. The originality of this research is primary on the different definition of performance called oligarchical performance. The other originality of this research is on the basis of analysis and explaination that use different assumption in agency relationships, and also different corporate culture, called Javanese Culture.

# Gamification-Stimulus to Learners' Style, Interest, Speed and Academic Performance : A 21st Century Learning Based Pedagogical Strategy in Science Education

**Evangeline T. De Paz**
University of the Philippines Open University, Philippines

## Abstract

In the past, the emphasis was on the "3R's" (Reading, Writing, Arithmetic) as well as social studies, science and language. The model was teacher-centered with an emphasis on teaching strategies that focused on repetition, memorization, and lecturing; and tests were given at the end of the learning cycle to assess student learning. Today, educators in the field of teaching are evermore committed in giving our students the 21st century learning through the tools and skills they need to succeed in whatever endeavor in life they choose to do.

Accordingly, the framework prepared by The Partnership for 21st Century Skills advocated for the integration of core, academic knowledge, critical thinking, and social skills in teaching and learning to support students in mastering the multi-dimensional abilities required in the 21st century. Not only these skills include the New 3Rs, Relationships, Routines, and Resilience, of core academic content mastery but also the 4Cs, Critical Thinking, Communication, Collaboration, and Creativity. Finally, integrating a more realistic and practical cognitive learning and skills into the curriculum, students can gain a deeper understanding of the subject as well as ways to solve complex problems in the real world.

Significantly, fast pace of technological advancements have affected all aspects of life, including education. Modern pedagogical paradigms and trends in education was reinforced using ICT, thus creating new approaches and techniques in educational processes in order to implement active learning by educational technology application. Gamification as a trends is one of the most popular and globally preferred amongst students. It has been adopted to support learning in a variety of contexts and subject areas and to address related attitudes, activities, and behaviors, such as participatory approaches, collaboration, self-guided study, completion of assignments, making assessments easier and more effective, integration of exploratory approaches to learning, and strengthening student creativity and retention. While the implementation of gamification in science education has been an intriguing area for many researchers, yet at the same time draws interest since utilization of gaming elements and aesthetics positively enhance students' motivation and promote learning. Logically it can be explained, the core idea in gamification lies on the empowerment that game elements' motivational strength can be transferred in an educational context. Moreover, gamification as an educational strategy can facilitate scientific thinking compatible with scientific theories, methodologies, and meaningful learning.

Based on scientific studies an advantage of gamification is that by playing games, students produce dopamine, the reward hormone, and endorphins, which are also known as 'happiness hormones'. These enable them to work in a more relaxed and focused manner with perseverance and self-confidence. Besides, gamification can be applied to students of all ages and with different needs.

One key sector where gamification is being actively explored, mainly for its potential to motivate is education.

## Keywords

Gamification, Science Education

# Gender Responsiveness in the Philippine Basic Education Context: Priority Thrusts and Initiatives in the Schools Division of Batangas City

**Famela Q. Barairo**
Junior High School Department, University of Batangas, Philippines

**Nerissa D. Torregoza**
Grade School Department, University of Batangas, Philippines

**Romell A. Ramos**
Research and Publications, University of Batangas, Philippines

## Abstract

In 2017, the Department of Education (DepEd) issued the Gender Responsive Basic Education Policy ([GBER], DepEd Order 32, series 2017) mandating schools to pursue initiatives to address the enduring and emerging gender issues and to promote gender equality in the basic education sector. Through this exploratory-sequential research, the gender-mainstreaming initiatives implemented in the Schools Division of Batangas City were explored and analyzed. The assessment of 255 teachers, school heads, and members of the gender and development (GAD) focal point system on the GBER implementation, based on the Gender Mainstreaming Evaluation Framework (GMEF), revealed that the gender-mainstreaming in their division is currently at the GAD application (Level III). The basic education personnel are aware of the various GAD initiatives that have been institutionalized within the organization and the strategic approach to implementing the GAD-related activities. The results and findings from the real-time Delphi survey and focus group discussion underscore the importance of targeted interventions in curriculum development, pedagogy, learning environments, research, capacity building, and knowledge management. The study recommends strengthening awareness programs, addressing knowledge gaps, implementing real-time monitoring and evaluation mechanisms, and fostering collaborative partnerships to enhance gender responsiveness within the Schools Division of Batangas City. These recommendations aim to foster an inclusive and equitable educational environment that supports the holistic development of all students, aligning with the principles of the Gender Responsive Basic Education Policy.

# Analyzing the Influence of COVID-19 on Soft Skills in Human Resources: A Novel Economic Framework

**Mohammad Alamarat**
Al-Balqa Applied University, Lviv, Ukraine

**Oleh Sokil**
Lviv Polytechnic National University, Lviv, Ukraine

**Nazar Podolchak**
Lviv Polytechnic National University, Lviv, Ukraine

**Olena Bilyk**
Lviv Polytechnic National University, Lviv, Ukraine

**Natalia Tsygylyk**
Lviv Polytechnic National University, Lviv, Ukraine

## Abstract

This paper introduces an economic model aimed at assessing and managing the impact of COVID-19 on the soft skills of human resources in Ukraine. The study explores the theoretical, methodological, and practical aspects of performance indicators to ensure the sustainable development of soft skills during the pandemic. It identifies specific indicators related to the influence of employees' soft skills in the context of COVID-19 and collects data from 100 respondents across 10 enterprises using a questionnaire. The research employs various analytical procedures, including quadratic correlation, regression analysis, and the creation of a polynomial trend line, utilizing Microsoft Excel. The analysis highlights two potential scenarios that have emerged during the pandemic, emphasizing how employees' adaptability has led to improvements in competencies and communication skills. These enhancements enable them to make informed decisions in enterprise management and economic activities, despite the constraints imposed by the crisis.

# Comparative Study of Filipino Consumers' Impulse Purchasing Behavior Between Online Grocery and In-Store Grocery Mainly in The National Capital Region (NCR)

**Babida N**
University Of Santo Tomas, España Manila, Philippines

**Rilloraza E**
University Of Santo Tomas, España Manila, Philippines

**Uy C**
University Of Santo Tomas, España Manila, Philippines

**Lugay C**
University Of Santo Tomas, España Manila, Philippines

**Ngo, J**
University Of Santo Tomas, España Manila, Philippines

## Abstract

The process of grocery shopping has changed as the epidemic has affected the market. This paper presents a first step towards understanding the comparison of what influences the desire to do impulsive online and in-store grocery shopping. The study draws inspiration from a wide range of empirical research and review papers that discuss the phenomena of online impulse buying and attempts to establish a correlation on whether the same factors that cause in-store grocery impulse purchases can also affect online grocery impulse purchases. This study examined the intrinsic and extrinsic factors in purchasing through online and in- store grocery including Impulse Buying Tendency (IBT), Money Availability (MA), Time Availability (TA), Visual Merchandising (VM), Online Environment (OE), In-store Environment (ISE), and Sales Promotions (SP) of Filipino consumers. The researchers used a correlational technique, a self-administered questionnaire and conducted online surveys among Filipinos in the National Capital Region (NCR) who maximized the use of online and in-store grocery. Thus, through the findings of this study, the researchers identified under In-store grocery shopping that In-store Environment (ISE) is the factor affecting consumers' impulse buying tendencies. On the other hand, Visual Merchandising (VM) affects consumers' online impulse buying. As the gathered data proved the determinants affecting the purchasing behavior of consumers, the study provided recommendations to reduce their impulsive tendencies.

# Community Residents' Awareness and Preparedness on Disaster Management

**Joanna Mae Yoro**
Mariano Marcos State University, Batac, Philippines

**Angela Jane E. Vicente**
Mariano Marcos State University, Batac, Philippines.

**Seantelle R. Vidad**
Mariano Marcos State University, Batac, Philippines

**Dhon Jerome Vicente**
Mariano Marcos State University, Batac, Philippines

## Abstract

Natural and human-induced disasters in the Philippines have devastated the country, affecting its social and economic development. Particularly, people and the economy are highly vulnerable to the effects of disasters due to their reliance on climate-dependent industries. In response, collaborative groups, such as community-based disaster risk reduction and management (CDRRM), encourage community engagement and foster cooperation and active participation among vulnerable groups. Despite extensive research, information on household preparedness and resilience at the local level remains limited. The study examined the level of awareness and extent of preparedness for disaster management among community residents. The study utilized a descriptive-correlational design, proportional stratified random sampling used, and data collection was done through a questionnaire checklist. A total of 382 respondents aged 18-59, residing in Batac City, Pagudpud, and Pinili, the most affected towns of Ilocos Norte in the past five years, participated in the study. They demonstrated a high level of awareness and extent of preparedness. Additionally, only three variables - age, educational attainment, and family monthly income - showed a significant relationship with the respondents' level of awareness. Similarly, age and family monthly income exhibited a significant relationship with the extent of preparedness. Lastly, a significant relationship was found between the level of awareness and the extent of preparedness among the respondents' management. Through this study, the development of community-centered programs and disaster management education will improve communities' disaster management, and understanding of appropriate actions, and make the findings available for future academic use.

## Keywords

Community Resident, Disaster Management, CDRRM

# Experience of Student in the University of San Jose Recoletos(USJR) Senior High School(SHS) ICT Enhancement Curriculum Innovating an Augmented Reality App in 21st Century Classroom

**Joan Rajah**

University of San Jose Recoletos Senior High School, Philippines

## Abstract

Learning Arduino Uno Component can also be done with the use of Augmented Reality. With the use of Unity platform using Vuforia Engine or any AR platform in making the AR App. This will make the classroom more exciting for learning. With the use of the new platform, students can gain a better understanding, fun and interactive. With the use of the tool Aryel students are able to create and explore Augmented Reality Applications. Revolutionizing the ways students experience learning. This kind of app can be used in future classrooms.

## Keywords

Experience, ICT Enhancement Program, Augmented Reality App, Future Classroom

# Beyond Pedagogical Expertise: Best Practices of Classroom Advisers Toward an Effective Advising Framework

**Renedict B. De Leon**
Dr. Yanga's Colleges, Inc., Bocaue, Bulacan, Philippines

## Abstract

Teachers do not just teach as they also fill the role of being classroom advisers of their students. This study explores their best practices through their lived experiences in managing the students in terms of their academic responsibilities, behavior, and even personal problems. The study employed a qualitative research design specifically a phenomenological approach wherein the participants of the study were selected through homogeneous purposive sampling. A series of semi-structured interviews were conducted after that, the interviews were transcribed and analyzed. The researcher came up with six emergent themes: (1) Raison d'etre: Reason for Being; (2) Development through Challenges; (3) Secure Attachment; (4) Observance of In Loco Parentis; (5) Adaptive Strategies, and; (6) Evidence of Success. It was found that classroom advisers described their lived experiences as challenging yet fulfilling duties. The best practices of classroom advisers involve establishing a connection with the students, valuing individuality, having constant communication, providing guidance, practicing parenting roles, yearning for the success of the students, being proactive, observing inclusivity in the classroom, and setting boundaries. The evidence of the success of their best practices, as presented by participants, includes gaining the trust of their students through listening and sharing stories, receiving messages of appreciation, and seeing the students transform for the better. An Effective Advising Framework was proposed based on the findings of the study which could be helpful in the classroom advisers for both public and private educational institutions.

## Keywords

Classroom Advisers, Best Practices, Effective Advising

# Less is More: Home-School Disaster Risk Reduction Plan

**Dr. Angela C. Napa**
University of Bantangas, Batangas City, Philippines

**Dr. Edward E. Babasa**
University of Bantangas, Batangas City, Philippines

**Judith A. Asistin**
University of Bantangas, Batangas City, Philippines

## Abstract

Disasters happen. It takes place anywhere, at any time, and in front of human eyes. For the country, it hampers economic growth, undermines social stability, and changes geographical characteristics. At some point, even the socio-emotional state is negatively affected. This research was an act towards helping the government manages the disaster risk reduction efforts through the collaborative initiatives of the University of Batangas and its students and families. The home-school partnership is seen to produce simple yet valuable input to the research plan. Just like what is mentioned in the title, the less that is done through home and school partnership will have more meaningful impact. Specifically, this determined the disaster risk reduction practices and strategies and eventually crafted a plan to improve the DRR efforts being done in every community where the University students live. Significant part of the plan was to integrate DRR strategies into the curriculum. With these being implemented, the local governments in this area will benefit. The target participants were 507 college students of the University of Batangas selected via stratified random sampling with a 5% margin of error and 95% confidence interval. Descriptive statistics was applied to analyze the gathered data, such as the weighted mean, percentage, frequency count, and standard deviation. The in-depth information gathered from the interview was integrated in the results. The findings were as follow: The DRR knowledge of the respondents and the DRR practices applied were observed to be of great extent. Meanwhile, the impact of such practices was evident for most items but strongly evident for items that concern family living and home routines. The DRR plan crafted out of the home-school partnership is intended to assist the Barangay in the implementation of some identified initiatives. Disaster risk reduction strategies are also intended to be integrated in the selected subjects in the University.

## Keywords

Disasters, Disaster Risk Reduction (DRR), DRR Strategies, Home-School DRR Plan, Home-School Partnership

# Application of Plackett –Burman Design in the screening of Factors Acting on the Sulfuric Leaching Process of Rare Earths from Moroccan phosphogypsum

**Fatima Asafar**

Faculty of science Semlalia, Cadi Ayyad University, Marrakesh, Morocco

## Abstract

As the main waste of the phosphates industry (200–300 million tons per annum produced globally), phosphogypsum (PG) is a major environmental concern (85% of PG is disposed of on land or at sea). The valorization of PG as a secondary source of rare earth elements (REE) is one of the most recent valorization options under investigation. This study investigated the sulfuric acid leaching process of REE from a Moroccan PG. Plackett -Burman design was used to statistically screen significant factors affecting the leaching efficiency of REE named the studied response (Y). Seven factors considered potentially influential were studied as the model variables : Sulfuric acid concentration (X1); Solid to liquid ratio (X2); Drying temperature (X3); Leaching time (X4); Stirring speed (X5); Temperature (X6), Particle size (X7). According to the results, the predicted values of the fitted model were in good agreement with the experimental values by a coefficient of determination ($R^2$) equal to (99%). Drying temperature has a statistically insignificant effect with $p = 0.336 > 0.05$. All the other six variables have significant effects ($p < 0.05$). The simplified model developed was a polynomial of the first order given as:

$$Y\ (\%) = 25.336 - 11.884\ X_1 - 4.803\ X_2 + 6.426\ X_4 + 3.788\ X_5 + 1.423\ X_6 + 1.609\ X_7$$

The cumulative Pareto effect of sulfuric acid concentration (X1), leaching time(X4), ratio S/L(X2) and, stirring speed(X5) presents 97,91 % of REE leaching efficiency from PG. Then, the value of the response depends mainly on these four highly significant variables. Particle size (X7) and Temperature (X6) have a negligible contribution (less than 2%). That's why it is better to set them at their economic values, in other words, to use a raw PG only dried at room temperature without grinding and 40°C as a leaching temperature. Experimental results indicated that REE leaching efficiency reached a maximum of 52.1% at experimental conditions of a sulfuric acid concentration 2.2 M; a solid-to-liquid ratio of 1/6; a leaching time of 40 min; and a stirring speed of 600 rpm.

## Keywords

Plackett –Burman Design, Sulfuric Leaching Process, Moroccan phosphogypsum

# Study of Financial Literacy and Enhancement of Student Entrepreneurship Competence through Digital Learning Models

**Siti Resmi**
Sekolah Tinggi Ilmu Manajemen YKPN Yogyakarta, Indonesia

**Reza Widhar Pahlevi**
Universitas Amikom Yogyakarta, Indonesia

**Intan Kusumawati**
Universitas Cokroaminoto Yogayakarta, Indonesia

**Damar Prasetyo**
Universitas Teknologi Yogyakarta, Indonesia

## Abstract

This research aims to conduct a study on financial literacy and increasing entrepreneurial students at the Center for Excellence Vocational High School in the Special Region of Yogyakarta through digital learning models. The research approach uses qualitative research and data collection through focus group discussions. The informants for the research were informants from SMK Centers of Excellence in the Special Region of Yogyakarta. Data collection was carried out in a focused and directed manner to respond to questions related to student entrepreneurship, financial literacy and learning models in SMK. The results of the study show that the quality of education is inseparable from the role of digital technology, so it is only natural that there are differences in the quality of education in various regions. Therefore, the learning process in Vocational Schools needs to be planned, implemented and controlled to achieve the goal of producing graduates with an entrepreneurial mentality. The habit of implementing entrepreneurship in schools can be achieved through learning activities, applying entrepreneurial characteristic values in schools and entrepreneurship practices. Students tend to look for work after graduating from SMK or continuing at the university. This is caused by constraints on the lack of skills and insight to be successful as an entrepreneur and also low motivation making it difficult to develop entrepreneurship independently. lack of literacy about entrepreneurship, have no capital, do not have support from their families.

## Keywords

Financial Literacy, Entrepreneurial, SMK Centers

# *In vitro* Anti-Inflammatory Activity of *Caesalpinia sappan* Extract in RAW264.7 Cell Line

**Neen Pamaranupong**

The American School of Bangkok, Sukhumvit, Wattana, Bangkok, Thailand

## Abstract

This manuscript presents an investigation into the in vitro anti-inflammatory potential of *Caesalpinia sappan* extract using the Greiss reaction and MTT assay on RAW264.7 macrophage cells. Inflammation plays a pivotal role in numerous diseases, making the search for natural anti-inflammatory agents of significant interest. The study explored the extract's ability to inhibit nitric oxide (NO) production and its impact on cell viability. In the investigation of *Caesalpinia sappan* extract's in vitro anti-inflammatory potential, the IC50 value for inhibiting nitric oxide (NO) production was 48.32 microgram/mL ± 0.108. Additionally, concentrations of the extract up to 80 microgram/mL exhibited no significant cytotoxicity to macrophages. These results highlight the extract's potential as a safe and effective anti-inflammatory agent, suggesting its suitability for further therapeutic exploration. In conclusion, the results accentuate *C. sappan* extract's efficacy as an in vitro anti-inflammatory agent. Its potent inhibition of NO production, combined with its non-toxicity up to a concentration of 80 microgram/mL, signifies its potential therapeutic relevance for managing inflammation without compromising cell viability.

## Keywords

*Caesalpinia sappan*, vitro anti-inflammatory, Greiss reaction, MTT assay, RAW264.7 macrophage

# Public Policy Investigation on English Learning in Digital Platform in Thailand Context

**Nisaphat Tangpanitanon**
Chulalongkorn University Technopreneurship and Innovation Program, Graduate School, Thailand

**Dr. Noawanit Songkram**
Department of Educational Technology and Communications, Faculty of Education, Chulalongkorn University, Bangkok, Thailand

**Dr. Sukanya Chaemchoy**
Chulalongkorn University, Bangkok, Thailand

## Abstract

In this era, it cannot be denied that digital is essential for the living. People use the internet and go online for various purposes such as social media, news, information, and education. Digital can also connect the language because it is no distant barrier. However, digital development and access to the internet in Thailand is in high-rate contrast to the result of English language skills for people within country that still below the expected even though Thailand put loads of money into education. This paper has been established to explore the public policy investigation on English Learning in digital platform in Thailand context. Public policy and factors; attitudes, strategy, environment, technology will be included. The conceptual framework will be proposed for further research and development.

## Keywords

Public Policy, Attitudes, Strategy, Environment, Technology, Digital Platform, Thailand

# Detection of Carcinoma Chest Lung Cancer in CT Scan Images using CNN Techniques

**Dr. Nadiminti Venkata Ramana Murtya**

Professor, Dept of CSE, Gayatri Vidya Parishad College for Degree and PG Courses(A), Visakhapatnam, Andhra Pradesh, India

## Abstract

Lung cancer is one of the dangerous most dangerous diseases in the world. However early diagnosis and immediate treatment can save lives of the Patients. CT scan imaging is one of the best imaging techniques in medical domain, but at the same time sometimes it is very difficult for doctors to understand and identify the exact location of the cancer from the CT scan images. Therefore, computer aided diagnosis process can make the doctors work easy and also it can help the doctor to identify the exact locations of cancerous cells accurately. Many computer aided techniques using Image Processing, Machine Learning and Deep Learning has been researched and implemented. The major goal of this research work is to detect the carcinoma chest lung cancer in a CT Scan image using Convolution Neural Network Techniques and also to detect the type of the Lung Cancer.

## Keywords

Lung Cancer Detection, CT Scan Image, Cancer, Image Processing, Convolutional Neural Network

# Enhancing Sickle Cell Disease Eradication, Monitoring, and Management: A Voice-Enabled Mobile App Approach

**Dr. D.S.S.N Raju**
Assistant Professor, Dept of CSE, Gayatri Vidya Parishad College for Degree and P.G Courses(A), Visakhapatnam, India

**Dr. Karteek Rao Amperayani**
Assistant Professor, Dept of Chemistry, Gayatri Vidya Parishad College for Degree and P.G Courses(A), Visakhapatnam, India

## Abstract

Millions of people worldwide are afflicted with sickle cell disease (SCD), a genetic blood condition. Healthcare professionals have long struggled to treat and eradicate SCD; novel approaches are required to enhance patient care and give those who suffer the disease more autonomy. This abstract investigates how voice control-enabled mobile applications could be a game-changer in addressing these issues.

Modern healthcare is now completely dependent on mobile applications, which present chances to enhance patient involvement, disease management, and monitoring. With the integration of features like medication adherence tracking, real-time monitoring, educational resource access, and virtual consultations with healthcare specialists, these applications can offer a comprehensive solution in the context of sickle cell disease (SCD). Voice-over technology also ensures accessibility for people from underprivileged communities and those with diverse levels of reading and computer literacy.

**Key components of mobile applications focused on SCD that have loud music include:**

**1. Real-time monitoring:** By enabling early intervention and lowering hospital admissions, patients can keep an eye on the development of their symptoms and vital signs.

**2. Medication adherence:** Voice instructions and reminders can improve medication adherence, which is important for controlling issues connected to sickle cell disease.

**3. Educational resources:** Audio resources provide in-depth knowledge about sickle cell disease (SCD), available treatments, and lifestyle advice.

**4. Telehealth services:** By enabling prompt medical advice through conversations with hematologists and other medical specialists, hospital facilities are not as burdened.

**5. Support from the community:** Social networking tools give patients a feeling of community, a chance to interact with other patients, and emotional support.

**6. Data analysis:** Thorough analysis can facilitate individualized treatment regimens, assist medical experts in spotting trends, and further our understanding of illness.

With the use of voice-over mobile applications, we can significantly enhance the quality of life for those who suffer from sickle cell disease. These services close gaps in patient access to treatment, encourage proactive disease management, and give patients the tools they need to take charge of their health. They also promise to assist international efforts to end SCD by gathering information for studies and sharing best practices.

In summary, voice-over technology combined with mobile applications presents a novel and easy approach to improving management, care, and eradication of sickle cell disease. With the use of these technologies, people with sickle cell disease (SCD) can connect with their condition and with healthcare practitioners in a whole new way, improving their quality of life.

## Keywords

Sickle Cell Disease, Eradication, Monitoring, Management, Mobile Applications, Early Detection, Genetic Counseling, Real-Time Monitoring, Personalized Care, Healthcare, Patient Empowerment, Family Planning, Genetic Testing, Pain Management

# Understanding the Mechanism of mutant Haemoglobin (HbS) by Molecular Dynamics, QM/MM and DFT Techniques to Design Potent Inhibitors

**Karteek Rao Amperayani**
G-Tri-BAL, Gayatri Vidya Parishad College for Degree and PG Courses (A), Visakhapatnam, India

**DSSN Raju**
G-Tri-BAL, Gayatri Vidya Parishad College for Degree and PG Courses (A), Visakhapatnam, India

**S. Rajani**
G-Tri-BAL, Gayatri Vidya Parishad College for Degree and PG Courses (A), Visakhapatnam, India

## Abstract

Sickle cell haemoglobin (HbS) is an example of a genetic variant of human haemoglobin where a point mutation in the β globin gene results in substitution of glutamic acid to valine at sixth position of the β globin chain (*βGlu6 to βVal6*). The individual HbS units drives the association of individual tetramers polymerization into insoluble long fibers under low oxygen ($O_2$) saturation. The insoluble HbS fibers then cause the RBCs to form rigid sickled cells that occlude small blood vessels, triggering several secondary pathological consequences, such as painful crises, organ damage, oxidative stress, haemolysis, impaired microvascular blood flow, morbidity, and mortality. There is no recognised drugs for Sickle cell Disease. Hydroxyurea is the only drug available in market to treat the SCD patients but its mechanism is unknown. Haemoglobin was a tetrameric having tow subunits α and β. To function as oxygen transporter, it requires binding of endogenous heterotropic effectors, such as carbon dioxide, hydrogen ions, chloride ions, and 2,3-bisphosphoglycerate (2,3-BPG). There are also allosteric sites to stop deoxygenation state of Haemoglobin these have been clinically evaluated as antisickling sites and drugs are in development state using the allosteric sites for the treatment of sickle cell anemia.

This project aims in understanding the mechanism of sickling and allosteric sites using Molecular Dynamics simulations (MD), Quantum mechanics/ Molecular Mechanics (QM/MM) modelling and density functional theory (DFT) techniques to design new inhibitors to stop sickling of haemoglobin. So far, computational work at atomistic level on the Sickling activity of mutational Haemoglobin is not yet exploited, this will be the first of this kind. This work gives a detailed mechanistic role of amino acids.

## Keywords

Sickle cell haemoglobin (HbS), Dynamics simulations (MD), Quantum Mechanics/ Molecular Mechanics (QM/MM), Modelling And Density Functional Theory (DFT)

# Design and Development of a Rule Based Expert System for predicting Sickle Cell Disease, Sickle Cell Trait, and Thalassemia using Machine Learning Techniques

**Dr. N.V. Ramana Murty**
Professor & Head of the Department, Department of CSE, Engineering & Technology Program, Gayatri Vidya Parishad College for Degree and PG Courses(A), Visakhapatnam, India

**Dr. V. Dharmarao**
Professor, General Medicine, Additional Superintendent, GVPIHCMT, Visakhapatnam, India

## Abstract

To explore the potential of machine learning models in predicting the presence of sickle cell disease, sickle cell trait, and thalassemia based on symptoms and blood smear images a rule based expert system is designed and developed. The hematological disorders in human body sometimes leads to a significant health disorders and that is the reason why early and accurate diagnosis is crucial at an early stage is very much essential. Machine Learning algorithms are used to enhance diagnostic accuracy and facilitate timely interventions.

## Keywords

Sickle Cell Disease, Trait, Thalassemia, Machine Learning, Rule Based Expert System

# Islamic Work Ethic and Technology Readiness as a Key to Improving Islamic Boarding School Productivity

**Anissa Lestari Kadiyono**
Fakultas Psikologi – Universitas Padjadjaran, Indonesia

**AF Mirza**
Fakultas Psikologi – Universitas Padjadjaran, Indonesia

## Abstract

Islamic Boarding School (pesantren) is the oldest educational institution in Indonesia. The basic education is to understand, live up to, and practice the teachings of Islam (tafaqquh fiddin) by emphasizing the morality of religion as a guide to daily living. But how to build superior human resources is not only oriented towards achieving the afterlife goals but also how to live in a society in the world. The purpose of this study is to identify what factors increase the productivity of students. In the industrial revolution currently experienced by Indonesia and demands to be able to improve the quality of life through work, the Islamic work ethic and technology readiness can be indicators to increase the productivity of students. The research method used was to conduct 2 stage cluster sampling, where respondents were selected based on Province and then in their cities, namely Sumedang and Bandung. The number of respondents was 260 people. The results showed that the Islamic work ethic and technological readiness influenced the formation of students' productive behavior. Efforts to improve both aspects are expected to be developed in Islamic boarding schools to improve the quality of the students.

## Keywords

Islamic Work Ethic, Technology Readiness, Productive Behavior

# Sharing Economy and Servitization for Public Sector

**Kinga Szab**

Associate Professor, John von Neumann University, Kecskemét, Hungary

## Abstract

To fill a research gap by developing a definition and a conceptual framework of sharing economy that could serve as a basis for classification of existing and future cases and which would clarify the links between sharing economy and servitization in general and in the public sector in particular.

Although the sharing economy has been part of human society for a long time, it has taken a new form and has grown considerably in many areas of economic activities during the last two decades. The recent innovations in technology particularly internet, digitalisation, social media and instant communication have transformed and diversified the concept of sharing economy. Given environmental consideration and declining desire for ownership of assets sharing economy has grown in leaps and bounds in the last two decades. This development has not only led to optimal utilisation of resources/assets but has also been able to provide value added services to consumers at fairly low prices, although it has also added new complications to the prevailing legal framework, governing economic activities of a nation. This development has also provoked a new thinking on servitizations of sharing economy by the government and public institutions.  Main theme of this research will focus on the following questions:

(a) Whether the increasing number of people prefer sharing rather than ownership.

(b) Positive role of internet, instant communication and social media, which have helped in putting together the logistics of sharing economy.

(c) Public services model of sharing economy (such as railway and public transport, power supply) and refinements thereof.

(d) Legal and safety issues arising out of this new economic concept of sharing.

## Keywords

Economy, Public Sector, servitization

# Network Covert Channels and Countermeasures: A Survey

**Ghanashyam Mahesh Bhat**
Department of Computer Science, PES University, Bengaluru, India

**Karan Bhat Sumbly**
Department of Computer Science, PES University, Bengaluru, India

**Prajwal V Bhat**
Department of Computer Science, PES University, Bengaluru, India

**KL Kumkum Geervani**
Department of Computer Science, PES University, Bengaluru, India

**Dr. Sapna V M**
Department of Computer Science, PES University, Bengaluru, India

## Abstract

Unidentified covert channels in a network can seriously compromise security, especially in high-security environments where sensitive information needs to be shielded from unauthorized access. The common techniques used to counter covert channels are monitoring, filtering, and encryption but the effectiveness of these defense mechanisms depends on the network's ability to identify and anticipate the covert channels used by the attacker. In our work, we have surveyed various covert channel classes and their detection schemes available across the literature. We have also devised some prevention schemes to obstruct timing network covert channel communication.

## Keywords

Network Covert Channels, Countermeasures

# Competitive Index of Municipalities in Bulacan, Philippines: Towards Sustainable Business Development in the New Normal

**Lagunda, Patricia B**
Baliuag University, Bulacan, Philippines

**Oluyinka, Solomon A**
De La Salle University, Manila, Philippines &
De La Salle Araneta University, Malabon City, Philippines

**Santos, Francia R**
De La Salle University, Manila, Philippines

**Cusipag, Maria N**
Baliwag Polytechnic College, Bulacan, Philippines

**Bernabe, Maria Teresa N**
Baliuag University, Bulacan, Philippines

**Rosuello, Marie Paul E**
Baliuag University, Bulacan, Philippines

## Abstract

The strong impact of the COVID-19 pandemic created challenges for the marginalized and vulnerable sectors. This global phenomenon also brought many problems to enterprises. This study surveyed the business owners and managers whose business operations are registered in Bulacan. The study hypothesizes that the four pillars of sustainable cities and municipalities' competitive index (CMCI) which includes economic dynamism, government efficiency, infrastructure, and resilience showed significant influence on the sustainability of the businesses in Bulacan. Partial least squares structural equation modeling (PLS-SEM) was utilized in analyzing the competitive index of Bulacan Municipalities. Statistical data analysis, performed by bootstrapping of 10,000 samples, reveals that there exist significant relationships among the four pillars of the competitive index toward the sustainability of businesses. Among the four pillars, only government efficiency was found to have an insignificant influence on business sustainability. Implications of this study are crucial for policy making and formulating strategies for the sustainability of business firms. Furthermore, the four-year ranking competitive index of the province in the Philippines confirms the added pillar of innovation towards a model for sustainable business development. Findings of this study can be validated by other scholars involving cities and municipalities in third world countries.

## Keywords

Competitive Index, Municipalities, Economic Dynamism, Government Efficiency, Infrastructure, Resilience, Innovation, Sustainable Business Development, And New Normal

# Determining Msmes Performance among Tax Compliance and Competitive Advantage in Indonesia

**Fran Sayekti**
Universitas Teknologi Yogyakarta, Indonesia

**Siti Resmi**
Sekolah Tinggi Ilmu Manajemen YKPN Yogyakarta, Indonesia

**Reschiwati**
Sekolah Tinggi Ilmu Ekonomi YAI, Indonesia

**Lilis Endang Wijayanti**
Universitas Teknologi Yogyakarta, Indonesia

## Abstract

MSMEs in Indonesia play an important role. Based on data submitted by the Ministry of Finance, MSMEs contribute around 90% of business activities and provide more than 50% of jobs in Indonesia. The problem of MSMEs is efforts to increase business to rise to a higher level and the tax contribution of MSMEs is still low. Understanding and knowledge is one of the causes of MSME problems. This study aims to determine whether MSME's understanding of tax literacy affects taxpayer compliance and competitive advantage and to determine whether MSME's competitive advantage affects performance. This study uses primary data sources, namely Creative MSMEs actors throughout the Special Region of Yogyakarta. Data were obtained through questionnaires which were distributed to MSMEs in the Yogyakarta area. The sample of this research is SMEs in the Yogyakarta area. Data analysis used the AMOS Structural Equation Modeling (SEM) model. The results show that there is an effect of financial literacy on tax compliance, there is an effect of tax compliance on competitive advantage, there is an effect of tax compliance on the performance of MSMEs and there is an effect of competitive advantage on the performance of MSMEs. However, tax literacy has no effect on competitive advantage. The implications of this research can be input for the government in making policies related to taxes for MSMEs.

## Keywords

MSME's, Tax Literacy, Tax Compliance, Competitive advantages

# *Leading the Leader:* Positive and Resilient Leadership (PRL) in Urban Public Schools through Filipino Public-School Teachers' Metaphorical Perspectives

**Mariciel B. Baligod**

General Academics and Teacher Education, Bulacan State University-Sarmiento Campus, Philippines

**Clarita D. Carillo**

The Graduate School, University of Santo Tomas, Philippines

## Abstract

Positive leadership and resilient leadership are two types of leadership that share several commonalities, both of which seemingly respond and offer suitability to the unpredictable and volatile landscape and requirements of the times. While separately, there has been substantial empirical work on positivity and resilience in leadership, no study has been undertaken to combine both so that one type of leadership, i.e. Positive and Resilient Leadership (PRL), can emerge. Further, positivity and resilience in leadership have so far remained understudied among public organizations, particularly in urban public schools, a sector that considers ineffective leadership as among the major problems that hinder the quality of public education. Also, while previous studies have focused on such leadership from the perspective of school leaders, there remains a dearth of literature on understanding it from the standpoint of those being led, such as the teachers. To fill these gaps, this study examined the possible nature and characteristics of PRL by employing qualitative content analysis and thematic analysis in an attempt to (a) determine the metaphors Filipino teachers in urban schools use to describe leadership that is both positive and resilient, (b) identify how these metaphors capture the traits of positive and resilient school leaders in these schools, and (c) explore various situational practices of PRL in the Philippine urban public school sector. Findings showed five (5) categorizations of metaphors that were drawn from the responses of the public school teachers, indicating how PRL can provide them P.O.W.E.R., i.e. positivity, opportunity, wisdom, empathy, and reinforcement in six (6) aspects of school management, namely: (a) planning and implementation of school policies, programs, activities, and projects, (b) decision-making, (c) personnel management, (d) implementation of innovation and change, (e) resource generation and utilization, and (f) communication within and outside the organization that could improve urban public school teachers performance and well-being.

# Climate Change Impact on Agricultural Productivity: Challenges and Adaptation Strategies

**Shivangi Singh**
Amity School of Applied Sciences, Amity University Uttar Pradesh (AUUP), Lucknow Campus, India

**Dr. Smriti Khare**
Amity School of Applied Sciences, Amity University Uttar Pradesh (AUUP), Lucknow Campus, India

## Abstract

Climate change is a global phenomenon that has significant implications across various sectors, with agriculture being one of the most impacted. This abstract provides an overview of the climate change on agricultural productivity and explores the challenges it poses to food security. Climate change is evidenced by rising temperatures, altered rainfall patterns, increased frequency of extreme weather events and shifts in growing seasons. These changes disturbs the delicate balance of ecosystems and traditional agricultural practices leading to decrease in crop yields, reduced livestock productivity and increased vulnerability to pests and diseases. The consequences of climate change on agriculture are particularly alarming, as the world's population continues to grow, demanding more food production. This abstract also underline the potential impact on rural livelihoods especially in developing nations where agriculture serves as a primary source of income. Adaptation and mitigation strategies are mitigation strategies are crucial to address these challenges. Farmers and policy-makers are exploring sustainable farming techniques such as drought resistant crop varieties, precision farming techniques and improved irrigation methods. Reducing greenhouse gas emissions from agriculture is vital to mitigate climate change's effects on the sector. This summary highlights the urgent need to address the consequences of climate change on agricultural productivity to ensure global food security. It emphasizes collaborative efforts at local, national and international levels to develop and implement effective adaptation strategies while maintaining the sustainability of agriculture.

## Keywords

Climate, Agricultural, Rainfall, Livelihoods, Adaptation, Mitigation

# Movie Recommendation Using Machine Learning

**Vedatrayee Chatterjee**

Assistant Professor, Department of Computer Science & Engineering, Asansol Engineering College, West Bengal, India &
Research Scholar, Department of Computer Science & Engineering, Om Sterling Global University, Haryana, India

**Dr. Kamal Dhanda**

Associate Professor, Department of Computer Science & Engineering, Om Sterling Global University, Haryana, India

## Abstract

Movie recommendation systems have become increasingly popular in recent years due to the abundance of available movie content and the challenge of finding personalized recommendations. This paper explores the development of a movie recommendation system using machine learning techniques. The objective is to provide users with accurate and relevant movie suggestions based on their preferences and viewing history.

The article begins by discussing the importance of recommendation systems in the context of the movie industry and the benefits they offer to both users and movie providers. It then delves into the underlying machine learning algorithms used in the recommendation system, including collaborative filtering and content-based filtering. These techniques leverage user behaviour data and movie metadata to make personalized recommendations.

Furthermore, the report explores the data pre-processing steps required to prepare the movie dataset for training and evaluation. It covers methods such as data cleaning, feature extraction, and data normalization, which help improve the performance and accuracy of the recommendation system.

Overall, this article provides a comprehensive overview of a movie recommendation system using machine learning. It demonstrates the significance of such systems in the movie industry and offers insights into the underlying algorithms, data pre-processing techniques, evaluation methods, and challenges faced. The findings presented in this report contribute to the understanding and advancement of recommendation systems, ultimately enhancing the movie-watching experience for users.

## Keywords

Movie Recommendation, Machine Learning, Cinema, Movie

# Corporate Governance: Balancing Accountability, Transparency and Stakeholder Interest

**Uddipta Nayan Medhi**
Research Scholar, Assam Down Town University, Assam, India

**Dr. Homeswar Goswami**
Professor, Department of Commerce & Management, Assam Down Town University, India

## Abstract

This paper takes a comprehensive approach to corporate governance (CG) and addresses the protection of stakeholders' rights and interests. It explores the effectiveness of boards of directors in safeguarding both shareholders' and other stakeholders' interests. Additionally, the article discusses the development of corporate governance principles for existing organizations, considering the importance of justice and fairness in decision-making. By highlighting the principles and codes established by the Organisation for Economic Cooperation and Development (OECD), the article defines CG and examines its application in countries like Nigeria, the US, and the UK. It emphasizes how these nations have integrated corporate social responsibility (CSR) into their CG principles by following the OECD guidelines and incorporating various rules and principles, such as the Companies and Allied Matters Act and Investment and Securities Act.

The paper underscores the significance of CG and its relevance to corporate businesses globally. It outlines the distribution of rights and responsibilities among corporate stakeholders, including board members, managers, and shareholders. Moreover, the article outlines rules and procedures for effective decision-making in the organization.

In conclusion, the article recognizes that achieving complete stakeholder satisfaction is challenging. Instead, it advocates finding a balance between organizational objectives and stakeholder interests. Transparency plays a crucial role in corporate governance, ensuring that stakeholders have access to clear and relevant information about the company's operations, financial performance, and decision-making processes.

## Keywords

Stakeholders, Directors, Shareholders, Protection, Corporate Governance (CG)

# Implementation of Date Fruit Sorting Machine using A Sensor based Technology

**Vanitha Mahadevan**
Engineering Department, University of Technology and Applied Sciences-Al Mussanah, Sultanate of Oman

**Bindu P.v**
Engineering Department, University of Technology and Applied Sciences-Al Mussanah, Sultanate of Oman

**Rahila Begum N Gadi**
Engineering Department, University of Technology and Applied Sciences-Al Mussanah, Sultanate of Oman

**Mazin Adim Salim Al Hattali**
Engineering Department, University of Technology and Applied Sciences-Al Mussanah, Sultanate of Oman

**Imad Bashir Hamed Al Badaai**
Engineering Department, University of Technology and Applied Sciences-Al Mussanah, Sultanate of Oman

**Ahmed Mohammed Abdullah Mohammed Al Maymani**
Engineering Department, University of Technology and Applied Sciences-Al Mussanah, Sultanate of Oman

## Abstract

The date palm has significance in Gulf nations, particularly in the Sultanate of Oman. Every summer, the palm produces a large number of date fruit that may be picked. Approximately 70% of it is used for human consumption, while the remaining 30% is used for animal feed and other purposes. Because there are so many different types of dates, they must be classified properly.

Omani citizens, used to sort dates by hand. That procedure takes longer time and requires more work. So, while there are various strategies for making the process of sorting date fruit easier and faster, the most efficient one is to use a date sorting machine using color sensor. This machine works with Arduino, color sensors, pistons and conveyor belt. The ultimate objective of this project is to categorize the dates based on the color. The project uses an Arduino microcontroller to receive data from a color sensor and transmit them to pistons in the appropriate order. The date fruit is kept in a conveyor belt that is fixed in a constant low speed.

When the color sensor identifies the dates, it activates a specific piston for each color, which pushes the dates into a corresponding basket.

## Keywords

Dates Sorting, Color Sensor, Arduino, Pistons, Conveyor Belt

# Effective Deployment of Human Resource Information System in Educational Sector

**Dr. Sayantani Ghosh**

Associate Professor, Dr. B. C. Roy Academy of Professional Courses, Durgapur (MAKAUT), India

## Abstract

This study explored into the many different elements that determine how effectively HRIS is used in the educational sector. fifty employees were the target group for the survey. To gather information, the employees were given a standardized questionnaire to complete on their own. To clarify the purpose of the association between HRIS and the elements influencing the successful implementation of HRIS in the educational sector, multiple regression analysis was utilized. The results of the research demonstrated a substantial positive association between HRIS and each of the five factors: X1 (IT Infrastructure), X2 (Scalability), X3 (Training and Capability Building), X4 (Complex Organizational Structure), and X5 (Management Support). The regression result also revealed that changes in X1 (IT Infrastructure), X2 (Scalability), X3 (Training and Capability Building), X4 (Complex Organizational Structure), and X5 (Management) can explain the variation in HRIS.

## Keywords

Performance management; Effective implementation; Strategies; Higher Educational Institutions; Factors

# Effective Removal of Pesticide from Wastewater using Biochar

**M. Diffallah**
Mohamed Chérif Messaadia University of Souk-Ahras, Souk-Ahras, Algeria &
LEREC Laboratory, Physic Department, Badji Mokhtar University of Annaba, Annaba, Algeria

**A. Nait-Merzoug**
Mohamed Chérif Messaadia University of Souk-Ahras, Souk-Ahras, Algeria &
LEREC Laboratory, Physic Department, Badji Mokhtar University of Annaba, Annaba, Algeria

**O. Guellati**
Mohamed Chérif Messaadia University of Souk-Ahras, Souk-Ahras, Algeria &
LEREC Laboratory, Physic Department, Badji Mokhtar University of Annaba, Annaba, Algeria

## Abstract

Globally, water pollution caused by dyes from various industries and the irrational use of agricultural pesticides is a well-established environmental and health problem that requires serious attention. Efforts are focused on finding environmentally friendly and cost-effective strategies to address various pollutants. In this study, we use Biochar (BC), from biomass, to remove pesticides and treat polluted water. Moreover, this adsorbent was easy to manufacture under mild conditions without the need for chemical capping agents, and thus would be cost-effective.

The obtained products were analyzed using different techniques, such as: XRD, FTIR, Raman, XPS and BET in order to determine more precisely its surface area, functional groups and structure.

The results obtained have proven the effectiveness of our adsorbent product with significant adsorption capacities and pesticide removal yield of around 80 percent.

## Keywords

Biochar, Adsorption, Pesticide, Depollution, Wastewater Treatment

# Study of Eco-friendly Natural Dyeing on Milk fabric by using Medicinal Herb Kalanchoe Pinnata: Its Past, Present, Future, Sustainability and Application

**Pooja Kumari**
Ph.D Scholar, Fashion Technology, Banasthali Vidyapith, Rajasthan, India

**Dr. Salini Juneja**
Associate Professor, Dept. of Home Science, Banasthali Vidyapith, Rajasthan, India

## Abstract

All over the world people are more concerned about environment and same has been applied while selecting clothing and textiles. Different climatic changes and severe problems like greenhouse effect, ozone layer depletion, water pollution etc. are the driving forces for invention of naturally sustainable and eco-balancing textiles. Natural dyes are the best suiting option for the green clothing as these are eco-friendly, renewable, safer and sustainable way of colouration. Since ancient times human beings have been using herbs and plants for curing various ailments and diseases due to their medicinal values and easy availability in nature. Later with advancement in technology herbs got major importance in pharmaceutical industry due to their suitable chemical composition, abundant availability and easy access. Kalanchoe-Pinnata (patharchatta) such type of herb which is found in tropical and sub-tropical areas of India and abroad as well. Kalanchoe Pinnata also well mentioned in ayurveda with vast application areas for Medicinal purposes. But no literature has been found regarding their colouring behaviour on Milk Fabric. Present research is an attempt to explore colouring behaviour of herb on milk fabric. K.Pinnata herb show great affinity for the milk fabric. Mordanting of the fabric was carried out using three mordanting technique i.e. pre, meta and post-mordanting using natural mordants i.e. Harda Powder, Dry Goose Berry Powder, Orange Peel Powder, Banana Peel Powder, Pomegranate Peel Powder ,Onion Peel Powder, Lemon Peel Powder, Beetroot Pee Powder, Carrot Peel Powder, Lychee Peel Powder, Dyed samples were further analyzed for colour strength and fastness properties against wash, rubbing and light. Both herbs give a wide colour spectrum in yellow-green region with moderate to excellent fastness properties. Brilliant shade card were developed with dye all natural extract. Antimicrobial behavior of dye extract is excellent against both garm positive and gram negative bacteria showing extensive application in medical textile such dress and gloves of doctors, bedsheets and curtains in hospitals. Thus, findings of study showed that kalanchoe Pinnata leaf extracts in conjunction with natural mordants can be used for eco-friendly dyeing with antimicrobial finished fabric.

# Impact of Water Pollution on Fishing Gear: An Impact Analysis of Fishing Communities of Deepor Beel, Assam

**Rajib Kumar Talukdar**
Research Scholar, Assam Down Town University, Guwahati, India

**Dr. Arnob Bormudoi**
Professor, Assam Down Town University, Guwahati, India

## Abstract

This research delves into an analysis of the effects of water pollution, on fishing equipment and the livelihoods of fishing communities residing around Deepor Beel in Assam. Water pollution is a concerning issue that affects both aquatic ecosystems and the people who depend on them. By focusing on this setting researcher aim to understand how water pollution impacts the functionality and longevity of fishing gear, which is crucial for the economic sustainability of these communities. Through an examination of both socio economic factors this study brings to light the intricate relationship between water pollution and the fishing industry. It highlights the importance of adopting practices and implementing policy measures to safeguard both the environment and the well being of these communities. The findings from this study provide insights for developing strategies to mitigate the effects of water pollution, on fisheries while ensuring the welfare of Deepor Beels inhabitants.

## Keywords

Fishing Communities, Water Pollution, Fishing Gear, Ecosystem

# An Autonomous Mecanum-Wheeled Robotic System for Air Quality and Health Monitoring, Sanitation, and Delivery in Hotels and Other Hospitality Facilities to Improve Social Service Provision in Oman's Tourism Sector

**Analene Montesines Nagayo**
Electrical and Electronics Section, Engineering Department, University of Technology and Applied Sciences, Al Musanna, Oman

**Mahmood Zayid Al Ajmi**
Electrical and Electronics Section, Engineering Department, University of Technology and Applied Sciences, Al Musanna, Oman

**Ahmed Salim Al Quatiti**
Electrical and Electronics Section, Engineering Department, University of Technology and Applied Sciences, Al Musanna, Oman

**Abdulsallam Gharib Al Hadidi**
Electrical and Electronics Section, Engineering Department, University of Technology and Applied Sciences, Al Musanna, Oman

**Maadh Saleh Al Farsi**
Electrical and Electronics Section, Engineering Department, University of Technology and Applied Sciences, Al Musanna, Oman

## Abstract

This project entails the design and deployment of a VEX mecanum-wheeled autonomous robotic system (MAROH) with the purpose of monitoring air quality and health conditions, gathering waste, and enabling delivery services within indoor hospitality facilities, such as hotels and restaurants. This project utilized various technologies such as the Internet of Things (IoT), robotics, wireless mobile communication, machine learning, and sensor technologies to enhance the delivery of social services. The designed robotic system performed the following tasks within the facility: (a) navigate the indoor premises and measure body temperatures of guest and staff, while also monitoring indoor air quality metrics; (b) performing sanitation functions which include decontaminating objects in rooms using UV light and collecting trash; (c) performing security functions by issuing an alert notification to a safety and security officer in cases of fever detection among individuals, as well as instances where social distancing and facial mask restrictions were not being followed, and (d) delivering various items and food not more than 2kg from one location to another. The robotic system was controlled and monitored using a Vex Cortex (Vex-C) microcontroller, which was interconnected with various types of sensing and actuation devices. In order to address the challenges of obstacle avoidance and robot speed control, a rulebased system was implemented. A user-friendly interface has been developed for the purpose of managing jobs and configuring delivery routes using smartphone applications. The implementation of Internet of Things (IoT) technology has enabled the real-time monitoring of air quality conditions and body temperature of individuals. The collected data has been stored in ThingSpeak and Particle cloud servers. The utilization of phone and IP cameras has been employed to enhance the visual perception of robots, mostly for security-related purposes. The MIT App Inventor's PIC toolbox uses a machine learning approach to detect noncompliance with the facemask and social distancing regulations, and a warning signal is forwarded to the ThingSpeak cloud to activate an alarm. Moreover, a solar-powered wireless charging station was designed as a cost-effective solution

for providing electricity to the robot. The implemented robotic system offers the potential to mitigate the likelihood of individuals being exposed to infectious diseases within enclosed environments. Additionally, it has the capacity to improve staff workflow and productivity because the robot can operate 24/7 without becoming ill and can follow predetermined schedules. Experimental data and results showed that the designed robotic system performed its assigned tasks efficiently with an improved average speed of 0.407 m/s and a reliability rate of 95.03%. The implementation of this robotic system is an innovative approach in social service provision within the tourism sector in Oman.

## Keywords

Robotics, IoT, Machine Learning, Wireless Mobile Communication, Social Services