



ICAKMPET-2026



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6th International Conference on Advancing Knowledge from
Multidisciplinary Perspectives in Education, Engineering &
Technology



24th – 25th January 2026



Cebu, Philippines

Organized By



IFERP Academy - Philippines Society

Academic Partners



Bulacan Agricultural State College, Philippines
Tawi-Tawi Regional Agricultural College (TRAC), Philippines
Marinduque State University (MARSU), Philippines



6th International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Education, Engineering & Technology (ICAKMPET-2026), Cebu, Philippines

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Conference Theme



**“Shaping Global Impact:
Pioneering Education,
Engineering, and Technology
for a Sustainable Tomorrow”**

Preface

We are delighted to extend a warm welcome to all participants attending 6th International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology (ICAKMPET-2026) organized by Bulacan Agricultural State College (BASC), Philippines; Tawi-Tawi Regional Agricultural College (TRAC), Philippines; Marinduque State University (MARSU), Philippines and IFERP Academy-Philippines Society on January 24th-25th, 2026. 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 Engineering & Technology. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICAKMPET-2026 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Engineering & 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 Engineering & 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 ICAKMPET-2026.

Since October 2025, the Organizing Committees have received more than 100+ manuscript papers, covering all aspects of ICAKMPET-2026. After review, approximately 35+ papers were selected for inclusion in the proceedings of ICAKMPET-2026. 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 ICAKMPET 2026

In the ever-evolving landscape of engineering and technology, the 6th International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Education, Engineering & Technology (ICAKMPET-2026). Organized by Bulacan Agricultural State College (BASC), Philippines; Tawi-Tawi Regional Agricultural College (TRAC), Philippines; Marinduque State University (MARSU), Philippines and IFERP Academy-Philippines Society, emerges as a catalyst for innovation, collaboration, and knowledge exchange. Set to take place on January 24th-25th, 2026, in the vibrant city of Cebu, Philippines, ICAKMPET-2026 beckons professionals, researchers, and academics from around the world to participate in a transformative experience.

Objective of the Conference

Collaboration across disciplines is key to addressing today's global challenges. This collaboration is facilitated by multidisciplinary research; however, the degree to which multidisciplinary researchers are collaborating on projects is slowly but steadily coming to a decline.

Professionals from around the world are recognizing that the changes and challenges confronting us require researchers to collaborate more effectively. Research bodies have created a flexible framework of multidisciplinary networks, centers, and institutes to facilitate interdisciplinary work. These institutes, centers, and networks transcend faculty boundaries to enable the effective advancement of scientific endeavor. Globally, research institutes are addressing some of the most significant issues facing the world today. These institutes are outward-looking and work with policymakers and businesses to apply new knowledge and provide independent scientific advice.

Benefits of the Conference

Currently, multidisciplinary research has become the most viable and efficient way to solve the problem. In this era of rapidly changing society, many kinds of socio-economic problems, related to other disciplines such as politics, anthropology, and psychology, have arisen, which require a holistic approach to find their solution.

When we speak of a multidisciplinary, transdisciplinary, or interdisciplinary research team, we imply collaboration between people from different disciplines. Thus, the concept of a multidisciplinary research team can be considered as a subset of the concept of collaborative research.

- *Access to Expertise:* This will be facilitated by sharing of the know how and techniques.
- *Stimulates Out-Of-The-Box Thinking:* Collaboration leads to a mixing of ideas and a confrontation of points of view which should in turn stimulate creativity.
- *Formal Division of Labour:* Sharing of tasks, pooling of specialised teams to complement each other while carrying out a project that could not be carried out by a single individual.
- *Collaboration Reduces the Isolation of Researchers:* Researchers increase their respective network of contacts in the scientific community through collaboration.
- *Transfer of Knowledge & Skills:* Collaboration is even more intriguing when the knowledge is implied and isn't already published.

About IFERP Academy

IFERP Academy is a professional association devoted to the advancement of the fields of engineering, science, and technology through the funding of research activities, propagation of the latest research insights, furtherance of industry trends, and other related ventures. IFERP aims to digitalize this entire process of innovation, collaboration, and knowledge-sharing through the fostering of a unified virtual scientific community worldwide. Everything from networking and joint ventures to learning, research assistance, publication, and more, will be carried out as part of this objective.

IFERP has established robust scientific, academic, and industry networks throughout Asia, the Middle East, and Europe. Some of the countries that IFERP has its presence in include Iraq, Maldives, Thailand, Malaysia, Singapore, Philippines, Indonesia, Taiwan, Vietnam, UAE, Australia, Japan, Sri Lanka, Nepal, Ghana, and Africa.

What IFERP Do?

- **Academic Resource Accessibility:** They make academic resources and support available to aspiring scholars in rural as well as urban locations.
- **Diverse Educational Programs:** They organize a wide range of educational events such as workshops, conferences, webinars, seminars, guest lectures, short-term training programs, and faculty development programs.
- **Drive Innovation:** They work hard to foster curiosity and creativity, and stay up to date on the newest trends and advancements in the dynamic field of Engineering, Science, and Technology.
- **Knowledge Sharing and Collaboration:** They believe in the strength of the exchange of knowledge and actively collaborate with institutions, organizations, and associations to contribute to our shared objective of a better future.
- **Publication & Recognition:** They also provide opportunities for research articles to be published in reputable journals and actively promote and encourage transdisciplinary research activities.

Mission

Upskilling the knowledge hub through technological innovation and excellence for the benefit of humanity.

Vision

A digitally equipped robust, dynamic & swift professional community integrating academics & industry for upgraded technical knowledge implementation.

Value

IFERP values the restoration of highlevel technological research, learning, collaboration, resource sharing & community-building traditions.

Goal

To serve as the foundation for all technological progress and advancement activities around the world.

From Director, IFERP



Mr. A. Siddh Kumar Chhajer

Founder & Managing Director,
IFERP, Technoarete Group,
India

On behalf of IFERP & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers. The goal of the 6th ICAKMPET 2026 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 Education, Engineering & Technology.

This conference creates solutions in different ways and to share innovative ideas in the field of Education, Engineering & Technology. 6th ICAKMPET 2026 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.

6th ICAKMPET 2026 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.

6th ICAKMPET 2026 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the fields of Education, Engineering & Technology.

From CEO, IFERP



Mr. Rudra Bhanu Satpathy

Founder & CEO,
IFERP, Technoarete Group,
India

IFERP is hosting the 6th International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Engineering & Technology (ICAKMPET-2026) this year in month of January, 2026. The main objective of ICAKMPET-2026 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.

From President, BASC



Mr. Jameson H. Tan

SUC President III,
Bulacan Agricultural State College,
Bulacan, Philippines.

I am very delighted to welcome you to the 6th International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Education, Engineering Technology (ICAKMPET-2026), Organized by IFERP Academy-Philippines Society to be held on January 24th and 25th, 2026, in the vibrant city of Cebu, Philippines. The objective of the conference is to provide a forum for researchers worldwide to unveil their latest work in Education, Engineering & Technology and to show how this research can be used to advance knowledge and innovation.

There are many and compelling reasons why multidisciplinary studies remain relevant even in our own era. I am confident that this conference will provide a great forum for researchers and practitioners in the field of Education, Engineering & Technology to present their results, exchange new ideas, and find new directions. I would like to thank an international team of reviewers, who did a superb job in reviewing and selecting high-quality papers, which will be presented at the conference.

I therefore express my best wishes for the successful outcome of the International Conference, trusting that it may make a valuable contribution to society.

From Former President, TRAC



Dr. Mutti A, Asaali

Former President,
Tawi-Tawi Regional Agricultural College,
Bongao, Philippines

Tawi-Tawi Regional Agricultural College (TRAC) proudly stands in solidarity with the 6th International Conference of IFERP as it advances the theme, "Sharing Global Impact: Pioneering Education, Engineering and Technology for a Sustainable Future"

As Former College President, it is a distinct honor to extend heartfelt greetings to the distinguished scholars, innovators, educators, industry leaders, engineers, and community partners gathered for the conference. This conference reaffirms our collective belief that higher education and technological innovation must always be anchored in the service of people, planet, and peace.

Guided by its vision to become a center of excellence in agriculture and allied disciplines in the Bangsamoro and beyond, TRAC continues to uphold its four-fold mandate of instruction, research, extension, and production as instruments for inclusive and sustainable development.

Our formalized academic partnerships and cooperation agreements reflect TRAC's strengthened resolve to engage beyond provincial boundaries---forging dynamic collaborations with national and international institutions that share a commitment to quality education, responsible innovation, and community transformation. In harmony with the theme of this conference, TRAC recognizes that education, engineering, and technology must converge to address urgent challenges in food systems, environmental stewardship, and social equity. Technological and engineering solutions --- whether in mitigation, postharvest systems, renewable energy, or digital connectivity --- become most impactful when grounded in

community realities and informed by participatory research.

As Former President of Tawi-Tawi Regional Agricultural College, I take deep pride in how the institution has grown through partnerships and continues to fulfill its mission through responsive programs and international collaboration. The defined commitments of TRAC—anchored in joint research, collaborative extension, and shared capacity-building—embody the very spirit of this conference: that enduring global impact is achieved through collective action, mutual respect, and sustained engagement with communities.

May this 6th International Conference of IFERP strengthen bridges across institutions, disciplines, and cultures. As an island-based higher education institution, TRAC remains steadfast in contributing its experience, dedication, and collaborative spirit toward the realization of a just, peaceful, and sustainable future for all.

From President, MARSU



Dr. Diosdado P. Zulueta

President,
Marinduque State University (MARSU),
Marinduque, Philippines

It is with great pride and profound anticipation that I welcome all distinguished scholars, educators, engineers, technologists, and thought leaders to the 6th International Conference on Advancing Knowledge from Multidisciplinary Perspectives in Education, Engineering & Technology (ICAKMPET-2026).

This year's theme, "AI-Driven Education in ASEAN: Innovation Advantage or New Form of Learning Inequality", compels us to reflect deeply on the dual nature of technological progress. Artificial Intelligence promises unprecedented opportunities to transform teaching, learning, and knowledge creation across our region. Yet, it also challenges us to confront the widening gaps in access, equity, and inclusivity that may emerge if innovation is not guided by compassion, foresight, and shared responsibility.

As a community of educators and innovators, we are called to ensure that AI becomes a tool for empowerment rather than exclusion. Let this conference be a platform where diverse perspectives converge, where we interrogate the ethical, cultural, and social dimensions of AI, while celebrating its potential to uplift ASEAN education systems and strengthen our collective future.

Coming from the island province of Marinduque, I am deeply mindful of how geography and context shape access to education and technology. Our province, like many others across ASEAN, embodies both the promise and the challenge of AI-driven transformation. It reminds us that innovation must reach even the most remote communities, ensuring that no learner is left behind in this new era of knowledge.

I wish to extend my highest commendation to the organizers of ICAKMPET-2026. Their tireless dedication, vision, and commitment to fostering dialogue across disciplines have made this gathering possible. Through their efforts, we are given the invaluable opportunity to share knowledge, build collaborations, and chart pathways toward inclusive innovation.

May our exchanges inspire actionable strategies, collaborative research, and visionary leadership that will shape a more inclusive, resilient, and innovative ASEAN.

Together, let us advance knowledge not only for progress, but for equity and humanity.

About Ambassador



Dr. Jeanet E. Parreno, CGPA, CRFA, CPM, CHRA

Dean, Colleges at Eclaro Academy &
Faculty Member, De Lasalle University,
Manila, Philippines

Dr. Jeanet E. Parreno is a highly respected academic leader, educator, and professional with over 25 years of combined experience in higher education, organizational management, and public administration. She is currently a faculty member at De La Salle University-Manila and Informatics College Imus, where she contributes to academic leadership through program development, faculty mentoring, and student-centered initiatives that promote innovation, research, and excellence in education.

She previously served as Dean of Colleges at Eclaro Academy and has held various key roles at Philippine Christian University, including Assistant Professor III-V, Department Head of the College of Business Administration, Outreach Coordinator, and Internal Quality Auditor for ISO 9001:2015 Quality Management Systems. In these capacities, she played a pivotal role in curriculum development, accreditation initiatives, and institutional quality assurance and audits.

She earned her Doctor of Philosophy in Development Administration (2017) from Philippine Christian University, complementing her Master's in Business Administration (2004) and Bachelor of Science in Accountancy (1999). She also completed Professional Education units (2014) to strengthen her foundation in teaching. Dr. Parreno holds multiple international professional certifications: Certified Global Professional Accountant (CGPA), Certified Forensic Accountant (CrFA), Certified Human Resource Associate (CHRA), and Certified Professional Marketer (CPM), reflecting her diverse

expertise across education, business, and management.

A prolific scholar, Dr. Parreno has co-authored and published research works in international refereed and Scopus-indexed journals. Her research contributions include studies on cemetery management practices, DSWD's crisis intervention implementation, and road safety advocacy in the Philippines—the latter published in the International Journal of Environmental Science and presented at the IFERP Academy in Bangkok (2025). She also serves as a reviewer for international journals, such as the International Journal of Research and Innovation in Social Science (IJRISS), International Journal of Research and Scientific Innovation (IJRSI), International Journal of Research and Innovation in Applied Science (IJRIAS), and the International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS).

Her exceptional contributions to education and research have earned her numerous prestigious awards, including the Lifetime Achievement Award in Global Education and Research Innovation (2025), the Renowned Global Excellence Award for Transformative Achievements in Education and Research (2025), the Asia's Iconic Leadership in Education and Researcher of the Year Award (2025), and the Global Trailblazer Award for Transformative Leadership in Education and Research (2025). She has also been recognized with the Best Researcher Women Award (IFERP, 2025), the Best Research Excellence Award (IFERP, 2025), and international recognitions from The Thames International University in Bangkok and France. She also served as an international speaker in different universities and colleges in West Bengali, India last January 8–13, 2026.

In addition to her academic and research accomplishments, Dr. Parreno is a dedicated mentor and coach, guiding students to achieve championship and runner-up awards in national academic competitions such as those organized by the Council of Management Educators and Professionals in the Philippines (COMEPP). She is also deeply involved in professional organizations, serving as Business Manager (National Level) of COMEPP, Professional Ambassador of the Institute for Educational Research and Publication (IFERP), and a lifetime member of several research and education associations, including IMORE, PICEI, and FINED.

As an academician, leader, researcher, and mentor, Dr. Parreno continues to inspire excellence in education and research, dedicating her career to advancing global standards in higher education and fostering transformative leadership that empowers both students and professionals.

About Invited Keynote Speaker



Dr. Marvien M. Barrios

Director, Guidance and Counseling Services,
Cotabato Foundation College of Science and Technology (CFCST),
Cotabato, Philippines

Prof. Dr. Marvien M. Barrios, Ed.D., LPT, RGC, is a Professor III at the Cotabato Foundation College of Science and Technology (CFCST) in Doroluman, Arakan North Cotabato, 9417, Philippines. She serves as the Guidance and Counseling Director and Elementary Laboratory School Principal in the same college. Her work combines practical guidance counseling with academic research in education and psychology. She is a Subject Matter Expert (SME) for the PNP Training Service. Dr. Barrios has authored books on personality development and anger management for police officers, published articles, and presented her research at international conferences in and national forums.

About Invited Keynote Speaker



Dr. Valentina A. Pallo

University of Science and Technology of Southern
Philippines

Dr. Valentina A. Pallo is a leading authority in Educational Administration and Law, renowned for driving systemic change within academic institutions. Her research deconstructs the critical intersection of organizational governance and institutional transformation. She tackles the daunting legal and administrative challenges that arise from rapidly adopting new operational frameworks and policy demands in education. A fierce advocate for equitable and sustainable futures, Dr. Pallo forges practical policy solutions that ensure administrative structures serve global good. Her keynote delivers an essential administrative blueprint for navigating the complex future of education, offering a clear vision for compliance and innovation.

About Invited Keynote Speaker



Dr. Nor ' Adha Binti Ab Hamid

Associate Professor,
Universiti Islam Selangor (UIS)
Malaysia

Dr. Valentina A. Pallo is a leading authority in Educational Administration and Law, renowned for driving systemic change within academic institutions. Her research deconstructs the critical intersection of organizational governance and institutional transformation. She tackles the daunting legal and administrative challenges that arise from rapidly adopting new operational frameworks and policy demands in education. A fierce advocate for equitable and sustainable futures, Dr. Pallo forges practical policy solutions that ensure administrative structures serve global good. Her keynote delivers an essential administrative blueprint for navigating the complex future of education, offering a clear vision for compliance and innovation.

About Invited Keynote Speaker



Dr. Dina Grace T. Magnaye

Assistant Professor II, Head, Academic Programs
Polytechnic University of the Philippines,
Philippines

Dr. Dina Grace T. Magnaye is the Head of Academic Programs and an Assistant Professor II at the Polytechnic University of the Philippines – Bansud Campus. She holds a PhD in Education major in Mathematics from the University of Batangas, with her dissertation focusing on the effects of instructional approaches and digital skills on student engagement. A recognized Subject Matter Expert for the Philippine Coast Guard’s Instructor Development Program, Dr. Magnaye actively contributes to national capacity building in education. Her research interests include mathematics education, instructional design, and quality assurance in higher education. She has presented her work internationally and serves as Chair of the Research Ethics for STEM Review Panel at her institution.

About Invited Keynote Speaker



Dr. Edwin M. Puhagan

Research Director
Tawi-Tawi Regional Agricultural College
Philippines

Dr. Edwin M. Puhagan is a Filipino agricultural educator and researcher serving as Professor at the Tawi-Tawi Regional Agricultural College (TRAC) in the Southern Philippines. His specialization is in agricultural education, and holds a PhD in Agricultural Education with a cognate in Development Communication from the University of the Philippines Los Banos. He is known for his work on community-based, People-centered agricultural and environmental development, particularly in Tawi-Tawi and Mindanao. Academic and Professional Roles Dr. Puhagan has been affiliated with Tawi-Tawi Regional Agricultural College for many years, engaging in teaching, research and extension work related to agriculture. Overtime he has taken on various administrative and leadership functions, including roles connected to student affairs, special concerns, research, and faculty development with the institution. Research and Scholarly Work His research interests focus on agricultural practices and technologies suited to local conditions, including studies on improvised organic fertilizers and their effects on cash crops. He also authored and co-authored papers in these areas and shares his work through academic platforms such as online journals and academic networking sites.

About Keynote Speaker



Dr. Md. Mamun Habib

Professor & Head of Management
School of Business & Entrepreneurship
Independent University, Bangladesh

Prof. Dr. Md. Mamun Habib is a Professor & Head of the Management Department at the School of Business & Entrepreneurship (SBE), Independent University, Bangladesh (IUB). He is a Visiting Scientist at the Dept. of Industrial Engineering of the University of Texas – Arlington, USA. He is also a Visiting Professor at Unirazak, Malaysia; UCSI, Malaysia; PUP, Philippines; Beijing Wuzi University, China; and Universitas Ciputra, Indonesia. He is involved in Ph.D. supervision

locally and internationally. He supervises ten (10) Ph.D. scholars locally and globally, and eleven (11) Ph.D. scholars have been awarded. He has over 22 years of experience in teaching, training, workshops, consultancy, and research.

Dr. Habib has published about 250 research publications, including conference proceedings, journal articles, and book chapters/books. Among them, more than 80 articles are Web of Science and Scopus-indexed. He serves as the Editor-in-Chief/Editorial Board Member of more than 50 journals. He delivers Keynote speeches at 80+ international conferences in various countries. He conducted over 200 webinars and workshops locally and internationally. He accomplished his Ph.D. and M.S. with outstanding performance in Computer & Engineering Management (CEM) from Assumption University, Thailand. His core research areas are supply chain management, production & operations management, research methodology, and educational management.

Prof. Habib is an active member of different professional organizations, including IEEE (Senior Member); IEOM (President, SCM Technical Division); Chartered Fellow (FCILT), and CILT International (UK), just to name a few. He is involved with the AACSB and ACBSP accreditation, as well as QS World University Ranking/Times Higher Education Ranking, as an academic. He is also connected with the industry as a Consultant at AmCham (American Chamber of Commerce in Bangladesh), USAID, BAFFA, and so on.

About Keynote Speaker



Dr. Mastura Jaafar

Professor,
School of Housing, Building and Planning,
Universiti Sains Malaysia

Professor Sr. Dr. Mastura is currently attached to the Quantity Surveying program at the School of Housing, Building and Planning, Universiti Sains Malaysia. She has numerous years of experience in the construction industry dealing with project estimation and costing, finance and project management, development proposals, and project evaluation. Her areas of research, publication, and supervision interests include strategic management in the construction, housing, and tourism industries, entrepreneurship, project management and procurement management. Her scholarly contributions include innumerable publications in books and international journals, as well as international conferences papers. She has taught strategic management courses in construction, housing and tourism, entrepreneurship, and procurement management, both at undergraduate and postgraduate levels. She is also currently supervising numerous postgraduate research students at the Masters and PhD level. She received the Emerald Literati Network 'Highly Commended Award' in 2007 and 2015 and the Outstanding Paper award in 2023. Currently, she serves as an Editor-in-Chief for the Journal of Construction in Developing Countries.

About Keynote Speaker



Mr. Karthik Parvathinathan

USA

Karthik Parvathinathan carries more than 18 years of Industry experience in Quality Assurance delivering programs in multiple industry domains. Adept at leading and executing quality assurance initiatives across complex, large-scale system transformations and digitalization efforts within the insurance domain. His deep experience comes with various roles played since the beginning of his career from being a QA analyst to Module lead to Project Manager to Digital transformation Delivery Manager.

About Session Speaker



Dr. Abul Hasnat M Solaiman

Professor, Department of Horticulture
Sher-e-Bangla Agricultural University
Dhaka, Bangladesh

Dr. Abul Hasnat Muhammad Solaiman is presently working as Professor and departmental head at Department of Horticulture, Sher-e-Bangla Agricultural University, Bangladesh. He has completed his Ph.D. in Bio-Science from Iwate University, Japan. His main area of specialization includes Safe and organic Vegetable production, Medicinal Plants, Horticultural Crop Physiology, Innovative agriculture, Agro-4.0, Regenerative agriculture farming, Innovation incubation of new ventures, Sustainable Horticultural interventions in problems areas of Bangladesh. He is member of Bangladesh Society for Horticultural Science, GNOBB-Global Network of Bangladeshi Biotechnologists, JSPS alumni, JUAAB, Bangladesh Association of Biotechnology, Bangladesh Green Roof Movement (BGRM), Dhaka, Registered Graduate of Sher-e-Bangla Agricultural University, Sher-e-Bangla Agricultural University Alumni Association and Horticulturists' Bangladesh, etc. He has been working as a specialist for the FAO of UN in Bangladesh. He worked for different corporate agriculture ventures promotion in Bangladesh. He has ran almost 15 projects funded by different Ministries of GoB. He has huge experiences in planning, designing, writing, and running of the projects.

Currently he has established one Research and Innovation center in Dhaka funded by The World Bank Group. He has published 35 research articles in journals contributed as author/co-author. He has been working for recovering soil health promoting biochar and supervising 4 PhD students and eight MS students. Almost 30 students passed out getting MS degree under his supervision. He has an experience of 20 years in the field of horticulture industry development along with smart and future farming with AI, IoT in agriculture aligning agro 4.0. He established digital Fabrication laboratory (FAB LAB SAU) first in Bangladesh funded by HEQEP, UGC and The World Bank Group. He also runs a new innovative project funded by BCCTF, Govt of Bangladesh. He developed Face shield from FAB LAB SAU during covid- 19 pandemic and earned a remarkable popularity around the country.

About Session Speaker



Dr. Leele Susana Binti Haji Jamian

Associate Professor,
Educational Management Leadership Department
Faculty of Education, Universiti Teknologi MARA, Malaysia

Dr Leele Susana Binti Jamian completed her PhD in Educational Administration, Management and Leadership at the Faculty of Education, University Teknologi MARA, Malaysia in 2015. She also received her Master of Education in Educational Administration and Management from the International Islamic University (IIUM/UIA), Malaysia in 2001. Prior to that, she received her Bachelor of Education in Teaching of English as a Second Language (TESL) from the Universiti Kebangsaan Malaysia@

National University of Malaysia (UKM), Malaysia in 1994.

Currently, she is a senior lecturer working at the Faculty of Education, Universiti Teknologi MARA, Malaysia. She has been a language teacher and instructor at public schools and institutions of higher education for more than 20 years. She had the experience of coordinating the Educational Management and Leadership program at the current university for almost ten years. Her vast working experiences in university would include teaching, lecturing and supervising both TESL and Educational Administration, Management & Leadership programs to various groups of students ranging from the primary school children, school headmasters/administrators, adult learners to postgraduate students both at masters and Phd levels. She has been actively involved as a researcher in numerous universities and government funded projects. Her interests lie in various aspects of TESL and Educational Administration, Management and Leadership.

As to date she has been appointed as one of the university team members of High COE Research Project in the areas of Educational Administration, Management and Leadership. She also became the reference of expertise for new program development for various private and nonprivate Universities globally. During her PhD, numerous papers and research projects were written, presented and published both at local and international levels which were funded by The Research Management Institute (RMI), UiTM and The Ministry of Higher Education (KPT). She also won a few best papers during her Phd journey and will continue to write and publish more papers in her quest to be a social scientist. Finally, she has been actively writing papers for high impact journals and became an international plenary speaker in Educational Administration, Management and Leadership area for various levels of educational institutions globally. Further reference can be retrieved at <https://mni331017c.weebly.com/> for her past academic related work.

About Session Speaker



Dr. Jatinder Kaur

Associate Professor, Department of Electronics and Communication
Advanced centre of Research and Innovation,
CGC University Mohali, India

Dr. Jatinder Kaur, Ph.D., is an Associate Professor with over 12 years of teaching and research experience in Image Processing, Machine Learning, Deep Learning, and Nanotechnology. She has authored 20+ SCI-indexed papers in reputed international journals and guided several M.Tech theses and B.Tech projects. Recipient of AICTE VAANI grants in consecutive years, she has been honored with numerous awards, including Best Teacher and multiple appreciation recognitions from AICTE and the Ministry of Education's Innovation Cell. Actively involved in conferences as a session chair, organizer, and technical committee member, Dr. Kaur continues to advance academic excellence through research, innovation, and mentorship.

About Session Speaker



Dr. Samina Khalil

Former Professor and Director,
Applied Economics Research Center,
University of Karachi, Pakistan

Prof. Khalil was nominated as Member of the Economic Advisory Council of the Prime Minister of Pakistan in Oct 2022, Member Steering Committee, Planning Commission of Pakistan in 2023 and Member Steering Committee NSER (BISP), Ministry of Poverty Alleviation, Govt of Pakistan in 2023. Her responsibilities as Research Professor included undertaking contract and core research projects particularly in Development and Sustainable Development Economics, Environmental

and Natural Resource Economics, Climate Change Economics, Finance and Human Resource Economics, Institutional Economics etc. Contract research involves preparation of project proposals, methodology design, coordination and supervision of field surveys, computer data management and report writing; Teaching post graduate courses in Environmental Economics, Micro-Economics, Development Economics and supervision of MPhil and PhD theses.

Prof. Khalil is a Development Economist (by training) with PhD in Environmental Economics and Management from the University of York, UK & M.Phil in Economics of Developing Countries, from the University of Cambridge, UK. Prof. Khalil has done various courses (Ph.D. level) and got trained through training programs in Environmental Economics and Natural Resource Management from the University of Berkeley, USA, University of Gutenberg, Sweden and Shiga University, Japan. She is a winner of various scholarships / fellowships like Commonwealth Scholarship, Ford Foundation scholarship, SIDA (Swedish International Development Agency) scholarship, JICA (Japan International Cooperation Agency, Government of Japan) scholarship. She also earned fellowships from the Government of France, Higher Education Commission of Pakistan and East West Centre, Washington D.C. USA, for research work in the areas of Environmental Economics and Natural Resource Management Policy and Sustainable Development.

Dr. Khalil has worked as consultant to number of International Agencies like World Bank, IUCN, ADB, WWF etc. and have undertaken various research and policy oriented studies related to issues in Economic Development, Environmental & Natural Resource Management and Sustainable Development.

About Session Speaker



Dr. Sarah O. Namoco

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Dr. Sarah O. Namoco is a Professor IV at the University of Science and Technology of Southern Philippines (USTP). She holds a Doctor of Education in Educational Technology from Universiti Sains Malaysia, where she was awarded as the Best Doctor of Education Student in 2020. She also earned her master's degree in Technician Teacher Education from Mindanao University of Science and Technology

and her bachelor's degree in Secondary Education, major in Home Economics, cum laude, from Mindanao State University-Iligan Institute of Technology.

An accomplished researcher, Dr. Namoco has authored and co-authored numerous Scopus- and Web of Science-indexed publications on educational technology, pedagogy, curriculum development, and research methodologies. She has been recognized with several distinctions, including the Global Scientist Award (2022-2024), USTP Publication Awards, and the Teaching Excellence Award. She is a frequent presenter at international conferences across Asia and the United States, where she shares her research on technology integration and innovative learning practices. With more than two decades in the academe, Dr. Namoco began as a secondary school teacher before transitioning to higher education. At USTP, she has served in various leadership roles and currently heads the Continuing Quality Improvement Program under the Center for Innovative Teaching and Learning.

She also serves as an Adjunct Professor at Zamboanga Peninsula Polytechnic State University and is widely sought after as a resource speaker on research and education.

About Session Speaker



Dr. Marziana Madah Marzuki

Associate Professor
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Dr. Marziana Madah Marzuki is an Associate Professor at Universiti Teknologi MARA Cawangan Kelantan (UiTMCK), where she also serves as Coordinator of the Research Management Unit. She obtained her Bachelor's and Master's degrees in Accounting from the International Islamic University Malaysia (IIUM) and later earned her PhD in Accounting from Universiti Sains Malaysia (USM).

Throughout her career, she has held several leadership positions, including Coordinator of Malaysian Research Assessment (MyRA), Risk Management, and Tunas Research Interest Group (TRIG), contributing actively to academic governance, research development, and institutional advancement. A dedicated researcher and academic, Dr. Marziana has published more than 40 papers in reputable indexed journals such as WOS, Scopus, ERA, and MyCite, in addition to book chapters and conference proceedings. She has supervised over 45 postgraduate students, including PhD and DBA candidates, and continues to mentor young scholars. Her research interests cover financial reporting, corporate governance, auditing, Islamic finance, and zakat governance. She also contributes as a consultant, invited speaker, and editorial board member at international journals. Widely recognized both nationally and internationally,

Dr. Marziana has served as a visiting scholar and lecturer in Indonesia and Thailand, keynote speaker at global conferences, and external reviewer for academic programs. Beyond academia, she has led national and international community engagement projects, secured significant research grants, won multiple innovation awards, and remains an active member of the Malaysian Institute of Accountants (MIA) and the International Council of Islamic Finance Educators (ICIFE).

About Session Speaker



Dr. Mohd Rafi Bin Yaacob

Former Professor of Entrepreneurship
Deputy Chair
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Dr. Mohd Rafi Yaacob is a former Professor of Entrepreneurship at Universiti Malaysia Kelantan (UMK), Malaysia. He holds a BSc in Geography from Universiti Malaya, an MBA from Middlesex University, UK, and a PhD in Entrepreneurship from the University of Newcastle, Australia. In 2012, he was awarded a Postgraduate Diploma in Entrepreneurship by the University of Cambridge.

He began his academic career as a tutor at Universiti Malaya before serving as a lecturer at Universiti Teknologi MARA (UiTM). At UMK, he held key leadership roles, including Head of Department, Deputy Dean, Dean of the Faculty of Entrepreneurship and Business, and Deputy Vice Chancellor (Academic and International). Over the years, he supervised 24 PhD students, examined more than 100 theses, and authored over two dozen books alongside numerous journal articles and conference papers. His research focuses on entrepreneurship, small business, strategic environmental management, and green business.

Dr. Rafi is an active member of the Malaysian Nature Society and has contributed internationally as a visiting professor in Turkey and the Philippines. Even in retirement, he continues to deliver lectures and trainings. Outside academia, he enjoys reading, writing, traveling, and carpentry.

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Impact of Faculty Instruction Quality on the Development of 21st-Century Skills Among CCSE Graduates of Lorma Colleges (2018–2025)

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Abstract:

The increasing demand for graduates equipped with 21st-century competencies—such as critical thinking, problem-solving, and effective communication—necessitates that higher education institutions continuously assess faculty instruction quality. This study examined the relationship between the perceived quality of faculty instruction and the development of 21st-century skills among graduates of the College of Computer Studies and Engineering at Lorma Colleges from 2018 to 2025. Employing a quantitative research design, secondary data from the Graduate Satisfaction Survey (n=934) were analyzed. Descriptive statistics summarized graduates' perceptions, while Pearson correlation and multiple regression determined the relationship between instructional quality and skill development. Findings revealed high satisfaction with faculty instruction (M=4.21) and strong ratings for critical thinking (M=4.03) and communication skills (M=4.07). A weak but positive correlation ($r=0.10-0.15$, $p < 0.05$) indicated that faculty instruction quality significantly predicted skill development ($\beta = 0.12$, $p < 0.05$), accounting for 2% of variance ($R^2=0.02$). The study concludes that while faculty instruction positively influences graduates' acquisition of 21st-century competencies, other experiential and institutional factors also contribute. Continuous faculty development, innovative pedagogies, and stronger industry-academe linkages are recommended to enhance employability and lifelong learning.

Academic Preparation and Career Readiness as Predictors of Graduate Employability: A Predictive-Correlational Study

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Abstract:

Graduate employability has become a central measure of higher education effectiveness, reflecting how well academic institutions prepare students for professional success. In an era of rapid technological advancement and evolving industry demands, higher education institutions are challenged to balance academic preparation and career readiness to ensure that graduates are competent, adaptable, and competitive in the workforce. This study examined how academic preparation and career readiness predict graduate employability among tertiary education graduates. Specifically, it sought to assess graduates perceived levels of academic preparation, career readiness, and employability; determine their interrelationships; establish predictive influence; and compare the predictive accuracy of various models—Linear Regression, Random Forest, and Support Vector Regression (SVR). A quantitative predictive-correlational design was employed using data from 934 graduates who completed a Graduate Satisfaction Survey (2018–2025) of the College of Computer Studies and Engineering. Descriptive statistics, Pearson correlation, multiple regression, and machine learning models were analysed using Python and Jupyter Notebook. Visualizations such as bar charts, scatter plots, heatmaps, and a 3D regression plane were used to interpret findings. Results showed that graduates rated academic preparation ($M=4.31$) and employability ($M=4.27$) as very high, and career readiness ($M=4.18$) as high. Academic preparation ($r=0.74$) and career readiness ($r=0.79$) both had strong, positive correlations with employability. Regression analysis revealed that the two predictors jointly explained 83% of employability variance ($R^2=0.83$). Among the models tested, the Random Forest Regressor achieved the highest predictive accuracy ($R^2=0.85$, $MAE=0.12$, $RMSE=0.16$). Findings confirm that academic preparation and career readiness significantly and jointly predict graduate employability. These results emphasize the importance of integrating rigorous academic instruction with structured career development initiatives to produce employable, industry-ready graduates.

Individual Motivations for Sustainable Consumption Practices among Malaysian Consumers

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Abstract:

This paper aims to examine a set of individual factors that shape green purchase intentions. These factors include self-efficacy, environmental attitudes, perceived severity, and gender. Data were collected through an online survey using a convenience sampling approach, which yielded a total of 373 usable responses. Structural equation modeling with PLS was employed to test the proposed hypotheses and to evaluate the relationships among the study variables. The results reveal that self-efficacy, environmental attitudes, and perceived severity have meaningful and statistically significant relationships with green purchase behavior. These findings indicate that individuals who believe in their ability to make environmentally responsible choices, who hold positive attitudes toward environmental protection, and who perceive environmental issues as serious are more likely to engage in green purchasing. In contrast, gender shows no effect on the intention to buy green products, suggesting that the motivation to choose environmentally friendly goods is similar among male and female consumers. The overall findings align with previous research, reinforcing the idea that individual level psychological factors play an essential role in strengthening green purchase behavior. This study contributes additional evidence to the literature and highlights the importance of understanding personal motivations in promoting sustainable consumption. The paper concludes by offering practical recommendations for policymakers and practitioners. These recommendations include developing targeted awareness programs, strengthening environmental education, and designing communication strategies that enhance self-efficacy and attitudes toward green consumption. Such efforts can support the creation of more effective green related policies and ultimately increase green purchase intentions within the community.

Index Terms:

Green Purchase Intention, Self-Efficacy, Environmental Attitude, Perceived Severity, Gender

Exploring Housing Accessibility: Insights into the Needs of Malaysia's Underprivileged Communities

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Abstract:

Housing should be accessible to all, regardless of their social background. Nevertheless, it was argued that the current housing initiatives did not reflect their housing needs and that more housing awareness was needed among the people. Hence, this study investigates the housing awareness and needs of underprivileged groups living in urban areas. A focus group discussion with ten (10) informants from low-cost public housing in Kampung Kerinchi, Kuala Lumpur, Malaysia, was conducted in a separate session to validate the housing issues and needs facing them using the inductive approach of Behavioural Insights (PRIME Framework) as proposed by the Malaysian Productivity Corporation (2021). The data is also collected via focus group discussions (FGDs) with five (5) experts from the academic area, property, local authority, Ministry, and non-governmental organisations to understand the provision and housing issues in Malaysia. The study's findings reveal that people aspire to own a house, but the current housing practice does not support them. Even though housing is the basic need of all citizens, and everyone should have equal access to adequate and suitable housing as outlined in the human rights principles, the current housing policy in Malaysia has yet to fulfil this role. Findings from the need-based analysis and valuable input from stakeholders should be consolidated to ensure effective interventions are implemented at the earliest possible.

Index Terms:

Public Housing; Housing Awareness, Housing Needs; Underprivileged; Malaysia

The Influence of Data Privacy and Digital Security on User Perceptions of the Coretax System in Indonesia

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Abstract:

The rapid digitalization of tax administration in Indonesia has led to the implementation of Coretax as a centralized platform for tax processing and compliance. Despite its intended benefits, limited empirical evidence has examined how data privacy and digital security shape user acceptance of the system. This study investigates the influence of data privacy, digital security, trust, perceived usefulness, perceived ease of use, and behavioral intention toward the Coretax platform. Using a quantitative approach, data were collected from individual taxpayers through an online survey and analyzed using Partial Least Squares Structural Equation Modeling. The findings show that data privacy significantly enhances perceptions of digital security, which subsequently strengthens trust in the system. Perceived usefulness and perceived ease of use also contribute to stronger behavioral intention toward adopting Coretax. The study extends the Technology Acceptance Model by integrating privacy and security constructs, offering a more comprehensive explanation of user acceptance in mandatory government digital services. Practically, the results provide guidance for the Directorate General of Taxes in improving system transparency, strengthening data protection measures, and enhancing user communication to support the continued success of Indonesia's digital tax administration reform.

Polya's Effect on Improving 9th Graders' Ability to Solve Non-Routine Math Problems-A Quasi-Experimental Study in Lebanese Private Schools

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Abstract:

This quasi-experimental study focused on the role of Polya's four-steps in mitigating the problem-solving difficulties that ninth graders studying in private schools in Lebanon faced when solving non-routine math problems (NRMPs). A quantitative approach was used to examine the effectiveness of Polya's four-step framework: understanding the problem, devising a plan, carrying out the plan, and looking back the solution. The research sample consisted of 67 students, aged 14-15-year-old, who were given Polya-based instruction as 2-week intervention. Pre-post-tests were administered to measure significant improvements in students' problem-solving abilities. Findings indicated that Polya's structured approach significantly enhanced the experimental group's cognitive skills and reduced their difficulties with solving NRMPs. The results suggested that integrating Polya's steps into the mathematics problem-solving could promote deeper understanding of mathematical concepts and improve 9th graders problem-solving competence. This research added to knowledge on effective strategies for mathematics instruction, focusing on the importance of structured approaches which enabled students to handle NRMPs.

Index Terms:

Polya's Approach - Non-Routine Math Problems (NRMPs) - Bodin's Taxonomy - Cognitive Development

Effects of Graveyard Shift to Casino Employees towards a Stress Management Framework

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Abstract:

The research investigates how graveyard shift affect casino employees through their emotional, physical and mental health before developing a complete stress management system. The research uses the Circadian Rhythm Theory together with the Job Demand-Control (JDC) Model and Effort-Reward Imbalance (ERI) Model to develop a complete theoretical framework for understanding employee difficulties.

The research uses qualitative method which include structured questionnaires to collect data from night-shift workers. The study population consists of dealers, security personnel, hospitality staff and all other personnel in the casino environment. In order to capture diverse experiences and stress levels and to ensure representation across different job categories, stratified random sampling method was used.

The research identifies three main stress factors which include 24/7 job/demand control, effort-reward imbalance and working environment. The research examines how physical health issues including sleep problems and pain affect individuals who have anxiety and depression.

Findings reveal significant variability in the management of stressors and stress levels among employees, with notable differences based on job roles and personal demographics. The research employed statistical methods which included one-sample t-tests, ANOVA bi-factors and multiple regression analysis, to test the hypotheses and determine the relationships between stressors and stress outcomes.

The proposed stress management framework includes flexible scheduling and health and wellness program access and better work environment conditions. It aims to enhance the well-being and job satisfaction of casino employees, reduce absenteeism, and improve overall operational efficiency. The research findings create value for casino management, healthcare providers, policymakers, labor unions and academic researchers who can use these results to develop solutions for graveyard shift work problems in casinos.

Index Terms:

Graveyard Shift, Casino Employees, Stress Management, Circadian Rhythm Theory, Job Demand-Control Model, Effort-Reward Imbalance Model, Qualitative Research, Occupational Health

Development of a Web-Based Interactive Spatial Intelligence Module (WBISIM) for Architecture Students: Pedagogical Design and Theoretical Integration

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Abstract:

This paper details the pedagogical design and robust theoretical development of the Web-Based Interactive Spatial Intelligence Module, a pioneering educational innovation specifically crafted to profoundly enhance spatial reasoning, visualization, and mental rotation skills among architecture students. Strategically anchored in a synergistic combination of Gardner's Multiple Intelligence Theory, Bruner's Constructivist Theory, and Sweller's Cognitive Load Theory, the module delivers a dynamic, interactive, browser-based learning experience, innovatively utilizing SketchUp Web and Google collaborative tools. The WBISIM is meticulously structured into nine scaffolded weekly lessons, progressively advancing students from fundamental geometric manipulations to intricate architectural modeling tasks, directly aligning with the core learning outcomes of Architectural Design 2. Rigorous expert validation unequivocally affirmed the module's exceptional instructional quality, technical robustness, and profound pedagogical relevance. The study conclusively establishes the WBISIM as a robust model for transformative technology-mediated spatial learning in architecture, effectively demonstrating how meticulously theory-informed digital modules can drive significant advancements in cognitive engagement, visual fluency, and comprehensive design understanding within higher education.

Index Terms:

Architecture Education, Spatial Intelligence, Module Development, Web-based Learning, 3D Visualization, Constructivist Pedagogy

AI-Powered Wearable System for Environmental Sound Detection and Inclusion of Hearing-Impaired Individuals

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Abstract:

Hearing impairment remains a major barrier to inclusion, affecting over 430 million people worldwide (WHO, 2023). In countries such as Benin, limited access to assistive technologies exacerbates social exclusion and safety risks for individuals with hearing loss, who often remain unaware of crucial environmental sounds like alarms, sirens, or approaching vehicles. This research introduces EchoBand, an AI-based wearable device designed to enhance environmental awareness for people with hearing impairments. Built on the M5Stack C Plus 2 platform, EchoBand detects and classifies real-world sounds in real time using lightweight on-device machine learning models. The device is paired with a mobile application, developed in Flutter, that enables users to monitor alerts, customize vibration patterns, and contribute to system improvement. Through a participative AI framework, anonymized audio samples collected via the app are sent to a Firebase-based cloud infrastructure for retraining the model, which is later deployed back to users' devices. This feedback loop allows EchoBand to continuously adapt to diverse sound environments and community data. Preliminary evaluations show improved accuracy in environmental sound recognition and high user satisfaction with the system's responsiveness and usability. By integrating wearable sensing, AI, and participatory design, EchoBand provides a scalable, low-cost solution to improve safety, independence, and social inclusion for the global hearing-impaired community.

Index Terms:

Hearing Impairment, Wearable Assistive Technology, Environmental Sound Detection, Participative AI, Inclusion

Exploring Housing Accessibility: Insights into the Needs of Malaysia's Underprivileged Communities

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Abstract:

Housing should be accessible to all, regardless of their social background. Nevertheless, it was argued that the current housing initiatives did not reflect their housing needs and that more housing awareness was needed among the people. Hence, this study investigates the housing awareness and needs of underprivileged groups living in urban areas. A focus group discussion with ten (10) informants from low-cost public housing in Kampung Kerinchi, Kuala Lumpur, Malaysia, was conducted in a separate session to validate the housing issues and needs facing them using the inductive approach of Behavioural Insights (PRIME Framework) as proposed by the Malaysian Productivity Corporation (2021). The data is also collected via focus group discussions (FGDs) with five (5) experts from the academic area, property, local authority, Ministry, and non-governmental organisations to understand the provision and housing issues in Malaysia. The study's findings reveal that people aspire to own a house, but the current housing practice does not support them. Even though housing is the basic need of all citizens, and everyone should have equal access to adequate and suitable housing as outlined in the human rights principles, the current housing policy in Malaysia has yet to fulfil this role. Findings from the need-based analysis and valuable input from stakeholders should be consolidated to ensure effective interventions are implemented at the earliest possible.

Index Terms:

Public Housing; Housing awareness; Housing needs; Underprivileged; Malaysia

Agent-Empowered Test Artifact Generation and Validation with Reflective Feedback

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Abstract:

This paper presents an innovative system for generating and validating essential quality assurance artifacts. Utilizing robust agent-bot support, it provides a framework to automate and simplify complex testing. The system incorporates an intelligent feedback mechanism, where execution outcomes dynamically inform test refinement and property verification, embodying an AI-driven approach to enhance artifact quality. This method significantly improves the efficiency of automated test creation and fault discovery, offering a new paradigm for robust software quality assurance through adaptive, agent-driven processes.

Impact Analysis of Generative AI Tools and Applications in Modern Project Management Practice

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Abstract:

Background: In recent years, the rise of Generative AI has fundamentally altered various industries, including project management. Generative AI refers to AI systems capable of creating content, predicting outcomes, and providing strategic recommendations by analyzing vast amounts of data. These tools have the potential to streamline project management processes by automating routine tasks, offering predictive insights, and enabling more informed decision-making. The shift towards AI-driven project management practices is driven by the need for greater efficiency, accuracy, and innovation in managing complex projects.

Problem Statement: Despite the enthusiasm surrounding AI, there is a lack of comprehensive research examining its actual impact on project management practices. While some studies suggest potential benefits, others raise concerns about the challenges and limitations of AI adoption, including ethical issues, the need for skilled personnel, and the risk of over-reliance on AI-generated decisions. This research seeks to fill the gap by providing an in-depth analysis of how Generative AI tools influence project management outcomes.

Objectives: The paper aims to achieve the following objectives:

1. To evaluate the impact of Generative AI on the efficiency of project management processes.
2. To identify the benefits and challenges associated with the use of Generative AI in project management.
3. To assess the role of Generative AI in enhancing decision-making and risk management.
4. To provide recommendations for the effective integration of AI tools in project management practices.

Significance of the Study: Understanding the impact of Generative AI on project management is critical for organizations seeking to leverage these tools for competitive advantage. This study offers practical insights for project managers, organizations, and AI developers, guiding them in the effective implementation of AI technologies to improve project outcomes.

Root Zone Cooling System for Sustainable Intensified Vertical Modular Hydroponics Crop Production

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Abstract:

Sustainable Development Goals (SDG) 12 on responsible consumption and production and SDG 13 on climate action, as set forth by the United Nations, have guided research and policymaking efforts toward sustainability and improved quality of life. These goals call for human-centered solutions that create lasting, sustainable impacts for end-users, particularly farmers and communities. One such solution is the use of root zone cooling systems, which aim to regulate environmental factors such as temperature and relative humidity that directly influence water quality parameters, especially in hydroponic production. In response to this, researchers from Bulacan Agricultural State College developed a study titled Root Zone Cooling System for Sustainable Intensified Vertical Modular Hydroponics (IVMH) Crop Production. The general objective of the study was to design an intensified vertical modular hydroponics system integrated with a root zone cooling system for crop production. Two sets of IVMH systems were established: one equipped with a cooling system and one without. The IVMH system with the root zone cooling system was replicated three times and arranged randomly in the field. Thirty test plants per tower were randomly selected and labeled for observation. Results showed that the application of the root zone cooling system lowered the temperature of the nutrient solution in the water tanks by an average of 6.0°C at 12:00 noon before the temperature gradually dissipated compared to the water tank without the cooling system. Among all treatment and replication combinations, only T1R1 and T2R3 exhibited statistically significant differences. Notably, T1R1 stood out with an exceptionally high F-value and a very low p-value (0.000), indicating that the treatment used in T1R1 had a strong positive effect. While T2R3 also demonstrated a significant effect ($p = 0.009$), its impact was not as pronounced as that of T1R1.

Index Terms:

Root Zone Cooling System, Sustainable Intensified Vertical Modular Hydroponic, Nutrient Solution, Sustainable Development Goals (SDG) 12 And 13, Hydroponics Production

Bridging the Digital Gap: Developing a Competence Framework on Technology Integration for Educators

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Abstract:

Technology integration has shaped education, yet faculty competence in effectively using digital technology remains uneven. This study aimed to develop a competence framework on technology integration for educators, design training modules responsive to their needs, implement and evaluate this technology competence enhancement training.

Using Design and Developmental Research guided by the ADDIE Model—Analyze, Design, Develop, Implement and Evaluate—the study conducted a needs assessment through interviews, surveys and expert validation. Results showed moderate competence in digital citizenship, ICT integration frameworks and educational technology tools, but lower proficiency in interactive platforms and gamification. These findings guided the development of a competency framework for teachers and Kolb’s Triple E framework to ensure engagement and practical application.

Evaluation using Kirkpatrick’s Four Levels indicated highly positive outcomes in reaction, learning, behavior and results. The study concluded that a needs-based and structured framework enhances faculty competence in technology integration. It recommends extending training time, providing more hands-on workshops and promoting on-going professional development.

The resulting four-phased competence model—Launch, Immerse, Zoom and Advance—emphasized that technology integration competence arises from the interplay of knowledge, skills and attitudes. For educators, this highlights the importance of pedagogy-focused, experiential training that addresses real needs and equips faculty for meaningful technology-enhanced teaching.

Index Terms:

Competence Framework, Technology Integration, Faculty Development, Instructional Design, ADDIE Model

TRAC Integrated Research and Extension for Community Empowerment and Agricultural Productivity in Buan, Panglima Sugala, Tawi-Tawi

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Abstract:

This study assessed the effectiveness of the Tawi-Tawi Regional Agricultural College (TRAC) Integrated Research and Extension Program in empowering the community and enhancing agricultural productivity in Buan, Panglima Sugala, Tawi-Tawi. Utilizing a mixed methods approach, data were collected from 150 households representing fisherfolk, farmers and fishermen, and youth sectors through surveys, focus group discussions, and informant interviews.

The findings revealed high participation rates in training sessions, technology demonstrations, and community meetings, with moderate to high adoption of improved agricultural and fisheries technologies. Participants reported increased crops and fishery yields, improved household income, and enhanced skills and knowledge. Despite these positive outcomes, challenges such as limited output to quality inputs, financial constraints, and environmental risks were identified as significant barriers. The majority of respondents expressed commitment to sustaining the use of technologies, indicating promising prospects for long-term impact. This study underscores the alignment of TRAC's integrated research and extension effort with its mandates to serve as a center of excellence in agriculture, contributing to sustainable rural development and community empowerment in the region.

Recommendations include strengthening resource access, continuous capacity building, and fostering multi-stakeholder partnership to sustain and expand program benefits.

Index Terms:

Integrated Research and Extension, Community Empowerment, Agricultural Productivity, Technology adoption, Sustainable rural development

A Comprehensive Study on the Influence of Inadequate Water Availability and Inorganic Fertilizer Inputs on Crop Productivity and Health in Tawi-Tawi Province

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Abstract:

Tawi-Tawi- province, the southernmost part of the Philippines, is an agriculturally dependent archipelago region heavily reliant on staple food crops like cassava, rice and corn, alongside a historically significant seaweed farming industry. Despite its economic importance, Tawi-Tawi faces chronic challenges stemming from inadequate freshwater availability and extensive use of inorganic fertilizers, which collectively threaten crop productivity, soil health and rural livelihoods. This study undertakes a comprehensive evaluation of how water scarcity, compounded by unregulated inorganic fertilizer inputs, impacts crop growth, yield, and physiological health in key agricultural zones of Tawi-Tawi. Empowering a mixed-methods approach, data were collected from 160 farmers across five municipalities—Bongao, Simunul, Sitangkai, Panglima Sugala, and Sibutu—using structured questionnaires, soil and water sampling, and field observations.

Results revealed frequent water shortage episode linked for insufficient irrigation infrastructure and erratic rainfall, limiting critical growth stages and [ost-harvest processing operations. Fertilizer use is widespread but marked by excessive application rates without balanced nutrient management, contributing to soil acidification, reduced organic matter content, diminished nutrient uptake efficiency. Crop productivity remains below national benchmarks, with yields averaging 2.8 tons/ha for Cassava and 1.9 tons/ha for cash crops and veggies, alongside notable losses in seaweed quality and quantity due to environmental stressors and disease. Statistical analysis confirms significant negative interactions between water scarcity and fertilizer overuse, exacerbating adverse effects on crop health and soil degradation. Farmer interviews underline socio-economic limitations, including lack of access to training, credit, and modern farming inputs, which constrain the adoption of sustainable resources management practices.

The study concludes that addressing Tawi-Tawi's agricultural sustainability requires integrated water and nutrient management strategies, investment in irrigation and water harvesting infrastructures, capacity building on balanced fertilization, and promotion of organic soil amendments. These interventions are vital to enhancing crop productivity, improving environmental resilience, supporting food security, and sustaining the livelihoods of farming communities vulnerable to climate variability and resource constraints.

Index Terms:

Agriculture And Health, Water Scarcity, Sustainable Crop Production, Inorganic Fertilizer Impacts, Soil Health Degradation, Smallholder Farmer Resilience, Crop Productivity Constraints

Attitudes and Barriers Towards English Language Learning and the Development of Contextualized English Modules for Prospective Agricultural Educators in Tawi-Tawi

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Abstract:

This study investigated the attitudes and barriers towards English language learning among 150 prospective agricultural educators enrolled at Tawi-Tawi Regional Agricultural College in the Philippines. Recognizing the critical role of English proficiency in academic and vocational success within agricultural education, the study aimed to assess learners' perceptions, identify challenges, and develop contextualized English language modules tailored to their local linguistic and agricultural context. A mixed-methods research design was employed, utilizing surveys to quantify attitudes, barriers, and proficiency levels, alongside interviews and focus group discussions to gain qualitative insights into learners' experiences and cultural-linguistic dynamics.

Quantitative data revealed generally positive attitudes but significant barriers, particularly limited English exposure, resources scarcity, and dominance of the local language Sinug. After the implementation of tailored English modules, significant improvements were observed in listening, speaking, reading and writing skills, validated through pre- and post-test. Thematic qualitative analysis enriched understanding by highlighting socio-cultural tensions, motivational factors, and resource needs. Correlation analysis indicated strong positive relationships between attitudes, motivation, engagement and proficiency, while barriers negatively impacted these outcomes. The study concludes that culturally and vocationally contextualized English instruction effectively enhances learner engagement and language competence. It recommends institutional adoption of such modules, targeted teacher training in English for Specific Purposes, and policy support to provide adequate learning resources and exposure opportunities. This research contributes valuable insights into overcoming language learning barriers in multilingual, rural agricultural education settings, offering a model for regional educational development and empowerment.

Index Terms:

Agricultural Education, English Language Learning, Prospective Agricultural Educators, Contextualized English Modules, Language Barriers, Attitudes Towards English

Challenges and Barriers Faced by Agriculture Graduates in Tawi-Tawi Province: Insights from Educators on Employment, Curriculum Relevance, and Socioeconomic Impact

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Abstract:

This study examined the challenges and barriers faced by agriculture graduates in Tawi-Tawi province, focusing on employment opportunities, curriculum relevance, and socioeconomic impact as perceived by educators. Using a descriptive-survey design with 300 respondents across 11 municipalities, research combined quantitative analysis of employment trends with qualitative insight from educators.

Results revealed that a majority of graduates are unemployed or underemployed, with only 26.7% within the agriculture sector. Key barriers include limited job opportunities, skills mismatch, inadequate practical training, and poor infrastructure. Correlation analysis showed a significant positive relationship between curriculum relevance and employability, highlighting the critical role of updated and locally attuned curricula in improving workforce readiness. Educators emphasized the need for stronger linkages between institutions and industries, enhanced faculty development, and greater incorporation of modern agricultural technologies and entrepreneurship training. Findings also indicated that employment outcomes significantly affect graduates' socioeconomic well-being, with employed graduates reporting higher household income, greater access to services, and better capacity to invest in farming activities.

The study concludes that addressing employment barriers require curriculum reforms, stronger industry and government partnership, financial support for students, and continuous monitoring of graduate outcomes. Recommendations aim to enhance agricultural education and promote sustainable development in Tawi-Tawi's agricultural sector.

Index Terms:

Agriculture Graduates, Employment Challenges, Curriculum Relevance, Socioeconomic Impact, Tawi-Tawi Province, Agricultural Education

Prospective Economic Impacts of the Tawi-Tawi Regional Agricultural College's Home Makers and Home Technology Program on Grassroots Livelihoods in Tawi-Tawi province

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Abstract:

The study examines how the Tawi-Tawi Regional Agricultural College's Home Makers and Home Technology Program can serve as a strategic vehicle for grassroots economic empowerment among coastal and rural households in Tawi-Tawi province, with particular emphasis on women homemakers facing chronic poverty and livelihood vulnerability.

Anchored on the Sustainable Livelihood Framework and Diffusion of Innovations Theory, it conceptualizes the program as a mechanism for enhancing human and financial capital through skills training in for processing, crafts, and home-based technologies, and for accelerating the adoption of feasible livelihood innovations compatible with local fisheries- and agriculture-based economies.

Using a mixed methods prospective evaluation design, the research integrates household's surveys, simulated financial projections, and qualitative insights from key informant interviews and focus group discussions to estimate potential income growth, employment creation, and return on investment associated with program participation, while identifying institutional and socio-economic moderators such as resource constraints, access barriers, and gendered roles.

Findings indicate that, under realistic assumptions, program exposure can lead to substantial increases in projected household income, improved home-based employment opportunities, and favorable benefit-cost ratios, but that these gains are tempered by extension and delivery gaps and the geographic isolation of many coastal communities in BARMM.

The study concludes that strengthening TRAC's extension capacity integrating the program into the livelihood and women's economic empowerment initiatives, and institutionalizing continuous impact evaluation can maximize the program's contribution to inclusive, sustainable livelihoods in Tawi-Tawi and serve as a scalable model for similar coastal provinces in the Philippines.

Index Terms:

Tawi-Tawi Grassroots Livelihoods, Homemakers' Economic Empowerment, Income Diversification And Home-Based Enterprises

Design and evaluation of Agribusiness Financing Models Tailored to the Socioeconomic and Operational Needs of Smallholder Farmers and Rural Enterprises in Tawi-Tawi, Philippines

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Abstract:

This study focused on designing and evaluating agribusiness financing models that are specifically tailored to the socioeconomic realities and operational dynamics of smallholder farmers and rural enterprises in Tawi-Tawi, Philippines. Recognizing the unique challenges faced by farmers in geographically isolated and culturally diverse communities, the research employs a mixed-methods approach combining descriptive-correlational quantitative analysis with qualitative insights from key informants and focus group discussions. Data were collected from 60 purposively selected respondents engaged in key agricultural activities such as seaweed farming, copra production, and vegetable cultivation.

Results indicated strong positive correlations between the adoption of these tailored financing models and improvements in financial inclusion, agricultural productivity, income stability, and market integration. The qualitative data reveal pervasive barriers like lack of traditional collateral, seasonal cash flow fluctuations, and limited institutional support, underscoring the need for financing mechanisms that are flexible, risk-sensitive, and culturally attuned. The study also highlights the potential of digital financial services to overcome the province's geographic constraints. Gender inclusion and social capital emerge as vital factors influencing financing uptake and success.

The study concludes that context-specific agribusiness financing models hold significant promise for empowering small-scale farmers and rural enterprises, fostering sustainable rural development, and addressing poverty and food security in Tawi-Tawi.

Recommendations urge policymakers and stakeholders to adopt inclusive, adaptive, and technology-enabled financing frameworks, complemented by continuous monitoring and capacity enhancement, to build resilient agribusiness ecosystems in the province. This research contributes a practical, evidence-based framework that can guide future interventions aiming to enhance agribusiness financing for smallholder farmers in similarly remote and diverse settings, supporting both local empowerment and broader development goals.

Index Terms:

Agribusiness Financing, Smallholder Farmers, Rural Enterprises, Market Access, Income Stability, Agricultural Productivity, Financial Literacy

Navigating Sustainable Seas: Mapping Marine Tourism Challenges to the SDGs–Blue Economy Nexus on Koh Lan, Thailand

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Abstract:

This study develops a rapid, data-driven approach to detect operational sustainability gaps in island tourism by applying machine-learning sentiment analysis to user-generated TripAdvisor reviews of Koh Lan (2015–2024). A corpus of 2,388 English-language reviews was preprocessed and classified with five supervised algorithms; a Support Vector Machine (SVM) produced the best performance (accuracy 87.29%, F1 75.38%). Although the majority of reviews were positive (91.57%), a small negative subset (90 reviews, 4.25%) contained concentrated, actionable signals. Qualitative coding of negative reviews revealed five recurring problem dimensions—Scenery (37.29%), Staff and Service (29.38%), Facility (19.21%), Safety (10.73%), and Accessibility (3.39%)—yielding 179 distinct issue mentions. Each identified problem was mapped onto specific SDG targets and assessed against the Blue Economy pillars (environmental sustainability, economic resilience, and social equity), exposing persistent weaknesses in marine and waste management, infrastructure resilience, service quality, and institutional governance. The paper translates these diagnostics into a pragmatic “Blue Tourism” policy package—zero-plastic and blue-carbon initiatives, eco-infrastructure upgrades, eco-service certification, and a participatory marine governance and risk committee—to shift Koh Lan from a short-term, extractive tourism model toward regenerative stewardship. Methodologically, the study demonstrates that ML-enabled monitoring of online reviews can provide timely, high-resolution intelligence to guide sustainable destination management.

Index Terms:

Marine Tourism, Sustainable Development Goals, Blue Economy, Sentiment Analysis, Machine Learning

VI-AUTEK (Visual-Audio and Technology): A Transmedia Podcast as an Innovative Tool for Effective Teaching of Short Stories

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Abstract:

This study focuses on examining the level of students' autonomy in the use of technology (AUTEK) and its relationship to their academic performance. The research aims to determine the extent of students' autonomy in using technology in terms of planning, monitoring, and evaluating their own learning, as well as to assess their level of academic performance. The study also explores the significant relationship between technological autonomy and students' academic performance.

A descriptive-correlational research design was employed. The respondents consisted of students selected through an appropriate sampling procedure. A survey questionnaire, developed and validated for this purpose, served as the main instrument to measure the level of technological autonomy, while academic performance data were obtained from the school's official records. The collected data were analyzed using mean, standard deviation, and Pearson r .

Findings revealed that students demonstrated a high level of autonomy in the use of technology, particularly in monitoring and evaluating their learning. The respondents' academic performance was also found to be satisfactory. Most importantly, the results showed a significant relationship between students' autonomy in using technology and their academic performance.

Based on the findings, the study recommends the continuous integration of technology in teaching and learning processes, as well as the implementation of strategies that will further enhance students' autonomy to improve their academic performance.

Index Terms:

Learning Autonomy, Educational Technology, Academic Performance, AUTEK, Students

Motivations, Challenges, and Strategies of Rabbit Raisers in Bulacan: A Thematic Qualitative Analysis

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Abstract:

This qualitative study explores the motivations, challenges, and strategies of rabbit raisers in Bulacan. Through in-depth, semi-structured interviews, the researchers examine why individuals enter rabbit raising, the obstacles they confront (e.g., market thinness, capability gaps, disease risk), and the practices they adopt to sustain operations. Reflexive thematic analysis surfaced six interlinked themes: (1) livelihood orientation and multifaceted motivations; (2) thin and unstable markets; (3) capability and cost pressures in production; (4) health and welfare management as a cornerstone strategy; (5) grassroots market-building and collaboration; and (6) strategic mindset for new entrants. The thematic analysis shows that livelihood motivations trigger entry, but market volatility and capability constraints create early vulnerability. Raisers respond with rigorous biosecurity, social-media selling, associational ties, and experiential marketing; a “learn first, validate demand, then scale” mindset mitigates failure risks. Implications include LGU-backed demand formation, buyer linkages, modular capacity-building, pooled procurement, and light-touch cooperative arrangements. Findings provide practice-ready insights for local policy and extension programs aimed at strengthening this emerging value chain.

Amidst the Demagogues: An Appraisal on BASC Students' Views in Studying Philippine History in the "Age of Disinformation"

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Abstract:

This study investigated the views of Bulacan Agricultural State College (BASC) students regarding their study of Philippine History in the "Age of Disinformation" in the aspect of cognitive-historical, digital literacy and pedagogical factors. A qualitative research design was employed through semi-structured interview to gather in-depth insights of the participants. The researcher utilized a validated researcher-made list of interview questions for the thirteen (13) student-participants who had taken the course HIST100 (Readings in Philippine History) from their previous semester. Thematic analysis was employed by the researcher towards its findings that revealed the cognitive-historical features that influence students in learning Philippine History are professors' proficiency, credibility of online resources, presence of social media, lack of reliable resources, and the educational system. The study identified also that in evaluating the credibility and reliability of the historical information, the students have digital literacy skills in looking at the source of information, looking at the author's reputation and credibility, and cross referencing/fact-checking. Another generalization justified that faculty members who teach Philippine History provide credible and reliable historical evidence, correct false historical information, and are pedagogically competent in addressing the challenges of disinformation. Furthermore, the researcher recommends that Higher Education Institutions (HEIs) should strengthen their partnerships with historical organizations to build academic linkages, history professors should consider authentic assessments and real-life teaching methods in teaching Philippine History, and HEIs should be actively engaged in conferences that may allow both their professors and students to meet experts in the field of history, and to hear about latest researches and trends.

Behind the Beat: Unveiling PASUC Competition Challenges for Coaches

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Abstract:

This qualitative research investigated the challenges faced by dance coaches participating in PASUC (Philippine Association of State Universities and Colleges) competitions. The study aimed to comprehensively understand the factors influencing coaches' experiences before, during, and after the competition. The central question revolved around identifying challenges and providing insights to enhance support systems for coaches within the PASUC framework. Utilizing phenomenological methodology, the research employed hermeneutic phenomenology to delve into coaches' lived experiences through in-depth interviews. The data was analyzed thematically using MAXQDA Software, categorizing challenges before, during, and after competitions. Collegiate dance competitions faced challenges in pre-competition preparation, internal performer issues, external competition dynamics, and post-event concerns like accidents and judging dynamics. Recommendations highlighted the need for robust administrative support and strategic planning within the PASUC framework to improve coaching experiences.

Index Terms:

Dance Coaches, Competitions, Pedagogy, Qualitative

Performance Assessment of A Recirculating Floating-Raft Aquaponics System For Sustainable Peri-Urban Food Production

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Abstract:

This study evaluated the performance of a recirculating floating raft aquaponics system, focusing on system design, hydraulic behavior, water quality dynamics, and crop productivity. Two experimental aquaponics setups were assessed to determine the functional efficiency of key system components, including the fish tank, settling basin, biofilter, floating raft unit, and sump tank. Initial system diagnostics revealed structural leakage in the concrete raft structure, unstable hydraulic conveyance between the fish and settling tanks, and reduced biofiltration efficiency caused by hydraulic short-circuiting, leading to elevated ammonia and nitrite concentrations and sub-optimal light intensity ($46 \mu\text{mol m}^{-2} \text{s}^{-1}$). Following system modifications, including lighting placement and biofilter elevation, hydraulic stability and treatment performance significantly improved. Final operating flow rates were 2.57 L min^{-1} (fish tank), 2.68 L min^{-1} (settling tank), 2.70 L min^{-1} (sump tank), and 2.14 L min^{-1} (concrete or floating raft unit). Water quality parameters were maintained within optimal ranges ($25\text{--}29 \text{ }^\circ\text{C}$, pH $6.5\text{--}7.1$, dissolved oxygen $10\text{--}12 \text{ mg L}^{-1}$). The system produced lettuce with a mean fresh mass of 43.82 grams. Results demonstrate that properly optimized floating raft aquaponics systems can achieve stable hydraulic performance and favorable water quality, offering practical design guidelines for efficient, low-maintenance applications in sustainable urban and peri-urban food production.

Index Terms:

Aquaponics, Filtration, Hydraulic Behavior, Peri-Urban, Water Quality

Residents' Insights on the Integration of Artificial Intelligence in Marinduque Island's Sustainability: Basis for Policy and Action Plan

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Abstract:

The study examined the residents' insights on the integration of artificial intelligence to island sustainability and the challenges faced by Marinduque island communities. It highlighted the impacts of climate change, biodiversity loss, and unsustainable resource use. The study's findings revealed the urgency for rehabilitation and conservation of Marinduque Island to address resource depletion and declining agricultural productivity. Artificial intelligence (AI), along with digital technologies, emerged as promising tools for enhancing the island's sustainability. Furthermore, the respondents also recognized the potential of AI in supporting biodiversity conservation, predicting environmental risks, and fostering sustainable livelihoods through improved education, innovation, and job creation. The participants also mentioned the critical barriers that impede the integration of AI in the island, which include poor internet connectivity, low digital literacy, frequent brownouts, limited government support, and weak infrastructure. Ethical issues on data bias, digital inequalities, and privacy concerns were also noted, emphasizing the need for transparency and inclusivity in the AI implementation. The study concluded that while AI can accelerate sustainable island development, its success depends on bridging digital divides, strong governance, and culturally sensitive AI integration, which are aligned with local values and traditions. Furthermore, the study also recommended investing in digital infrastructure, promoting capacity-building programs, supporting community engagement, and establishing ethical frameworks to guide the use of AI. Likewise, collaborative partnerships among governments, academic institutions, and local stakeholders must be established to ensure that AI-driven sustainability initiatives are equitable, transparent, and community-centered. In a nutshell, the study found that achieving island sustainability requires balancing technological innovation with environmental stewardship, social inclusivity, and cultural integrity to ensure that progress benefits the people and the planet as a whole.

Index Terms:

Marinduque Island, Sustainability Challenges, Artificial Intelligence, Climate Change, Biodiversity Loss, Digital Technologies, Ethical AI, Community Engagement, Island Development, Policy, And Action Plan.

SolarSort: An Arduino-Based Smart Waste Bin Powered by Solar Energy with Automated Sorting and Mobile Charging

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Abstract:

The rapid increase in waste generation continues to create environmental and community challenges, especially where proper segregation is not consistently practiced. In the Philippines, this problem contributes to pollution, inefficient recycling, and faster landfill use. To help address this at the community level, this study developed SolarSort, an Arduino-based smart waste bin that uses solar power and sensing technologies to assist in sorting common waste types. The system uses color, inductive, and infrared sensors to identify paper, plastic, and metal, which are directed to separate compartments through a servo mechanism. A 40W solar panel and a 12V battery power the unit, and USB ports allow users to charge mobile devices as a simple incentive for using the bin. The system was tested in selected barangays through surveys, observations, and short interviews with residents and barangay officials. Results showed that the prototype was usable, worked reliably for basic sorting, and received positive feedback for its convenience and potential to support improved waste practices. Overall, SolarSort shows how simple automation and renewable energy can contribute to better segregation in community settings, with potential for further refinement and scaling in future versions within local areas and similar environments across various community contexts nationwide.

Harnessing Artificial Intelligence for Sustainable Island Living: An Analysis

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Abstract:

This study primarily aimed to determine the level of impact of artificial intelligence (AI) and the relationships between the demographic profile of the respondents and the five sustainability factors, namely environmental factors, socio-economic factors, technological infrastructure, institutional and policy context, and community participation and awareness. A descriptive correlational design was used to gather the quantitative data from three hundred fifty-five (355) respondents from the six (6) towns of the island. The findings of the study revealed that the demographic variables significantly influenced island sustainability factors, where age, sex, occupation, income, and access to technology emerged as consistent predictors. Likewise, age showed a negative correlation with environmental and technological factors, indicating a lower engagement among older residents on the island. On the other hand, occupation and income positively correlated with socio-economic status and community participation, suggesting that economic stability fosters involvement and awareness among community members. In addition, access to technology showed strong positive associations with technological infrastructure and institutional and policy contexts, affirming its role in connectivity and governance. Although the explanatory power of demographic factors ranged from 6% to 18%, the findings affirmed their measurable influence on sustainable behavior and participation among island residents.

Index Terms:

Artificial Intelligence, Sustainable Living, Demographic Factors, Mixed-Methods, Island Communities

Gender in the Economy: Department of Trade and Industry's Programs for Women Entrepreneurs

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Abstract:

This study assessed the implementation of Gender and Development (GAD) programs of Department of Trade and Industry (DTI) in Batangas, Philippines; uncovered the challenges and opportunities of these programs encountered by DTI and the women microentrepreneurs; and proposed strategies to improve for gender-responsive programs. Descriptive-qualitative method through one-on-one interviews and focused group discussion were used. The key informants of this study were the DTI implementers, and the women entrepreneurs. Findings showed that the flagship programs of DTI are the Kapatid Mentor Micro Enterprise (KMME) and One Town, One Product (OTOP) which resulted to increased in sales, improved quality, financial capability, and market visibility of the MSMEs. The uncovered challenges include program monitoring and time management, while devolution, digitalization, networking, and other relevant programs were found to be good opportunities. Finally, the proposed strategies highlighted the alignment of government programs, private-public sector partnerships, and financial aid restructuring.

Index Terms:

Entrepreneurship; Gender and Development; MSMEs; Women Entrepreneurs; Women Economic Empowerment

A Cost-Effective Smart-Controlled Robotic Hand for Unilateral Transradial Amputees

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Abstract:

Upper-limb amputees in low- and middle-income countries often lack access to functional prosthetic devices due to high costs, limited rehabilitation facilities, and the dominance of cosmetic low-cost options. This study presents the design and evaluation of a cost-effective, smart-controlled robotic hand for unilateral transradial amputees. The system employs an Arduino Nano-based controller, a flex-sensor glove worn on the intact hand, nRF24L01 wireless modules, and a 3D-printed PLA prosthetic hand that replicates basic gestures (open, close, grip) in real time. A Design and Development Research approach under Agile guided the iterative development of the glove, gesture mapping, wireless communication, and mechanical structure. Technical testing evaluated response time, accuracy, and link stability, while stakeholder surveys assessed functionality, usability, safety, maintainability, and portability. Results indicate reliable performance with ratings from “Agree” to “Strongly Agree,” particularly in maintainability and responsiveness. Feedback points to the need for improved socket fit and expanded grip options, confirming both feasibility and areas for refinement.

Promoting Accessible Growth-oriented Approaches for Learners with Manifestation) PAG-ALAM Project: Better to Best Journey

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Abstract:

This action research is termed PAG-ALAM which means (Promoting Accessible Growth-oriented Approaches for Learners with Manifestation) Project: Better to Best Journey investigates evidence-based techniques for improving the educational results of Special Needs Education (SNED) students and learners with manifestations at Molino Elementary School. The study sought to find effective interventions that promote the overall development of these students while addressing barriers in implementing inclusive practices.

Over a three-month period, the research used a mixed-methods strategy, collecting and analysing data using both quantitative and qualitative procedures. Pre and post-surveys using a Likert scale were used to obtain quantitative data from 150 participants, which included 56 SNED learners, 90 learners with symptoms, 4 SNED teachers, and 56 parents. Pre-intervention data showed that just 38% of participants thought the inclusion of teaching tactics was "effective." The post-intervention analysis revealed a significant improvement, with 85% of participants rating strategies as "highly effective." A paired t-test revealed a statistically significant increase in academic engagement, while qualitative data collected through focus group discussions and semistructured interviews were thematically analysed to capture nuanced insights into participants' experiences.

Key findings indicated the importance of intensive psychological training for teachers in managing classroom issues and creating a good learning environment. Differentiated life skills training and a thorough grasp of Individualized Education Plans (IEPs) have been identified as key components for meeting the requirements of diverse learners. Furthermore, the study emphasized the significance of parental involvement as a key stakeholder in promoting learners' success. The research also emphasized the use of assistive technologies and Universal Design for Learning (UDL) principles to improve accessibility and engagement.

Over a three-month period, the project implemented and modified treatments using baseline evaluations, classroom observations, and regular feedback sessions. Descriptive statistics were utilized to examine demographic characteristics and intervention effects, whilst theme analysis gave a thorough comprehension of qualitative answers. The findings revealed that teamwork among educators, parents, and administrators was critical to the program's long-term success.

This study makes policy and practice suggestions that promote systematic teacher training, resource allocation, and community partnerships. By proving the success of personalized, growth-oriented approaches, the study advances inclusive education and supports the Department of Education's aim of ensuring fair learning opportunities for all.

AarogyaPath: National Health Care Supply Chain Management

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Abstract:

AarogyaPath, a web-based solution for the healthcare supply chain that provides real-time availability of critical supplies launched.

- This public platform will help healthcare users like hospitals, pathology laboratories, research institutes, medical colleges and patients.
- This national healthcare supply chain portal will remove supply chain bottlenecks during the Covid-19 pandemic.
- The vision of this initiative is to set up an information management and forecasting database platform at national level. It will capture demand and supply scenarios for key healthcare needs items.
- This public platform can help customers in tackling a number of routinely experienced issues like dependence on limited suppliers, time-consuming processes to identify good quality products, limited access to suppliers etc.
- It also helps to reduce the Black Marketing of medical equipment & products, Unstandardized Medical product prices.
- It's the single platform of all medical suppliers & buyers for any announcement/feedback etc.
- It will also help the manufacturers and suppliers to reach customers efficiently like nearby pathological laboratories, medical stores, hospitals, etc.
- It will also create opportunities for business expansion due to an expanded slate of buyers and visibility of new requirements for products.
- It also helps to fill a critical gap in last-mile delivery of patient care within India through improved availability and affordability of healthcare supplies.

Index Terms:

Healthcare, Online Supply Chain System, Health Products, Health Innovation

Mangrove Ecosystems of Sta. Cruz Marinduque, Philippines as Habitat for the Snapping Shrimp *Alpheus euphrosyne* de Man 1897

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Abstract:

The study identifies the habitat preference of *A. euphrosyne* (manakla) which has a market value for the residents of Marinduque. Field surveys were conducted in Alobo and in Biga, Sta. Cruz. Transects that ran from shore with mangroves up to sea were divided into zones according to dominant mangrove stands. In each of the zones, plots were established to assess mangrove composition, map the occurrence of *Alpheus* burrows, and obtain sediment samples for granulometric and organic matter analyses. Results shows that Rhizophoraceae specifically *Rhizophora apiculata* was the most abundant mangrove within the study site serving significant roles as habitat and nursery ground for *manakla*. Stability of the environment is established with the diversity index of 1.86. The collected *manakla* have a length of 8–12 mm long often living in a shallow mudflat or sandflat areas near *Rhizophora* species and *Xylocarpus granatum*. Significant positive correlations ($p < 0.05$) between regenerating mangroves, sediment type and *manakla* population have been observed. This correlation emphasizes that sandy/clay loam type of sediment exhibits 30% higher organic matter predicting nutrient-rich soils enabling the growth of mangroves, thereby providing more habitats for *manakla*. Future studies could explore *manakla*'s feeding mechanisms and role of mangrove regenerants in *manakla* development and reproduction.

Index Terms:

Mangroves, Snapping Shrimp, Habitat Occurrences, Organic Matter, Regenerant

Integrating Disaster Risk Reduction Management in Higher Education: A Multi-Stakeholder Case Study of Marinduque State College

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Abstract:

Republic Act 10121 mandates the integration of Disaster Risk Reduction and Management (DRRM) into school curricula nationwide to enhance preparedness and resilience. In 2019, Marinduque State College (MSC) implemented a DRRM curriculum in compliance with this mandate. However, since its incorporation, there has been no comprehensive study conducted to evaluate the effectiveness of this curriculum in fostering practical DRRM response and preparedness among students.

This mixed methods convergent case study assessed the knowledge, attitude, and practices of students enrolled in Marinduque State College (MSC) during the 2023–2024 academic year regarding the Disaster Risk Reduction and Management (DRRM) course. Survey was administered towards 85 students who completed the GE 1103 - Disaster Preparedness Course at MSC, and 95 faculty and administrative staff. Key Informant Interviews (KII) with faculty and administration was conducted to triangulate the quantitative data results.

MSC implementation of the DRRM mandate can be identified as either a) in-campus community implementation, and b) as an educational program for the students. DRRM program, as a mandate, shall develop a universal learning material in teaching the DRRM course, it shall also create an office for the dedicated DRRM Officer and a promotion of external partnerships. The DRRM program, as an educational program, showed moderate knowledge among students. While DRRM knowledge is moderate, attitude and practice are high. Results also showed that while practice aptitude increases, the knowledge aptitude also increases.

This study's findings underscore the importance of integrating the DRRM program into the Marinduque State College (MSC) curriculum, aligning with national disaster response policies, and recognizing Higher Education Institutions as key stakeholders in risk reduction and community resilience. The institutionalization of the DRRM program is expected to enhance faculty professional development and student competence while directly impacting the quality of life in served communities. Recommendations for implementation include establishing a simulation center, emphasizing hydro- meteorological hazards and contingency planning, incorporating gamification in disaster response learning, and allocating budget through national policy. These initiatives aim to create a comprehensive, practical DRRM program that bridges academic knowledge and real-world application, positioning MSC as a leader in disaster preparedness education and community resilience building.

Development and Acceptability of Vacuum Fried Native Pork Legs and Ribs

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Abstract:

The establishment of the Vacuum Fried Native Pig Facility aimed to support the Markaduke Native Pig-based project located in MSC, Torrijos Campus. It further aimed to develop vacuum-fried native pork meat (legs and ribs) with a standard production protocol by adopting the DOST-ITDI technology on vacuum frying. Additionally, it sought to determine the acceptability of vacuum-fried native pork meat using a sensory evaluation test among 35 panelists composed of food technology students and faculty from both Torrijos and Boac Campuses. Lastly, it aimed to register the processing standard protocol of the developed products (vacuum-fried native pork ribs and legs) with the IPOPHIL.

Results showed that the optimum standard processing procedure for an acceptable product is 120°C temperature with 68 kPa pressure for 30 minutes. Acceptability tests revealed that for color, taste, and general acceptability, the vacuum-fried rib obtained a mean score ranging from 4.7 to 4.8, verbally described as “like extremely.” Meanwhile, the sensory evaluation test for the vacuum-fried leg also indicated a very acceptable product across nearly all sensory attributes—color, texture, aroma, taste, and general acceptability—with mean scores between 4.5 and 4.7, also described as “like extremely.”

However, the sensory mean scores of both products (legs and ribs) when reheated in an oven after being stored in the freezer showed lower acceptability, with scores ranging from 4.1 to 4.4 in taste, texture, and aroma, described as “like moderately.” The only sensory attributes that remained rated as “like extremely” for both products were color and general acceptability.

Recommendations to further improve the acceptability of vacuum-fried pork meat include using a higher temperature when reheating the products to achieve a crispy texture within 25–30 minutes. Additionally, improvement of packaging materials is suggested, as well as conducting shelf-life testing, nutritional composition analysis, and microbial testing.

Growth Performance of Tilapia (*Oreochromis niloticus*) in Fiberglass Tank-Based Recirculating Aquaculture System

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Abstract:

This pilot study evaluated the feasibility of household-scale tilapia (*Oreochromis niloticus*) production using 1 m³ fiberglass tanks integrated with a recirculating aquaculture system (RAS). The experiment was conducted over four months, with fish fed 2–3 times daily, and water quality parameters (temperature, dissolved oxygen, pH) maintained within optimal ranges. Stocking density was the experimental variable, with four treatments (50, 75, 100, 125 fish/m³), each replicated three times, to assess effects on growth performance and survival. Initial fish weight and length were 1.5 g and 5.52 cm, respectively.

Fish stocked at 50 fish/m³ achieved the highest final weight (32.62 g), length (11.31 cm), daily weight gain (0.71 g), and specific growth rate (3.73%), with 88% survival. Higher densities exhibited reduced growth, though survival remained above 86%. Water quality remained stable across treatments, indicating that growth differences were driven primarily by biological and behavioral factors.

The study demonstrates that a 1 m³ fiberglass-based RAS can support small-scale tilapia production, providing baseline data for optimizing sustainable household aquaculture. Integration of this technology into community extension programs may enhance local food security, promote income generation, and contribute to achieving SDGs (2–Zero Hunger; 12 – Responsible Consumption and Production & 14 – Life Below Water).

Index Terms:

Tilapia Culture; Recirculating Aquaculture System; Small-Scale Aquaculture; Sustainable Aquaculture; Fiberglass Tanks

Productivity Performance of Tomato (*Solanum lycopersicum*) Plant Induced with Supplemental Doses of NPK Microbial Biofertilizer

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Abstract:

This study evaluated the growth, phenological development, and economic viability of two tomato varieties (V1 and V2) under varying fertilizer regimes, contributing to the framework of Sustainable Development Goal (SDG) 2 (Zero Hunger) by enhancing crop productivity and SDG 12 (Responsible Consumption and Production) through the reduction of chemical inputs. Treatments included a Control (T1), 100% Recommended Inorganic Fertilizer (T2), 100% Microbial Fertilizer (T3), and an integrated approach of 50% RIF + 50% Microbial Fertilizer (T4). Results indicated that nutrient management significantly influenced vegetative vigor, with T4 achieving the highest mean plant height (91.31cm) and the earliest reproductive onset, reaching flowering in just 29 days and first harvest in 65 days. Yield analysis revealed distinct variety-specific responses: Variety 1 maximized productivity under 100% inorganic fertilization (T2), producing a high volume of smaller fruits, whereas Variety 2 excelled under the integrated regime (T4), achieving superior individual fruit mass (46.95 g) and enhanced nutrient utilization efficiency. While the 100% RIF treatment (T2) yielded the highest financial Return on Investment (ROI) at 276.34%, the integrated approach (T4) demonstrated comparable biological performance and superior fruit quality for specific genotypes. These findings suggest that a 50/50 integration of inorganic and microbial fertilizers offers a sustainable and effective strategy for optimizing tomato production without compromising early market entry or fruit quality.

Index Terms:

Solanum lycopersicum, Microbial Fertilizer, Integrated Nutrient Management, ROI, Phenology, Sustainable Agriculture

Exploring The Influence of Health Consciousness and Health Literacy on the Professional Performance of Faculty and Staff

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Abstract:

This study examined the health consciousness, health literacy, and job performance of faculty and staff in Bulacan Agricultural State College. Specifically, it assessed health consciousness in terms of self-awareness, personal responsibility, and health motivation; evaluated health literacy based on access to information, understanding of information, communication and social support, and health self-management; and analyzed how demographic factors relate to health consciousness, health literacy, and job performance. Furthermore, it investigated the relationships among health consciousness, health literacy, and job performance, and explored faculty and staff perceptions regarding the importance of health-related competencies. A total of 203 respondents participated in the study. Descriptive statistics revealed that faculty and staff possessed moderately high literacy ($M=3.27$) and moderate health consciousness ($M= 2.78$), while job performance ratings were high ($M=3.71$). Correlation analysis indicated a significantly strong positive relationship between health literacy and health consciousness, but no significant relationship between either variable and job performance. T-tests and ANOVA revealed that demographic factors, such as education and years of service, had a significant influence on health consciousness, while health insurance coverage significantly impacted health literacy. Regression analysis revealed that health literacy and health consciousness did not significantly predict job performance. The findings underscore the need for targeted wellness initiatives and structured health education programs to strengthen employees' health practices. While health literacy and consciousness do not directly influence job performance, enhancing these competencies remains vital in fostering a healthy and proactive workforce. Recommendations include implementing institutional wellness programs, conducting routine health literacy workshops, and establishing policies that promote accessible healthcare services for all employees.

Index Terms:

Health Consciousness, Health Literacy, Job Performance

