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"Pioneering Innovation, Shaping the Future"

Proceedings of the

International Conference on Sustainability, Innovation and Future Technologies

Join us to shape a greener future. Explore sustainable technologies and future-focused research at our conference, connecting academics, professionals, and innovators.

21st - 23rd March, 2025

Manila, Philippines



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ICSIFT – 25

International Conference on Sustainability, Innovation and Future Technologies

Philippine Christian University, Philippines

21st - 23rd March, 2025

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Acknowledgement

ZEP Research is hosting the ICSIFT-25 International Conference on Sustainability, Innovation and Future Technologies at Philippine Christian University, Philippines on March 21st - 23rd, 2025. The main objective is to grant the amazing opportunity to learn about groundbreaking developments of this era, 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 scope 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 painstaking effort to travel such a long distance to attain this conference.

Priyanka Sahu

Mrs. Priyanka Sahu
Founder
ZEP Research

Editorial

Dear Readers,

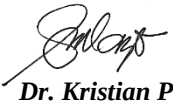
In an era defined by rapid technological advancements and pressing sustainability challenges, the **International Conference on Sustainability, Innovation, and Future Technologies (ICSIFT): Shaping Tomorrow's Sustainable Landscape** serves as a vital platform for intellectual exchange and collaborative discourse. This gathering of esteemed scholars, researchers, industry leaders, and policymakers underscores the collective commitment to fostering sustainable solutions through innovation and forward-thinking strategies.

As the world grapples with environmental degradation, resource scarcity, and the complexities of digital transformation, this conference aims to explore cutting-edge research, emerging technologies, and sustainable practices that can drive positive change. It provides an opportunity to discuss actionable strategies that balance economic growth with environmental stewardship, ensuring a future that is both technologically advanced and ecologically responsible.

Through insightful keynote addresses, rigorous academic presentations, and dynamic panel discussions, this event aspires to generate meaningful conversations that bridge disciplines and sectors. The knowledge and innovations shared here will undoubtedly contribute to shaping policies, guiding industries, and inspiring communities toward a more sustainable and resilient future.

We welcome all participants to engage in this vital dialogue, collaborate on transformative ideas, and take an active role in shaping the future of sustainability and technology. Let us work together to build a world where innovation not only drives progress but also safeguards the well-being of future generations.

Warm Regards,



Dr. Kristian Paul M. Lazo
Session Chair, ICSIFT, 2025

Preface

ZEP Research is hosting the ICSIFT Conference at Philippine Christian University, Philippines on 21st -23rd March, 2025. This edition of conference is called in Philippines. Hosted onsite and online mode for the convenience of our attendees.

It is our pleasure to have Dr. Kristian Paul M. Lazo, Dr. Mario P. Tamana, Dr. Joseph Berlin P. Juanzon, Dr. Sipnarong Kanchanawongpaisan, Dr. Aris Ignacio, Grace S. Ibañez, Patricia D. Tumamao and Dr. Armi Grace B. Desingaño as our Session Chair and the Keynote Speakers- Dr. Elenita M.Tiamzon, Prof. Dr. Alexander Bull, Dr. Junifen F Gauuan, Dr. Margie DG. Dela Cruz, Dr. Nitu Bhatnagar, Prof. Sixto N.Ras Jr., Dr. Jenny Beb Espineli, Dr. Ferdinand Bulusan Phd. EdD and the Guest of Honor- Desiderio R. Apag III, The ICSIFT Conferences aim to promote interdisciplinary collaboration and the advancement of sustainability and innovation across various fields. The conference serves as a platform for discussing the challenges and solutions related to the practical implementation of cutting-edge research in Sustainability, Environmental Science, Renewable Energy, Innovation, and Technology. Bringing together experts from diverse sectors, ICSIFT seeks to address global challenges through innovative solutions and the sharing of knowledge that can shape a sustainable future.

This conference serves as a crucial platform for researchers, practitioners, and industry leaders to exchange ideas, share insights, and forge collaborations. Through keynote presentations, technical sessions, and interactive workshops, we aim to explore the latest developments, thoughts, and ethical considerations in this rapidly evolving field.

We are honoured to host distinguished experts and enthusiasts from around the globe, each contributing unique perspectives and expertise.

We extend our heartfelt gratitude to all participants, sponsors, and organizers whose dedication has made this event possible. Let us embark on this journey of discovery, innovation, and collaboration.

Welcome to the International Conference on Sustainability, Innovation and Future Technologies

International Conference on Sustainability, Innovation and Future Technologies

Philippine Christian University, Philippines
21st -23rd March, 2025

Organizer's Message



Mrs. Priyanka Sahu
Founder
ZEP Research, India

Dear All,

It is with great pleasure that we present the proceedings of the International Conference on Sustainability, Innovation and Future Technologies (ICSIFT-2025). This compilation of scholarly contributions represents the collective efforts of researchers, academicians, industry experts, and practitioners who are dedicated to advancing knowledge and fostering innovation in their respective fields.

The ICSIFT-2025 serves as a platform for intellectual exchange, interdisciplinary discussions, and the dissemination of pioneering research that bridges the domains of Sustainability, Innovation and Technologies. The papers included in this volume reflect a broad spectrum of cutting-edge studies, innovative methodologies, and practical applications aimed at addressing contemporary global challenges.

We extend our sincere gratitude to all the authors, reviewers, keynote speakers, and participants for their invaluable contributions. Special appreciation is due to Philippine Christian University, Philippines and the organizing committee, technical team, and advisory board for their unwavering dedication in making this conference a success. As we move forward, we hope that the insights and discoveries shared in this proceedings book will inspire further research, collaborations, and meaningful advancements across disciplines. We look forward to continuing this journey of academic excellence and innovation in future editions of ICSIFT-2025.

Priyanka Sahu

Mrs. Priyanka Sahu
Founder,
ZEP Research, India

Keynote Speakers



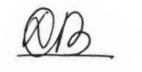
Dr. Nitu Bhatnagar
Provost and Professor,
Department of Chemistry Manipal University Jaipur, India

Dear All,

I would like to express my special thanks to the organizing committee of "International Conference on Sustainability, Innovation and Future Technologies (ICSIFT)" which will be held on 21st – 23rd March, 2025 at Manila, Philippines.

In order to solve some of the most pressing challenges of our time, synergy between sustainability, innovation, and future technologies is extremely important. I understand that ICSIFT -25 will provide a platform to all the participants in discuss and embrace the possibilities that lie ahead and work together to build a future that's not only innovative and advanced but also sustainable and inclusive. I am particularly happy to be part of this conference representing my point of view relating to the conference goal on "**Circular economy of Electric Vehicle Battery for Sustainable Future"** with members of the conference. On behalf of Conference chair, I would like to welcome you all to this conference and look forward to seeing your excellent participation in ICSIFT-25.

Best Wishes,



Dr. Nitu Bhatnagar
Keynote Speaker,
ICSIFT-2025



Dr. Elenita M.Tiamzon
Vice President
Learning Leaders of the Philippines Inc. Philippines

I would like to express my special thanks to the organizing committee of "International Conference on Sustainability Innovation and Future Technologies (ICSIFT)" which will be held on 21st – 23rd March, 2025 in the Philippines at the Philippine Christian University organized by ZEP Research Foundation (ZRF), India in collaboration with ADGLE -Philippines, Learning Leaders of Association of the Philippines Inc., Cavite State University- IMUS Campus, Philippines, Sulu State University – Philippines, Philippine Christian University, and Satna, MP, India. In order to explore and navigate the future by sustaining technologies and practices, innovating for a sustainable future and smart and future technologies, I believe that ICSIFT-25 will provide a platform of excellent international conference and give a lot of benefit to the participants in discussing on latest finding in Sustainability, Innovation and Future Technologies. I am particularly happy to be part of this conference representing my point of view relating to the conference goal on sustainability, innovation and future technologies with members of relevant international participants. On behalf of Conference chair, I would like to welcome you all to this conference and look forward to seeing your excellent participation in ICSIFT-25.

Warm Regards,

Dr. Elenita M. Tiamzon
Keynote Speaker,
ICSIFT-2025



Prof. Sixto N.Ras Jr.
Assistant Professor IV,
Cavite State University - Imus Campus, Philippines

Message

It is my great privilege and honor to be invited by ZEP Research Organization as one of their distinguished speakers for the 2025 International Conference on Sustainability, Innovation, and Future Technologies (ICSIFT) that will take place from March 21st to March 23rd, 2025, at Philippine Christian University-Manila, Philippines.

As a speaker at this outstanding event, I would like to offer my respect to my fellow researchers who are actual innovators and game-changers of our era. Our collective interest in innovation, sustainability, and future technologies is fueling change, reshaping our world, and representing the mindset and values that make these innovations possible.

Congratulations and Kudos to ZEP Research for assembling us from various sectors!

Prof. Sixto N. Ras Jr.
Keynote Speaker,
ICSIFT-2025



Prof. Dr. Alexander Bull
International University of Applied Sciences, Germany

Message

I'd like to express my heartfelt gratitude to the organizing committee of the "International Conference on Sustainability, Innovation, and Future Technologies (ICSIFT)," which will be held from March 21st to 23rd, 2025, in Manila, Philippines. The connection between sustainability, innovation, and emerging technologies is key to tackling today's critical challenges. I'm confident that ICSIFT-25 will create a space for sharing ideas and exploring opportunities to shape a future that is both forward-thinking and sustainable. Welcome everyone and looking forward to your valuable contributions.

Prof. Dr. Alexander Bull
Keynote Speaker,
ICSIFT-2025



Dr. Ferdinand Bulusan Phd. EdD

Associate Professor V/ Director of KTM, Isabela State University, Philippines

Message

I am deeply honored to be a keynote speaker at the **International Conference on Sustainability, Innovation, and Future Technologies 2025**. This event is not just a meeting of scholars but a convergence of ideas, where diverse perspectives come together to shape the future of research, education, and technology. In this academic gathering, the seeds of collaboration are sown, where insights are shared, refined, and transformed into meaningful contributions to society.

The challenges of our time require not just individual brilliance but collective wisdom. As academicians, we do not work in isolation; we build upon each other's work, question assumptions, and expand the boundaries of what is possible. This conference is a great avenue to **cross-pollinate** ideas, best practices, and experiences, thereby allowing us to explore new solutions and rethink established paradigms.

I extend my gratitude to the organizers for bringing together such a distinguished assembly of scholars and professionals. I look forward to the conversations, the debates, and the shared commitment to innovation that will emerge from this gathering. May this conference deepen our understanding of sustainability and future technologies and forge new partnerships that will continue long after the final session concludes.

I look forward to seeing you all in Manila, where new ideas will take root and collaborations will flourish.

Mabuhay!

Dr. Ferdinand Bulusan Phd. EdD
Keynote Speaker,
ICSIFT-2025



Dr. Jenny Beb Espineli
Campus Administrator,
Cavite State University - Carmona Campus, Philippines

Message

I would like to express my deepest appreciation to all the esteemed speakers, researchers, and participants of the International Conference on Sustainability, Innovation, and Future Technologies (ICSIFT 2025), taking place from March 21st to 23rd in Manila, Philippines. Your valuable insights, groundbreaking ideas, and engaging discussions have been instrumental in making this event a remarkable success.

A heartfelt thank you to the organizing committee, sponsors, and partners for their unwavering dedication in establishing ICSIFT 2025 as a platform for meaningful collaboration and knowledge exchange. I am truly honored to be part of this conference and to contribute my perspective on "Sustainability, Innovation, and the Future of Technologies – The Philippine Perspective" alongside distinguished colleagues.

Together, we are driving progress toward a more sustainable and technologically advanced future.

Thank you, and we look forward to welcoming you to ICSIFT!

Dr. Jenny Beb Espineli
Keynote Speaker,
ICSIFT-2025

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Index

Sl No	Title	Author Name	Page
1.	The Myths and Oral Traditions of the Tagakaolo Tribe Towards Environmental Protection and Preservation in Malungon, Sarangani Province	• Dr. Sheruel G. Matalandanga • Dr. Zandro P. Ibañez	1
2.	Sinapanan: "A new Feature for Food Tourism"	• Decy Derecho-Sienda	2
3.	Availability and Management of Rice Straw of Select Rice Farmers in Isabela, Philippines	• Jeffrey C. Ginez • Marcelino U. Siladan	3
4.	Enhancement of Collaborative Filtering Algorithm with the use of Energy-Based approach in Dating Applications	• Sean Timothy Archer M.Dyogi • Frenzo Archiel Dacoco	4
5.	An Enhancement of the Jaro-Winkler Fuzzy Searching Algorithm Applied in Library Search Engine	• MALAGA (Karl Benedict) • VERDILLO (Korinne)	5
6.	Sustainable Development Through Click Green Projects: Commissioning Education for A Greater Cause	• Helmer B. Montejo	6
7.	Influence of Electronic Service Quality of Biometric Authentication Technology on User Satisfaction in Electronic Banking: An Integrated Model of TAM and E-S-Qual	• Linh Hoang Vu • Duc Quyen Nguyen • Vu Hanh Ngan Nguyen • Van Giang Tieu • Khanh Chi	7
8.	Online Food Delivery Services During and After COVID–19 Epidemic with A Bibliometric Analysis	• Rahmanwali Sahar	8
9.	Creating Carbon Credits: Unveiling the Dynamics of The Asean and East Asian Market	• Suseno Hendratmoko	9
10.	Analysis of Green Viability Assessment System in Philippine Government Hospitals Towards Climate-Resilient Health Facilities	• Engr. June Philip Ruiz, MME • Mr. Glenn Cruz • Ms. Georgina Mae Zulueta • Ms. Joana Joy Lico-Almiral,MBA • Dr. Ma. Bituin Reyes, MBA	10
11.	Investigating the Effects of Solanum nigrum Linn. Against Spodoptera frugiperda found in Nicotiana tabacum	• Jessica C. Ginez-Gilo • Jeffrey C. Ginez	11
12.	Intensive Teacher Training and its Impact in	• Veridiano, Grace B.	12

	the Quality of Teaching and Learning Activities at Deped Camarines Sur		
13.	Assessment of Barriers to the Adoption of Sustainable Practices: A Mixed-Method Study in Vietnam's Construction Industry	• Nguyen Khanh An • Nguyen Phan Duc Anh	13
14.	Detection Tomato using Vgg19 and Explainability XAI	• Laatiri Youssef	14
15.	Mapping the Geographical Distribution of Anabo *(Abroma augusta Linn)* Species in Apayao	• Hannie T. Martin • Maria Christina Z. Manicad David A. Rodolfo • Ryan W. Gabit • Olivia C. Tomas	15
16.	Potential of Enhanced Probiotic (Provet) as Dietary Supplement for Growing-Finishing Pigs	• Menardo D. Villanueva, Ph.D.	16
17.	Cytotoxicity of Native Fruit Trees and Ethnomedicinal Tress	• Hannie T. Martin • Olivia C. Tomas • Ryan W. Gabit • Maria Christina Z. Manicad David A. Rodolfo	17
18.	Experiences on the Use of Generative Artificial Intelligence (AI) Tools for Research Writing Among Graduate School Students of ASC Conner Campus	• Agustina G. Pattung • Mc Ornoc Lamao	18
19.	Purchase Behavior of Restaurant Operators Towards Seafood Products in Lianga Bay, Surigao Del Sur	• July Hera G. Salomon • Harvey Kier O. Ranara	19
20.	Curriculum (Mis) Alignment: A Qualitative Study Of the Industrial Arts Work Immersion Students' Competency	• Paulino, Enrik Kristoffer L.	20
21.	SWOT Analysis on Covid 19 Pandemic Towards Business Retailers	• Dr. Rovilyn Katalbas	21
22.	Perception of Students on Individual and Collaborative Approaches in the Study of Trigonometry	• Atibagos, Nicole Anne V. • Branzuela, Fauline Joy M. • Dahipon, Ysabelle Alyssa B. • Garcia, Angielo Aies R. • Malonzo, Mariel D.C. • Nonato, Daniel Arvyn P. • Sariola Andrea	22

23.	Community Needs Assessment among Residents of Barangay Palico II in Imus City, Cavite:Basis for Community-Based Extension and Development Program	• Cromwell R. Cabalu • Dr. Liane Vina G. Ocampo • Dr. Alfe M. Solina • Bernardo C. Pangilinan	23
24.	Field Performance of Large Fishtail Palm *(Caryota rumphiana Mart. var. philippinensis Becc.)* Intercropped with White Lauan (Shorea contorta)	• David A. Rodolfo • Olivia C. Tomas	24
25.	A Cross-Platform Blood Donation System with Data Analytics	• Grace S. Ibañez	25
26.	A Mobile- based Application for E-Learning Disaster Preparedness with Game Simulation	• Rosalina D. Lacuesta	27
27.	Community Needs Assessment in Tandag City	• Jennilyn C. Doloriel • Dr. Rovilyn K. Dagondon	28
28.	Green Reverse Logistics in Sri Lankan Apparel and Textile Industry: A Path Towards Sustainable Manufacturing	• Tharani Dakshina Sooriyaarachchi	29
29.	Optimization of Biomass-Fired Drying Systems for Sustainable Food Preservation in Sri Lanka	• Nithianantham Arunprakash Pathiraja Mudiyanselage Maleesha • Prabodini Thennakoon Rajadurai Gajalaksan	30
30.	Assessment of Jicama *(Pachyrhizus erosus)* Processed Products: Basis For Consumer Acceptability	• Alexander N. Morados	31
31.	Enhancing Conductive Polymer Nanocomposites with Nanomaterials for Superior Properties and Versatile Applications: A Review	• Megha Goyal • Nitu Bhatnagara	32
32.	Library Management System with Integration of Barcode Technology for Cavite State University – Imus Campus Library	• Jose Lerio Batula • Luningning Valdez	33
33.	A Mobile- based Application for E-Learning Disaster Preparedness with Game Simulation	• Rosalina D. Lacuesta	34
34.	Academic Performance and Program Perceptions: Analyzing Differences in Factors Affecting First-Year Students' Choice to Pursue A Bachelor of Science in Office Administration at Cavite State University Imus Campus	• Mark Raffy Bacay • Lexver. G. Ocampo • Ronalyn Garcia • Dr. Liane Vina G. Ocampo	35
35.	Exploring Emotional Labor Strategies: Experiences of Faculty Members From	• Luningning A. Valdez • Ruby-Lyn T. De Grano	36

	Selected Universities in Cavite	• Margarette B. Soberano • John Joseph G. Albuera • Laisel G. Angeles • Veronica Faye S. Fullo	
36.	Low-cost Portable Molecular Diagnostic Platform for Rapid Detection of Select Poultry Pathogens (LMDP) in Bicol, CALABARZON, and MIMAROPA Regions of the Philippines	• Ma. Cynthia Rundina-Dela Cruz • Yves Roy M. Tibayan • Gerry A. Camer • Rhonnie D. Domingo • Dennis V. Umali	38
37.	Solar-Powered Seed Sowing Machine	• Surasani Akhila • Dr. G. N. Swamy • Sudabattula Sahithi • Shaik Faheem • Jogi Rajesh	39
38.	Pancreatic Cancer Detectionusing Deep Learning	• Surasani Akhila • Dr. G. N. Swamy • Sudabattula Sahithi • Shaik Faheem • Jogi Rajesh	40
39.	Synergistic Effect of Bacillus spp. and Aspergillus spp. as Biofertilizers Spray on Nutrient Uptake and Growth Enhancement in Lettuce (Lactuca sativa) and Radish (Raphanus sativus)	• Idroos F. S • Jayathilake K.M.P.I. • Manage P.M	41
40.	Development of an Industrial Motor Controls Trainer	• Franklin A. Samonte	42
41.	Development of Secure Health Management System Utilizing Blockchain Technology for Encrypted Patient Data Transmission	• Mrs. A Nithya • Yakhsha Rattha P • Salomi Oli Arasi C	43
42.	Preparedness and Awareness of Students in Emergement Incidents at Plmar: Basis for A Proposed Terminate Incident Plan	• Romero, Ervin Jade C. • Afante, Mark B. • Baraga, Jomely T. • Celeridad, Aaron Paul T. • Dela Cruz, Arvee E. • Dizu, Lovely V. • Omaging, Crestian A. • Pedro, Vincent E. • Villafania, Allen Godwin Luis D.	44
43.	Application of Simple Nutrient Plus Vermitea on High-Value Crops for NFT Hydroponics System under Controlled	• Marion B. Caraui • Franklin A. Samonte • Mark Joseph Reyes	45

	Climatic Condition		
44.	Exploring Efficient Cemetery Management: Practices, Challenges, and Innovations at new Bilibid Prison Cemetery as a Basis for Improved Operational Effectiveness and Sustainable Development	• Mark Raffy Bacay • Lexver. G. Ocampo • Ronalyn Garcia • Dr. Liane Vina G. Ocampo	46
45.	Job Challenges and Level of Adjustment in the Curiculum of Drafting Technology in the Advent of Curriculum Migration	• Marty B. Barasolia • Mildred F. Accad	47
46.	Nematicidal Effect of Botanical Extracts of Moringa for the Management of Root-knot Nematode of Chilli	• S. Rajeshkanna • R.M.C.S. Ratnayake • G.Puvitha	48
47.	Sustainability Roadblocks: Effect of Implementation Challenges on the Adoption of Circular Management Practices in Selected Manufacturing Firms in the Philippines	• Maria Cristina L. Desepida	49
48.	Social Media as A Marketing Tool: Perceptions of Entrepreneurship Students in Cavite State University-Imus Campus	• Cristal, Baby Kharen A. • Villa, John Joseph P.	50
49.	Evaluation of Serianthes grandiflora Benth. as an Agroforestry Crop for Biodiversity Conservation on Hinatuan Island, Surigao, Philippines	• Marjohn V. Anislag	51
50.	The Role of Public Sector Innovations in the Competitiveness of Local Government: Evidence in the Province of Cavite, Philippines	• Marlon A. Mojica, PhD	52
51.	Dispositional Resilience, Cognitive Appraisal, and Academic Isolation of Adolescents During Online Classes Amidst Covid-19 Pandemic	• Armi Grace B. Desingaño	53
52.	Development of Big Books using the Mother Tongue-based Multilingual Education (MTB-MLE) on Climate Change and Disaster Response	• Analyn I. Diola, MSc • Philip G. Nonales, PhD • Christopher Espero, MAED	54
53.	A Fuzzy Logic-Based Decision Support System for Academic Program Selection in Higher Education: Development and Evaluation	• Edward Louie M. Marin • Ricardo A. Catanghal Jr • Mary Jezza Saballa-Marin	55
54.	Correlating Job Satisfaction and Faculty Depth Analysis of Factors-Attrition: An In Affecting Instructor Retention at Colegio de	• Turla Sherimae • Fandiñola Lorecel	56

	Manaoag-San Juan de Letran	• Gorospe Dhana Alaxa • Magno Hazel Ann • Sampaga Scarlet • Amansec • Carol, Kristine G. De Vera, DBA	
55.	Indigenous Fruits as Natural Dyeing Agent	• Jenalyn C. Andres • Rosalinda B. Velasco	57
56.	Free Irrigation Service Act: The Case of Communal Irrigation System (CISs) Irrigators's Association (IAs) in the Province of Tarlac	• Bumagat, Jhamil Kharl L.	58
57.	Enhancing Practices for Operational Strategies of Laundry Shops: A Focus in Water and Energy Conservation	• Macabales Jolamae • Brumuela Samantha • Competente Tony Rose • Mendoza Joshua • Punay Jenny Rose • Sernadilla Mariel • Kristine G. De Vera, DBA	59
58.	Evaluation of Service Delivery of Drug Abuse Treatment & Rehabilitation Centers (DATRCS) in Region III	• Cheryl B. Sembrano, RN, MPA-HM	60
59.	The Philippine Army's Doctrine Manual Backlogs towards an Improved Doctrine Development System	• Dennis Martinez	61
60.	Enhancing Customer Satisfaction Through Advanced Mobile Banking: A Study in Tanza, General Trias and Trece Martires City, Cavite	• Jeanet E. Parreno	62
61.	Applying Systems Thinking to Chicken Production and Consumption: A Circular Economy Perspective from the Philippines	• Elijah Jeremiah C. Abad • Cedrick John V. Alejandrino • Ernie C. Avila • Van Olem E. Benitez • Rupert Jeremiah A. Bustamante IV • Emerson G. Cabudol • Qiarrah Syrah A. Chavez • Merryrose R. Palma • Kyle Russelle P. Paredes • Margaret R. Tadeja	63
62.	GUnify: A Comprehensive and Optimized Event Management Solution Utilizing the	• Ain Geuel E. Escober • Alma C. Fernandez	65

	Deflate Compression Algorithm	• Rosicar E. Escober • Demelyn Monzon	
63.	Blue Ocean Economy Strategy for Sustainable Development of Aurora	• Antonio D Bolivar III	66
64.	Analysis of Environmental Literacy and Sustainable Development Goals (SDGs) Competence Among Community Leaders: Bases for Technology-Assisted Module for Green Management Advocates	• Ju-Im T. Jimlan PhD, EdD, DM • Evan Anthony V. Arias EnP, DM	67

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ABSTRACTS

The Myths and Oral Traditions of the Tagakaolo Tribe towards Environmental Protection and Preservation in Malungon, Sarangani Province

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Abstract

In the distant hamlet of Barangay Panamin, Malungon, Sarangani Province, the Tagakaolo tribe has preserved a sacred bond with nature through myths and oral traditions passed down for generations. This study explores how these stories influence the tribe's environmental conservation practices, uncovering the intricate ties between their mythology and sustainable resource management.

Central to the Tagakaolo worldview are the myths of Lumabet and the ritualistic practices of Sayog and Tyananem, which serve as both spiritual guides and pragmatic tools for protecting sacred lands, water sources, and biodiversity. Utilizing a descriptive-qualitative case study approach, the research draws insights from Key Informant Interviews (KII), Focus Group Discussions (FGD), and participant observation with elders, leaders, and residents. The findings reveal a profound system of environmental governance rooted in reverence for nature, now challenged by modernization and external pressures.

Despite these challenges, this study highlights the relevance of indigenous knowledge in addressing contemporary environmental issues. The myths and rituals of the Tagakaolo not only preserve a way of life but also offer a potential blueprint for integrating indigenous wisdom into modern environmental policies. This research contributes to the discourse on sustainable development by showcasing how Indigenous Knowledge Systems and Practices (IKSP) can bridge the gap between traditional beliefs, education, and global conservation efforts.

Keywords*: Tagakaolo Tribe, Myths and Oral Traditions, Indigenous Knowledge, Environmental Protection, Environmental Preservation*

Sinapanan: "A new Feature for Food Tourism"

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Abstract

The aim of the study is to introduce Sinapanan, a novel feature intended to improve culinary tourism experiences, it aims to evaluate the acceptability of Sinapanan in preparing different dishes by conducting a taste test to assess the taste, texture, aroma and appearance of the different dishes.

Rather than merely utilizing basic meats, the researcher decided to establish the notion that employing traditional processed meat, especially Sinapanan, would increase the flavor and originality of diverse cuisines. The study investigates how Sinapanan provides tourists with a distinctive, immersive experience by utilizing state-of-the-art technologies and locally relevant culinary ideas. By incorporating real-time suggestions and cultural background, Sinapanan aims to serve as a connection between tourists and authentic local dining experiences.

Keywords*: Word Embedding, Keystrokes minimization, Attention, Tokenization, N-gram, Stemming, User experience enhancement.*

Availability and Management of Rice Straw of Select Rice Farmers in Isabela, Philippines

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Abstract

The widespread use of combine harvester during harvesting and threshing challenges rice farmers to efficiently manage their rice straw. There is also an extremely low adoption of sustainable rice straw management options by rice farmers. Thus, it is deemed necessary to estimate the total straw biomass generated by rice farmers and to describe their rice straw management practices. The main objective of this study was to assess the availability of rice straw and management options of rice farmers during the dry season in 2024. Case study was employed to attain the objectives of the study. Data gathered from household surveys and analyzed through descriptive statistics such as mean and ANOVA. Analysis revealed that the mean straw biomass of rough grain yield ha-1 is 5,219.73 kg. Moreover, the two factors that might influence the generation of higher quantities of rice straw were type of soil and planting method. Lastly, rice farmers predominantly managed their rice straw through in-situ straw incorporation but only few of them practiced straw mushroom production and surface retention. It has been demonstrated that there is a massive contribution of rice straw biomass in Isabela. This provided data for the authorities to carry out plans and initiatives, and to employ appropriate management to optimize the potentials of rice straw. The findings suggest that political will, partnership and collaboration, provision of physical infrastructures, and active participation of rice farmers are the main ingredients to the efficient management of rice straw. Through this, rice farmers will strengthen their technical efficiency and productivity, and will cultivate environmental efficiency.

Keywords: *Climate change mitigation, Environmental efficiency, Rice straw biomass, Rice straw management, Straw grain ratio*

Enhancement of Collaborative Filtering Algorithm with the use of Energy-Based approach in Dating Applications

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Abstract

Dating applications rely on recommendation systems to create meaningful matches, yet traditional Collaborative Filtering (CF) algorithms face limitations in handling mutual interest, evolving user preferences, and popularity bias. This study enhances the Energy-Based Collaborative Filtering (EBCF) algorithm by incorporating bidirectional energy scoring to improve mutual compatibility predictions, temporal embeddings with a time-decay factor to adapt to shifting user preferences, and penalty adjustment mechanisms alongside diversity conscious sampling to ensure fairness and diversity.

The enhanced algorithm prioritizes mutual interest by calculating bidirectional energy scores, reflects dynamic preferences through temporal embeddings, and mitigates popularity bias by normalizing the influence of high-activity users while promoting inclusivity for low-activity and niche users. Simulations using synthetic datasets modeled on user interactions in dating apps demonstrated improved match relevance, fairness, and recommendation diversity compared to the baseline EBCF algorithm.

These enhancements address key challenges in traditional recommendation systems, ensuring that dating applications provide more meaningful, personalized, and equitable matches. This study contributes to the development of more efficient and adaptive algorithms, fostering deeper connections and improved user satisfaction in modern dating platforms.

Keywords*: matchmaking, recommendation systems, collaborative filtering, temporal dynamics, diversity-conscious sampling, energy-based collaborative filtering*

An Enhancement of the Jaro-Winkler Fuzzy Searching Algorithm Applied in Library Search Engine

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Abstract

The Jaro-Winkler algorithm is widely used for approximate string matching, offering reliable similarity calculations between two strings. However, its performance declines with increasing string length due to bias against longer strings and its reliance on prefix similarity, which neglects significant suffix matches. This paper presents an Enhanced Jaro-Winkler algorithm that addresses these challenges by integrating a Rabin-Karp Rolling Hash – inspired technique and applying suffix weights to balance the prefix bias. Experimental evaluations using 100 words commonly found in book titles demonstrate the enhanced algorithm's robustness across varying fuzzy match thresholds (0.7, 0.8, and 0.9). Unlike the traditional algorithm, where higher thresholds reduce match accuracy, the enhanced algorithm consistently achieves 100% accuracy in identifying titles regardless of query position or threshold. Additionally, it showcases superior performance by improving the quality and quantity of retrieved results by an average of 125 titles compared to the traditional approach. These advancements highlight the algorithm's potential for improving search performance in applications requiring precise and flexible string matching.

Keywords*: Approximate String Matching, Fuzzy Matching, Fuzzy Logic, Jaro-Winkler*

Sustainable Development Through Click Green Projects: Commissioning Education for A Greater Cause

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Abstract

Achieving long-term change to address issues that are related to high-quality education, diminished inequalities, climate action, peace, justice, and strong institutions, as well as partnerships for the goals is the aim of any higher education institution. Sustainable development through green projects is a crucial aspect of addressing these issues to ensure better future for all. Identifying current Education for Sustainable Development (ESD)-relevant activities in a higher education institution not only promotes integration of ESD in the educational systems at all levels but also supports ongoing initiatives to enhance the quality and delivery of formal education in different programs namely teacher education, hospitality management, and industrial technology programs. The researcher created a comprehensive review of the school's click green program which drew data from a survey conducted. It was found out that the click green program supports other national and international programs for sustainable development. The researcher proposed the expansion of the program focusing on developing strategy, building partnerships and collaboration, securing funding, and implementing and monitoring. With a focus on non-teaching staff, school administrators, and, most importantly, teachers and students, the expansion of the program aims to lay out a set of steps to direct the higher education institution and the Local Government in creating suitable responses for ESD in the school.

Keywords: *chartering education, sustainable development, click green projects, higher education institution*

Influence of Electronic Service Quality of Biometric Authentication Technology on User Satisfaction in Electronic Banking: An Integrated Model of TAM and E-S-Qual

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Abstract

The development and adoption of new security technologies to combat fraud and cybercrime have become top priorities for financial institutions and banks in Vietnam. In compliance with Circular No. 17/2024/TT-NHNN issued by the State Bank of Vietnam, nearly 84.7 million bank accounts had been biometrically authenticated by early January 2025. However, challenges remain as users adopt new technologies and confront various issues associated with this transition. This study aims to explore the influence of electronic service quality, perceived ease of use, perceived usefulness, and perceived risk on user satisfaction with biometric authentication technology in electronic banking applications in Vietnam. This study presented a comprehensive conceptual model to understand user satisfaction by integrating an extended Technology Acceptance Model (TAM) with a modified scale for assessing electronic service quality (E-S-QUAL) to overcome existing limitations and align with the research context. An online survey of 300 respondents was conducted, utilizing Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to validate the measurement model. Structural Equation Modeling (SEM) was then applied to examine the relationships between the constructs. The findings indicated that electronic service quality had a positive influence on user satisfaction, perceived ease of use, and perceived usefulness, while having a negative influence on perceived risk. Furthermore, perceived ease of use and perceived usefulness were found to positively influence user satisfaction, whereas perceived risk had a negative impact on user satisfaction. The results provide valuable insights for electronic banking service providers and policymakers in Vietnam. Understanding the factors contributing to user satisfaction enables electronic banking providers to improve the quality of biometric authentication services in their applications within the new legal framework. Policymakers can leverage these insights to refine and develop new legislation aimed at enhancing security in online transactions to reduce fraud and cybercrime.

Keywords*: biometric authentication, electronic banking, electronic service quality, user satisfaction.*

Online Food Delivery Services During and After COVID–19 Epidemic with A Bibliometric Analysis

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Abstract

This study aims to assess journal papers relevant to Online food delivery services during and after the COVID-19 epidemic. The study uses bibliometric analysis of 383 published articles in the Scopus database from 2019 to 2024. The bibliometric procedure assesses research performance and growth within an international impact framework, with Biblioshiny-R and VOSviewer visualizing overall research trends in Online food delivery services. The study results show that the production of scientific publications has skyrocketed during and after the COVID-19 epidemic. In addition, the results show China and India are the countries with the most publications relevant to Online food delivery services during and after the COVID-19 epidemic; the University of Sydney and The University of Sharjah are the leading institutions in the field based on total publications. The most recent keywords include online food delivery, fast food, food applications, the COVID-19 pandemic, e-satisfaction, and e-service quality.

***Keywords**: Online Food Delivery Service, Bibliometric Analysis, Biblioshiny, VOSveiwer, Scopus.*

Creating Carbon Credits: Unveiling the Dynamics of the Asean and East Asian Market

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Abstract

This study aims to explore the dynamics of carbon credit markets within the ASEAN and East Asian regions, focusing on their development, challenges, and potential for sustainability. Utilizing a mixed-methods approach, we conducted quantitative analyses of carbon credit transaction data alongside qualitative interviews with key stakeholders, including policymakers, industry leaders, and environmental experts. The results reveal a growing interest in carbon credits as a tool for mitigating climate change, yet significant barriers remain, including regulatory inconsistencies and market volatility. The findings underscore the importance of harmonizing regulations and fostering collaboration among countries to enhance market efficiency. This research contributes to the understanding of carbon credit mechanisms in Southeast Asia and East Asia, providing insights that could inform future policies and initiatives aimed at achieving regional sustainability goals.

Keywords: *Carbon Credits, ASEAN, East Asia, Climate Change, Sustainability*

Analysis of Green Viability Assessment System in Philippine Government Hospitals Towards Climate-Resilient Health Facilities

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Abstract

Health facilities contribute to greenhouse gas emissions, such emissions can be mitigated by using renewable, sustainable, and clean energy. As the health sector is significantly affected by the circumstances brought about by climate change, the Department of Health as the nation's leader in health is challenged to respond to this phenomenon by minimizing the carbon footprint of health facilities while delivering quality health care.

In line with the Department of Health's (DOH's) vision towards achieving universal healthcare for all, health facilities must be responsive in reducing vulnerability to climate change and disaster impacts by improving people's access to healthcare. The DOH through the Health Facility Development Bureau (HFDB) developed the technical standards for green and safe health facilities accompanied by a green viability assessment (GVA) tool for hospitals to comply with its eight (8) performance standards such as Governance; Energy Efficiency; Water Efficiency, Sanitation, and Hygiene; Health Care Waste Management; Environmental Resilience; Site Sustainability; Materials Sustainability, and Indoor Environmental Quality.

To achieve climate-resilient and environmentally sustainable health facilities by 2040, the DOH has included the strategic thrust Agenda #4: Handa sa Krisis (Ready for Health Crises) within the 8-Point Action Agenda. The analysis focuses on GVA tool submissions that have undergone field assessment and subsequent desk validation from 2022-2024. In 2024, a total of 176 government hospitals garnered three (3) to five (5) Green Star Ratings under the Green Viability Assessment System with an initial 32 government hospitals recognized in 2022.

With the implementation of the GVA System, the management of hospital and local government units shows support for the objective to ensure that hospitals provide quality health and safety to people while minimizing the carbon footprint of the health facilities.

Keywords*: DOH, Green and Safe Hospital, GVA tool, greenhouse gas emission*

Investigating the Effects of Solanum nigrum Linn. against Spodoptera frugiperda found in Nicotiana tabacum

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Abstract

Control, management, and eradication of *Spodoptera frugiperda* or Fall armyworm (FAW) was challenging without the extensive use of inorganic pesticides. However, extensive application of inorganic pesticides threatens human health, animals, and environment. Hence, natural and organic pesticides are eco-friendly substance needed to control the proliferation of FAW. The main objective of this study was to determine the effects of *Solanum nigrum Linn*. or Black nightshade or Am-amsi leaf and fruit aqueous extract to FAW found in *Nicotiana tabacum* or Burley tobacco plants. Field experimental method using completely randomized design was employed. Data gathered were analyzed through descriptive statistics such as mean and ANOVA. Phytochemical analysis revealed that Black nightshade contains flavonoids, saponins, steroids, and terpenoids. Secondly, FAWs were irritable upon application of Am-amsi aqueous extract and became immobile after 12 hours of application. Moreover, there was an increasing mortality of FAW in the four treatments after 24 to 72 hours of application. In addition, there was a significant difference between T1 or 25% concentration and T4 or 100% concentration after 36 hours; there was a significant difference between T2 or 50% concentration and T4 after 60 hours; and there was a significant difference between T1 and T4 after 72 hours. Finally, Post Hoc analysis showed that T3 or 75% concentration was comparable to T4 when compared to a synthetic insecticide. It has been demonstrated that T4 of the aqueous extract was the most effective against FAW while T3 was comparable to T4 concentration. The phytochemical components of Black nightshade or Am-amsi contributed to the irritability, immobility, and mortality of FAW. The findings suggest that Black nightshade or Am-amsi is a potential natural and organic larvicide against FAW. Through the use of leaf and fruit extract of Black nightshade or Am-amsi, tobacco farmers may control FAW which is safer, more cost-effective, and more eco-friendly pesticide.

Keywords*: Burley tobacco, organic pesticides, phytochemical analysis, Solanum nigrum Linn, Spodoptera frugiperda*

Intensive Teacher Training and its Impact in the Quality of Teaching and Learning Activities at Deped Camarines Sur

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Abstract

This research paper investigates the effects of intensive teacher training on the quality of teaching and learning activities at DepEd-Bagolatao National High School in Camarines Sur, involving a sample of 256 students. The study aims to determine how structured professional development programs influence pedagogical practices and student engagement. Utilizing a mixed-methods approach, data were collected through surveys, classroom observations, and interviews with teachers and students. The findings reveal that intensive training significantly enhances teachers' instructional strategies, leading to improved student performance and engagement in learning activities.

Quantitative analysis indicates that students taught by trained educators scored higher on standardized assessments compared to their peers taught by untrained teachers. Qualitative data further illustrate that teachers reported increased confidence in their teaching abilities and a greater willingness to adopt innovative instructional methods post training. Additionally, students expressed heightened interest in subjects taught by these trained educators, suggesting a positive correlation between teacher preparedness and student motivation.

The implications of this study underscore the necessity for ongoing professional development within educational institutions to foster an environment conducive to effective teaching and learning. Recommendations include the implementation of regular training sessions tailored to address specific pedagogical challenges faced by educators. This research contributes valuable insights into the critical role of teacher training in enhancing educational outcomes and advocates for policy reforms aimed at prioritizing teacher development initiatives.

Keywords: *intensive training, quality teaching and learning activities*

Assessment of Barriers to the Adoption of Sustainable Practices: A Mixed-Method Study in Vietnam's Construction Industry

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Abstract

Architectural design aimed at sustainability too often defaults to technological fixes and checklist compliance, potentially missing the mark when it comes to meeting the diverse and evolving needs of our communities. This research takes a critical look at this trend, arguing that a more proactive and comprehensive approach is essential. We explore integrating "futures thinking" - a set of methods for anticipating change directly into how architects design. Think of it as using tools like horizon scanning and scenario planning to anticipate future social shifts, cultural shifts, environmental challenges, and new technologies. It's about envisioning the world our buildings will inhabit, rather than just meeting today's codes.

To explore this in practice, we present a case study of design studios at the Hanoi University of Civil Engineering. Here, students in the Master of Architecture and Master of Sustainable Design programs are actively using futures-oriented design methods. By analyzing their project proposals, we demonstrate the real pedagogical value of this approach. It's clear that future thinking fosters a more critical understanding of the architect's role in shaping a truly sustainable built environment. It also unlocks the potential for creative and context-specific solutions, designed to tackle the challenges we anticipate down the road. By empowering future architects with the ability to envision and proactively shape their world, we aim to bridge the gap between current practices and the complex realities of a rapidly changing future, ultimately building a more resilient, responsive, and equitable world through thoughtful design.

Keywords*: approach, resilient, responsive, creative and context-specific solutions*

Detection Tomato using Vgg19 and Explainability XAI

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Abstract

Early detection and diagnosis of tomato diseases is essential to ensure healthy harvests and reduce economic losses. This paper explores the use of the VGG19 convolutional neural network to identify the 10 class diseases of tomato from dataset images obtained from Kaggle site it compares images representing various tomato diseases divided into 3 training, validation, and testing datasets. The breakdown was as follows and incorporates explainable artificial intelligence (XAI) LIME(Local Interpretable Model-agnostic Explanations) techniques to improve the interpretability of the results. In our study show that VGG19 offers a high accuracy of 85% for validation, 87% for training and that XAI methods allow a better understanding of the model's predictions.

Keywords*: machine learning, deep learning, black box, transparency, explainable (XAI).*

Mapping the Geographical Distribution of Anabo (Abroma augusta Linn) Species in Apayao

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Abstract

This study aimed to map the location Anabo *(Abroma augusta Linn)* in Apayao through Geographic Information Systems (GIS) tool. This plant is rich in fiber. The plant's fiber has potential not only in traditional use but also in emerging eco-friendly textiles. The said plant is widely distributed in the seven municipalities of the province, thus, it has the potential as source of raw materials for fiber extraction. Mapping the geographical distribution of *Abroma augusta* is essential for understanding the plant's ecological requirements, conservation status, pharmacological and textile potential, and cultural significance.

Keywords: *plant is widely distributed*

Potential of Enhanced Probiotic (Provet) as Dietary Supplement for Growing-Finishing Pigs

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Abstract

The study entitled: Potential of Enhanced (Provet) Probiotic as Dietary Supplement for Growing-Finishing Pigs" was conducted at Agriculture Instructional, Research, and Production Units aims to evaluate its potential as dietary supplement for growing-finishing pigs in terms of body weight, gain in weight, average daily gain (ADG), Feed Consumption, and Feed Conversion Ratio, and the Return on Investment (ROI). The study was laid out using the Completely Randomized Designed (CRD). The least significance difference (LSD) was used for the comparison of means, if the result is significant. The treatments as basis of comparison were Treatment 1- Control (No Probiotic), Treatment 2. Commercial Probiotic, Treatment 3. 20ml of Enhanced (Provet) Probiotic, Treatment 4. 30ml of Enhanced (Provet) Probiotic. Highly significant ($P< 0.01$) result were observed on the growth parameters of growing-finishing pigs such as body weight, gain in weight, and the average daily gain (ADG) wherein, animals treated with 20ml provet probiotic took advantaged with the control treatment and the animals treated with 5 grams commercial probiotic. With the body weigh advantage of animals treated with 20ml provet probiotic, the Return On Investment (ROI) was significantly advantage compared with the pigs in other treatments. In is therefore concluded that the 20ml provet probiotic has something to do on the growth parameters of growing-finishing pigs, its utilization significantly affecting the return on investment, and safe to use for animal consumption. Therefore, it is recommended to use the 20ml provet probiotic and best to mixed with feeds and be utilized by pigs in the morning. Further study on provet probiotic be conducted for early and post weaned piglets, and gestating sow.

Keywords*: probiotic, dietary supplement, potential, growth*

Cytotoxicity of Native Fruit Trees and Ethnomedicinal Tress

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Abstract

This study was conducted in the selected municaplities of Apayao, province namely Municipality of Luna, Pudtol, Flora, Conner, Kabugao and Calanasan. It aimed to characterize the native fruit and ethnomedicinal trees in Apayao province and to determine the cytotoxicity analysis of these trees. Cytotoxicity testing is a critical tool in ensuring safety and efficacy of products as well as in advancing scientific understanding of cellular response to various substances. A descriptive research design was employed, involving both fieldwork and chemical laboratory analyses. Methanol extracts from various species of these native and ethnomedicinal trees, were evaluated for their cytotoxic potential against cancer cells. The study found that out of sixteen (16) species tested, four (4) species exhibited high cytotoxicity, three (3) species showed moderate cytotoxicity, six (6) species were identified as weak to non-cytotoxic, and three (3) species were noted to promote breast cancer cell proliferation. The threats to the survival of these trees include extreme weather events such as droughts, typhoons, and forest fires

Keywords*: Native fruit trees; ethnomedicinal trees; cytotoxicity*

Experiences on the Use of Generative Artificial Intelligence (AI) Tools for Research Writing Among Graduate School Students of ASC Conner Campus

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Abstract

Artificial intelligence (AI) has the power to revolutionize the field of education by enhancing teaching and learning experiences. The study aimed to explore the experiences of students of using Generative AI tools in research writing. It employed qualitative research particularly phenomenology. There were 15 students from the Graduate School who were selected for the study. In this study, students' experiences on using generative AI tools for research writing were thematized/ analyzed. Results revealed that students had varied purposes of using generative AI tools for the first time during their research writing process. Moreover, it is evident that the participants in this study had positive and negative experiences in using generative AI tools for research. It is recommended to strengthening the skills for effective use of generative AI tools in academic writing just like in research and thesis writing. The courses of the graduate school should be reviewed to incorporate competencies on utilization of AI tools to ensure that both students and teachers are well prepared for the responsible and effective use of AI tools and apps since AI have penetrated the teaching- learning process.

Keywords: *technology. artificial intelligence, generative, experiences, AI tools*

Purchase Behavior of Restaurant Operators Towards Seafood Products in Lianga Bay, Surigao Del Sur

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Abstract

This study examines the purchasing behavior of restaurants concerning seafood products, with a specific focus on the factors that shape procurement decisions in the municipalities of Lianga and Barobo, around Lianga Bay, Surigao del Sur, Philippines. Given the region's expanding food tourism sector, understanding the dynamics of seafood sourcing is crucial for ensuring both business sustainability and local economic growth. This research aims to identify key determinants such as product quality, pricing, supplier relationships, availability, and sustainability considerations that influence restaurant operators in their seafood procurement choices. Employing a quantitative descriptive methodology, the study surveyed 15 restaurants in these municipalities to assess their seafood sourcing strategies, challenges, and opportunities. Findings reveal that freshness and quality are paramount considerations, as they directly impact customer satisfaction and business reputation in the restaurant sector. However, price instability, supply chain inefficiencies, and inconsistent availability pose significant challenges for restaurant operators. Despite these constraints, a strong preference for locally sourced seafood emerged, highlighting the potential for strengthening linkages between local fishermen, aquaculture producers, and the restaurant industry. Furthermore, the study underscores the importance of establishing more resilient and sustainable supply chains, advocating for improved logistics, market coordination, and strategic partnerships between suppliers and buyers. These insights provide valuable recommendations for seafood producers, marketers, and policymakers to align their strategies with the needs of restaurant businesses while promoting sustainable fishing and aquaculture practices in the province. Ultimately, this research contributes to enhancing the local seafood industry's competitiveness and ensuring the long-term viability of Surigao del Sur's culinary and tourism sectors.

Keywords*: purchase behavior, restaurant operators, seafood products, marketing decisions, supply chain*

Curriculum (Mis) Alignment: A Qualitative Study Of The Industrial Arts Work Immersion Students' Competency

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Abstract

This study aimed to explore industry partners' perceptions of the Industrial Arts work immersion students' competency through an exploratory research design. It investigated the industry partners' expectations, perceptions, challenges, and issues regarding the knowledge, abilities, and attitude of deployed SHS students in the industry partners' workplace. This is to determine whether the TLE and TVL Industrial Arts curricula align with the requirements of the industry for competency since literature and studies imply that graduates of K to 12 suffer high rates of youth unemployment and even low employability owing to job mismatch.

The findings revealed that students in the Industrial Arts strand are more likely to have job mismatches due to curriculum misalignment. This is the non-correspondence of the competencies developed by learners from the K to 12 TLE and TVL Industrial Arts curricula to the competency needs of the industry. The industry partners observed curriculum misalignment because the fundamentals of the Industrial Arts work immersion students were lacking, as evidenced by their lack of competence due to their unfamiliarity with the operations and jobs in the industry. Furthermore, their functional self-management was inefficient, as seen by their inability to work independently and misconduct due to their disinclination in their area of specialization.

Keywords: *Technical-Vocational Education, curriculum, qualitative research, Philippines*

SWOT Analysis on Covid 19 Pandemic Towards Business Retailers

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Abstract

The Covid 19 pandemic has dramatically changed the retail industry in selling their products or services to their target customers. Moreover, the pandemic's detrimental effects on the retail sector have demonstrated the necessity of creating business strategies to ensure business survival and its sustainability industry. Thus, a strengths, weaknesses, opportunities, and threats (SWOT) analysis was conducted. A mix method was used among the retail business owners to ensure accurate data analysis and interpretation of the study. The most frequent benchmark statements during the interview were presented in the SWOT analysis and quantitative analysis were used for the evaluation of the said benchmark statements through weighted mean. Based on the result of the study, the business retailers have excellent quality products, but they don't have enough budget to promote it, and most of their problems are the IATF guidelines or travel restrictions that could affect the operations of their businesses. Therefore, in order to ensure survival and sustainability of their business, they should promote their products or services in the least cost possible. Moreover, they should strategies to sell their products through different social media platforms and offer delivery services during lockdowns or travel restrictions.

Keywords: *Business Survival, Sustainability Industry, Product Promotion, Business Strategies, Social Media Platforms*

Perception of Students on Individual and Collaborative Approaches in the Study of Trigonometry

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Abstract

Trigonometry is widely regarded by students as one of the most challenging course in mathematics. Improving the retention of trigonometric knowledge requires approaches that actively engage learners. Both individual and collaborative learning approaches offer distinct advantages, but each also has limitations. The most effective strategy likely depends on students' individual preferences, needs, and learning styles. By adapting the learning experience to these factors, educators can identify the approach that best supports students in mastering Trigonometry. This study explores the perceptions of third year and fourth-year education students major in mathematics at Pamantasan ng Lungsod ng Marikina regarding individual and collaborative approaches to studying Trigonometry. The research examines students' perceptions based on factors such as self-realization, autonomy, emotional independence, and social differentiation for the individual approach, and positive interdependence, considerable interaction, individual accountability, and social skills for the collaborative approach. It also explores potential differences in perception between third-year and fourth-year students and identifies possible learning development programs to enhance both approaches. A descriptive, quantitative design was used, with purposive sampling to select participants. A 4-point Likert scale measured students' perceptions, and T-tests were conducted to assess significant differences between the two student groups. The findings revealed that both groups valued individual and collaborative approaches. However, while there were no significant differences in perceptions of the collaborative approach, a slight difference was observed in the individual approach. These results suggest that both learning approaches are important, and learning development programs could further enhance their effectiveness in studying Trigonometry, offering insights into how students at different academic levels engage with and perceive learning strategies.

Keywords: *students' perception, individual approach, collaborative approach, Trigonometry*

Community Needs Assessment among Residents of Barangay Palico II in Imus City, Cavite:Basis for Community-Based Extension and Development Program

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Abstract

A community needs assessment provides the basis for developing effective programs so that actions align with the community's real needs, problems, and objectives. Like an organized process, it fosters a feeling of mutual responsibility between the program implementers and the community, thereby making community-based interventions more effective.

The study aimed to establish the requirements of the people of Barangay Palico II, Imus City, Cavite so it could serve as the basis of a community-oriented extension and development program. 95 residents were surveyed, with the quantitative method applied in quantifying data and service gaps. The evaluation was also founded on the five-point agenda of the Imus City Government, namely: Health, Education, and Public Services; Good Governance; Housing and Livelihood; Infrastructure; and Environment.

Findings showed that in Health, Education, and Public Services, the priority concerns are emergency services, health centers, medical assistance, scholarship grants, educational assistance, and daycare centers. Financial assistance, senior citizen assistance, and women's protection programs were also mentioned as needed public services. Under Good Governance, the respondents' concerns were school safety, peace and order, and police presence. For Housing and Livelihood, safe and accessible housing was a priority, and job fairs, skills training, and apprenticeship programs were mentioned as needed interventions for economic empowerment. In Infrastructure, the most pressing concerns were more streetlights, an improved transportation system, and road-clearing operations. Lastly, in the Environment category, the respondents mentioned the need for clean and green programs, cleanup operations, and street sweepers. The study emphasizes the importance of data-driven planning in community-based program development to make interventions responsive to the actual needs of the residents. The findings provide valuable input to local government units, policymakers, and community stakeholders in formulating targeted development programs that promote sustainable community development.

Keywords: *Health, Education and Public Services; Good Governance; Housing and Livelihood; Infrastructure; and Environment.*

Field Performance of Large Fishtail Palm *(Caryota rumphiana Mart. var. philippinensis Becc.)* Intercrop with White Lauan (Shorea contorta)

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Abstract

This study was conducted to determine the effect of varying levels of vermicompost in the growth performance of large fish-tailed palm (Caryota rumphiana Mart. var. philippinensis Becc.), locally known as "anibong". Randomized complete block design (RCBD) was used in the study. Five treatments were observed with three replications. Treatments are as follows: Treatment A- No fertilizer (control), Treatment B- 500 grams (Vermicompost), Treatment C- 750 grams (Vermicompost), Treatment D -1,000 grams (Vermicompost) and Treatment E -1,250 grams (Vermicompost). A total of 180 palm propagules was used in the study. Two parameters were observed in the study, diameter increment and height increment. The study was conducted from September 2022 to August 2024 with a duration of 22 months. Results showed that the utilization of vermicompost at the rate 1,200 grams per palm propagules grows the tallest, reaching a height of 465.00 centimeters when compared to a lesser rate at 1,000, 750, and 500 grams respectively. Consequently, similar pattern was observed in the height increment, where plants treated with 1,200 grams of vermicompost were 137.82%, 111.27%, 38.55%, and 17.10% taller than plants treated with control, 500 grams, 750 grams, and 1000 grams, respectively. Further, the utilization of vermicompost at 1,250 grams per plant, yield the biggest diameter at 91.60 mm compared to other treatments. This indicates that increasing the amount of vermicompost significantly enhances the diameter of fishtail plants.

The findings suggest that fishtail palms can thrive in soil with high organic matter content.

Keywords: *Underutilized indigenous forest food crops, vermicomposting, vermicompost*

A Cross-Platform Blood Donation System with Data Analytics

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Abstract

Recognizing the increasing need for a more effective and accessible blood donation system, a Cross-Platform Blood Donation System With Data Analytics was developed. This is an innovative cross-platform social networking application tailored for blood donation in Imus, Cavite. This initiative aims to foster meaningful connections between blood donors and recipients by offering a dedicated platform that simplifies the process of finding and coordinating blood donations. This platform sets itself apart from traditional social media platforms by prioritizing trust and security through strong user verification methods. These include one-time password (OTP) authentication and the submission of valid identification. The goal is to connect donors with those in need, fostering a supportive community dedicated to saving lives. The system is designed with several essential features that enhance its functionality and user experience. One of its core components is a sophisticated donor-recipient matching module, which utilizes algorithms to ensure optimal pairing based on various criteria, such as location, compatibility, and availability. This feature streamlines the donation process, making it more efficient and responsive to user needs. In addition to matching, the system includes a comprehensive real-time data analytics feature that empowers users with insights into transaction trends, user interactions, and operational efficiencies. This capability not only supports informed decision-making but also allows for proactive adjustments to improve service delivery. The messaging functionality enhances communication between donors and recipients, fostering a transparent and supportive environment throughout the transaction process. Users can easily share updates, ask questions, and provide feedback, which is crucial for building trust and ensuring a positive experience. To ensure the integrity of transactions, a transaction monitoring system is integrated into the framework. This system tracks all interactions and exchanges within the platform, flagging any anomalies or potential issues that may arise, thereby maintaining a high level of security and compliance. The platform boasts cross platform compatibility, enabling users to access the service effortlessly through both web browsers and mobile applications. This flexibility caters to a diverse user base, allowing individuals to engage with the system conveniently, regardless of their preferred device. The research and development process for this system follows the Spiral Model in its software development lifecycle. This iterative approach emphasizes continuous evaluation and enhancement, integrating user feedback at every stage to ensure the product evolves in alignment with user expectations and industry standards. Through repeated cycles of planning, risk analysis, development, and user evaluation, the

system remains adaptive and responsive to the changing needs of its users. The evaluation process of the study engaged a diverse group of stakeholders, including experienced IT professionals, dedicated blood donors, grateful recipients, and members of the Blood Donations organization. The results from this comprehensive assessment highlighted exceptional levels of system usability, robust functionality, and remarkable reliability. Key findings indicated that this platform serves as an effective tool for streamlining the coordination of blood donations, while simultaneously implementing safeguards to prevent fraudulent activities. This system represents an innovative and forward thinking approach to managing blood donations. It significantly enhances accessibility, boosts operational efficiency, and fosters a greater sense of trust within the community, ultimately improving the blood donation ecosystem for all involved.

Keywords*: Blood-donation system; Data analytics; cross-platform*

A Mobile- based Application for E-Learning Disaster Preparedness with Game Simulation

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Abstract

The Philippines is one of the countries in the world who suffers in different disasters, particularly natural disasters. Every year, there are more than twenty incidents recorded in the country related to different disasters which involve numerous lives of its citizens. It is found that most Filipinos have lack of knowledge in terms of disaster preparation specially, teenagers. This paper is intended to develop a mobile-based application for E-learning Disaster preparedness with game simulation that aims to spread awareness on what to do during disasters. It contains information about certain disasters from how they formed, what are the different types, what are the possible effects and when and where they are most likely to happen. The application also has a quiz module that helps the users to test their knowledge a scenario simulation game to test their readiness and essential tools that can be useful in case of emergency the application is also offers the first aid basics and preparation knowledge for different disasters. Agile methodology was used for the development process to achieve the goals. The results of the evaluation show that the respondents are satisfied with the result of application development and gave an overall weighted mean score of 4.10 which has a verbal indicator of "Very Good".

Keywords*: disaster preparedness, mobile application, game simulation , e-learning*

Community Needs Assessment in Tandag City

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Abstract

This study examined the needs, assessed the demographic profile, strengths, weaknesses, opportunities, and threats (SWOT) of fisher folks in Tandag City, Philippines, with the goal of cultivating the targeted interventions for sustainable development. The 224 fisher folks were identified by a comprehensive enumeration in order to gather the data. The used of researcher made questionnaire and a face to face survey was conducted to gather the data. The prevalence of males in fishing occupations aligns with traditional gender roles in rural economies, where men often dominate labor-intensive jobs. The majority earn a monthly income between ₱1,000 ₱5,000, and the identify fisher folks has over 20 years of experience in this occupation. The SWOT analysis indicates the following, strengths; respondents strongly rely on traditional knowledge and a high local demand for harvest. However, there is only moderate agreement on access to quality tools and government support. In terms of weaknesses, financial constraints and unstable incomes are significant challenges. There is limited access to modern tools and markets, while in opportunities, the respondents acknowledge strong government programs and training opportunities but face difficulties accessing financial aid. In threats, climate change, market price fluctuations, and natural disasters pose severe risks. The grand mean indicates a moderate level of agreement across all categories, highlighting the need for targeted interventions to address financial, technical, and environmental challenges while leveraging government programs and traditional knowledge to sustain livelihoods. Fisher folks have a moderate level of confidence in their capabilities and possibilities, according to the evaluation as a whole. However, they face major obstacles in the areas of financial access, technology adoption, and exposure to outside risks like market instability and climate change.

Keywords: *strongly rely on traditional knowledge and a high local*

Green Reverse Logistics in Sri Lankan Apparel and Textile Industry:A Path Towards Sustainable Manufacturing

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Abstract

Green reverse logistics, a new branch of reverse logistics is the process of taking back the products from their final destination back to the distributor or manufacturer for rework, replacement, or disposal in an environmentally friendly manner.

The apparel and textile industry is a significant contributor to the Sri Lankan economy, and the Sri Lankan economy is heavily dependent on the apparel and textile industry.

The industrial manufacturing processes of the apparel and textile industry are chemically aggressive, and the industry generates a heavy amount of post-industrial waste, including chemicals, dyes, fabric pieces, plastics, cardboards, and dyed water, which results in sustainability issues. The textile industry, being an industry that generates a massive amount of post-industrial waste, has been recognized by the researchers as an industry that should adopt green reverse logistics to mitigate the generation of post-industrial waste.

The study examines the influence of green reverse technologies adopted by Sri Lankan apparel and textile companies in improving environmental sustainability. A qualitative multiple case study based on two leading Sri Lankan apparel and textile manufacturers was employed by the researcher.

The research findings highlighted that that production of synthetic fabric from PET polyester yarn, waste upcycling (e.g.: knitting lint-paper manufacturing, fabric rejects – production of rugs, bags etc), sending out used oil to a certified company for re-refining, re-using the water used in dye machines, and dye clean and re-use projects are the key green reverse logistics practices adopted by Sri Lankan apparel and textile manufacturers. The research findings further indicated that green reverse techniques adopted by apparel and textile manufacturers result in a responsible and sustainable manufacturing process through promoting alternative uses of resources, use of alternative energy sources, optimization of materials, and reuse of materials.

***Keywords**: Green reverse logistics, sustainable manufacturing, Apparel and Textile, Sustainable manufacturing.*

Optimization of Biomass-Fired Drying Systems for Sustainable Food Preservation in Sri Lanka

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Abstract

Post-harvest loss due to inefficient drying methods remains a significant problem for Sri Lankan small and medium-scale farmers in drying food products. Here, the substitution of conventional open sun drying with a cabinet tray dryer fired by biomass is tried, in order to optimize drying behavior with improved efficiency, contamination, and post-harvest losses. The system uses thermal energy derived from the combustion of biomass, where heat is imparted to circulating air via a heat exchanger. Drying occurs by hot air circulation, heat conduction from trays, and radiation from heated surfaces for uniform moisture evaporation, where moist air is expelled through an air outlet. Experiments on trials were conducted with an 8-tray setup and subsequently a 16-tray test, with each tray containing a load of 8 kg of chili. The study compared drying parameters such as temperature distribution, moisture loss, and drying time. Field testing demonstrated that the biomass dryer could dry effectively in 4.30 hours at 59–62°C. However, variation in drying effectiveness was observed, particularly in lower trays, due to non-uniform airflow and heat distribution. Computational simulations using ANSYS provided an understanding of air circulation patterns, and regression analysis attested that there was a high correlation between temperature and airflow. Results indicate that the biomass-fired dryer significantly reduces drying time and enhances food safety compared to traditional sun drying. System efficiency depends on biomass type and ambient conditions. Recommendations for improvement include the inclusion of a draft fan in the heat inlet line and redirecting the burner for even more heat distribution. This research is a great stride toward sustainable, economic, and safe food processing, revealing the potential of biomass-fired drying systems for widespread agricultural application in Sri Lanka

Keywords*: Biomass-fired drying, Food preservation efficiency, Post-harvest loss reduction, Sustainable agricultural drying, Thermal energy utilization.*

Assessment of Jicama *(Pachyrhizus erosus)* Processed Products: Basis For Consumer Acceptability

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Abstract

The increasing demand of natural and organic foods together with the potential of exploiting the agriculture and food industry made it possible to keep on looking for some means in developing new products which are organic and/or natural to address to the consumer and government demand. This study was conducted to investigate the possibilities of processing Jicama (Pachyrizus erosus) tubers into a new commodity and determine their nutrition facts and the computation of its specific nutrients left after processing as well as the acceptability of the product in terms of its tastes, aroma texture and color. Jicama processed products are raisin and cracker. These products were then evaluated. It focused on chemical (Nutrition Facts and Chemical analysis), Microbial (Yeast and Molds Counts) and sensory Evaluation for the products' social acceptability. There were two instruments used to obtain the data, through the survey questionnaire for the sensory assessment and the laboratory test for their nutritive properties and microbial status. Results showed that processed jicama products were favorably acceptable by the market having adjectival rating of "strongly agree".In chemical analysis, Jicama products were to be very low in caloric value, not enough to contribute for the percentage of calories needed per day as recommended. Both products are low in lipid which means it is far from being rancid. Their being low in moisture contents and water activity made these product's shelf-life longer. Microbial Analysis is focused only at the yeasts and molds count. Results revealed that CFU/g of both products fall within the allowable standard for the same category products. It is concluded that new jicama products are definitely safe for consumption.

Keywords: *Chemical Analysis, Microbial Analysis, Sensory Evaluation, Jicama tuber*

Enhancing Conductive Polymer Nanocomposites with Nanomaterials for Superior Properties and Versatile Applications: A Review

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Abstract

Conductive polymers (CPs) have received significant attention due to their distinctive benefits over conventional materials, including versatile and adjustable electrical conductivity, straightforward fabrication methods, high mechanical strength, lightweight properties, cost effectiveness, and ease of processing. By fusing the outstanding mechanical, thermal, and functional properties of nanoparticles with the electrical conductivity of polymers, conductive polymer nanocomposites (CPNCs) have become a ground-breaking class of materials. The electrical, mechanical, and optical properties of these composites are greatly improved by the synergistic integration of nanofillers, such as carbon nanotubes, graphene, metal nanoparticles, and nanoceramics. This makes it possible for these composites to be used in flexible electronics, energy storage, sensors, biomedical devices, and electromagnetic shielding. The synthesis methods, structure-property correlations, and processes controlling the electrical behavior of CPNCs are examined in this review. It also emphasizes their wide range of uses, which include electronic gadgets, coatings, sensors, and energy storage. Additionally covered the difficulties and potential of CPNCs, highlighting their critical role in developing next generation nanomaterial-based technology.

***Keywords**: Composites, Conductive polymer, Energy storage, Fabrication, Nanocomposite*

Library Management System with Integration of Barcode Technology for Cavite State University – Imus Campus Library

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Abstract

The CvSU–Imus Campus Library is a unit that supports the university in achieving its mission, goals, and objectives by acquiring books and other library materials for users to utilize for research and reference. As the library is currently handling a minimum of 50 visitors and a maximum of 300 per day, their traditional way of recording the entry and exit logs, managing the library collection and transactions, which involves the use of a log book and manually writing on it that can be more time-consuming and are more prone to human error. This study aims to develop an online web-based library management system with integration of barcode technology which is an innovative software solution designed to enhance the daily operations within the Cavite State University-Imus Campus Library. This system is an online web-based library management system with features such as recording student and teacher information, facilitating easy search, tracking daily attendance, data security, managing the library's collection inventory, and enabling student and teacher accounts for monitoring transaction history, checking book, thesis, and journal availability, and making reservations. This system has the advantage of using barcode technology to automate and streamline the tracking library resources and operations and provide accuracy of data capture. The system aims for a user-friendly interface, and its development will be based on client input and advice from capstone and technical advisers. After development, thorough testing will be conducted to evaluate functionality, reliability, usability, efficiency, and portability. The final step involves launching the system, identifying potential bugs, and making necessary modifications. The researchers reasoned to use agile methodology because of its flexibility, for client's collaboration, and continuity improvement. The researchers used convenience sampling and Google Forms for the system evaluation. The findings showed that the system is effective based on the following characteristics: Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability.

Keywords*: CvSU Imus, Library management, Barcode technology, Agile Methodology, Online-Web-based System*

A Mobile- based Application for E-Learning Disaster Preparedness with Game Simulation

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Abstract

The Philippines is one of the countries in the world who suffers in different disasters, particularly natural disasters. Every year, there are more than twenty incidents recorded in the country related to different disasters which involve numerous lives of its citizens. It is found that most Filipinos have lack of knowledge in terms of disaster preparation specially, teenagers. This paper is intended to develop a mobile-based application for E-learning Disaster preparedness with game simulation that aims to spread awareness on what to do during disasters. It contains information about certain disasters from how they formed, what are the different types, what are the possible effects and when and where they are most likely to happen. The application also has a quiz module that helps the users to test their knowledge a scenario simulation game to test their readiness and essential tools that can be useful in case of emergency the application is also offers the first aid basics and preparation knowledge for different disasters. Agile methodology was used for the development process to achieve the goals. The results of the evaluation show that the respondents are satisfied with the result of application development and gave an overall weighted mean score of 4.10 which has a verbal indicator of "Very Good".

Keywords: *Filipinos, methodology*

Academic Performance and Program Perceptions: Analyzing Differences in Factors Affecting First-Year Students' Choice to Pursue A Bachelor of Science in Office Administration at Cavite State University-Imus Campus

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Abstract

Entering university as a continuum between school and career, a student inevitably has to go through the very important process of selecting a career considering very many personal, economic, social, and environmental factors. The study determined the perceptions and factors affecting first-year students in enrolling for Bachelor of Science in Office Administration (BSOA) in Cavite State University - Imus Campus. Office administration students have jobs lined up for them in almost all sectors, but the BSOA program faces a healthy competition from the regular business courses. Students have different perceptions about this field: for some, it is a stepping stone to management while for others, it is seen as simple clerical work.

This study attempts to (1) analyze the demographic profile of first-year BSOA students, (2) assess their attitude toward the program, (3) ascertain the most important factors that influence their decision to enroll, and (4) explore likely differences according to their background. Important elements that explain the reason behind one's career choice include personal motivating factors, career aspirations, role models, market demand, cost issues, family support, and institutional backing.

It will be useful for academic administrators and policymakers in taking decisions on improvements of recruitment, retention, and program development efforts. Identification of students' motivations and concerns will also help educational institutions improve the programs, making them more attractive and effective for BSOA with regard to the industry's requirements and the students' career goals.

***Keywords**: Office Administration, career choice, career goals, motivational factors*

Exploring Emotional Labor Strategies: Experiences of Faculty Members From Selected Universities in Cavite

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Abstract

This research study focused on emotional labor in an academic context. It specifically aimed to determine what emotional labor strategies among three known strategies, namely, genuine acting, deep acting, and surface acting, are utilized by faculty members from selected universities in Cavite., determine the situational factors influencing the use of such strategies, and the frequency of use of those strategies. This study also focused on finding the significant differences in emotional labor strategies utilized and the situational factors that influenced the use of such strategies when participants are grouped according to profile.

Descriptive-comparative research design was used in the study, and the data were collected through survey questionnaires. The participants included faculty members from all academic departments of the three selected satellite campuses of Cavite State University which are located at Bacoor City, Imus City, and Rosario, Cavite. They were purposely selected based on specific characteristics relevant to the study.

On the other hand, the findings indicate that faculty members generally have a high level of agreement on the utilization of emotional labor strategies in the workplace, as reflected by the overall weighted mean (W) of 2.96 and standard deviation (SD) of 0.440; genuine acting gained a very high level of agreement in terms of utilization (W = 3.40, SD = 0.774) compared to deep acting (W = 3.08, SD = 0.727), and surface acting (W = 2.40, SD = 0.493). Additionally, situational factors, specifically when participants are interacting with students (W = 2.57, SD = 0.607), had a stronger influence on the utilization of emotional labor strategies compared to their interaction with coworkers (W = 2.49, SD = 0.560). Moreover, the frequency of use of emotional labor strategies in the workplace only had a slight difference between participants' interaction with students (W = 3.12, SD = 0.581) and their interaction with coworkers (W = 3.09, SD = 0.614), indicating a high level of frequency of utilization. Furthermore, the study's findings suggested that, overall, there were no significant differences in the utilization of emotional labor strategies among faculty members when they are grouped according to age, sex, number of years of experience in the field, employment status, and estimated monthly income. In line with this, the data showed that there were also no significant differences in the situational factors influencing the use of emotional labor strategies when participants are grouped with the same profile.

***Keywords**: strategies, according to age, strategies utilized*

Low-cost Portable Molecular Diagnostic Platform for Rapid Detection of Select Poultry Pathogens (LMDP) in Bicol, CALABARZON, and MIMAROPA Regions of the Philippines

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Abstract

The general aim of the project was to develop a rapid field-based molecular detection solution for identification of select economically important bacterial and viral pathogens in poultry in the Philippines; and to translate the technology for local production for use at point of care. A total of 123 samples for Newcastle disease virus (NDV), infectious bronchitis virus (IBV), infectious bursal disease virus (IBDV), Mycoplasma spp., Salmonella spp., and avian pathogenic Escherichia coli (APEC) were collected from different regions of the country. From these, a total of 2 positive samples for NDV, 14 positive samples for IBV and 6 positive samples for IBDV were successfully detected. In addition, a total of 10 Salmonella enterica isolates; 27 APEC isolates and a total of 20 positive samples for Mycoplasma gallisepticum were collected and archived. From the nucleotide sequences of the target pathogens, LAMP primers specific for genotype VII NDVs (Sensitivity = 100%; Specificity = 100%); G3 very virulent IBDVs (Sensitivity = 100%; Specificity = 100%); pan-IBV (Sensitivity = 83.20%; Specificity = 76.67%); Salmonella enterica (Sensitivity = 100%; Specificity = 100%); APEC (Sensitivity = 100%; Specificity = 26.09%); and Mycoplasma synoviae (Sensitivity = 62.25%; Specificity = 90.48%) were developed using conventional primer design software and artificial intelligence-assisted LAMP primer design protocols. Furthermore, a total of 31 Low-cost Portable Molecular Diagnostic Platform (LMDP) devices were developed. Cost analysis showed that the LMDP device is 90- 95% cheaper than conventional PCR, with a more rapid result turnover of an average 60 minutes compared to 4-8 hrs in PCR. A cross-cutting collaboration was established, and it continues to this day. This research highlighted that creation of low-cost and point-of-care devices for livestock and poultry diseases can be done, and these technologies will redound to economic benefit of the animal industry and the nation at large.

Keywords: *LAMP, low-cost portable device, pathogens, poultry*

Solar-Powered Seed Sowing Machine

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Abstract

The solar-powered seed sowing machine is an eco-friendly, cost-effective solution that automates the seed planting process, enhancing productivity while minimizing environmental impact in agriculture. Using solar energy, the machine reduces reliance on conventional power sources, promoting sustainability. The system integrates an Arduino Uno microcontroller, which acts as the command center, a Bluetooth module for wireless control, a motor driver, solar panel, charge controller, and DC motors. These components work in harmony to control the machine's movement and seed dispensing with precision, enabling remote operation and customization. The solar panel powers the system, regulated by a charge controller to ensure consistent performance even in remote, off-grid areas. By optimizing labor costs, energy usage, and sowing efficiency, this machine represents a sustainable advancement in modern agriculture, supporting eco-friendly practices and improving productivity.

Keywords*: Arduino Uno, Bluetooth module, motor driver, solar panel, eco-friendly, productivity, energy efficiency.*

Pancreatic Cancer Detectionusing Deep Learning

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Abstract

Pancreatic cancer, known for its low survival rate, poses significant challenges in early detection due to its asymptomatic nature and complex tumor morphology. Deep learning, particularly convolutional neural networks (CNNs), has shown promise in enhancing diagnostic accuracy and improving early detection in medical imaging. This study explores the application of deep learning algorithms for pancreatic cancer detection, with a focus on implementing these methods using MATLAB. The research also highlights the role of transfer learning and multimodal image fusion in improving model performance, especially in settings with limited data. MATLAB's Deep Learning Toolbox and Image Processing Toolbox are leveraged to streamline image preprocessing, feature extraction, and model training.

Keywords*: Pancreatic Cancer, Deep Learning, Convolutional Neural Networks (CNN), MATLAB, Transfer Learning, Image Segmentation.*

Synergistic Effect of Bacillus spp. and Aspergillus spp. as Biofertilizers Spray on Nutrient Uptake and Growth Enhancement in Lettuce (Lactuca sativa) and Radish (Raphanus sativus)

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Abstract

Excessive use of chemical fertilizers has resulted in soil deterioration, water pollution, and the loss of biodiversity, hence requiring eco-friendly alternatives. The concept of biofertilizer emerges as an alternative approach for improving soil fertility and agricultural productivity. The objective of this study was to isolate Phosphate Solubilizing Bacteria (PSB), Phosphate Solubilizing Fungi (PSF), and Nitrogen-Fixing Bacteria (NFB), following the development of biofertilizers sprays that offer a promising solution by improving nutrient availability and promoting plant growth through microbial interactions while minimizing chemical fertilizers dependence. Soil associated with open dump sites and compost sites in the Karadiyana was selected to isolate the PSB, PSF, and NFB strains. Genotypic identification, analysis of antagonistic effect, and nutrient solubilization efficiency were performed for each isolate. A microbial consortium was prepared to consist of four Bacillus spp. and two Aspergillus spp. and incorporated into a fertilizers spray, which was applied to the leaves of Lettuce (Lactuca sativa) and Radish (Raphanus sativus) grown in compost, coir dust, and soil medium. Plants were measured for various growth parameters after 30 days of seed germination. Growth parameters, including shoot length, root length, wet weight, dry weight, seed germination time, leaf area, leaf length, leaf width, and the number of leaves of Lettuce plants, were significantly influenced by the application of fertilizer spray compared to control pots ($p < 0.05$). Lettuce and radishes showed shoot lengths of 16.97 ± 1.35 cm and 23.23 ± 0.49 cm, root lengths of 9.27 ± 0.32 cm and 15.57 ± 1.00 cm, leaf areas of 84.10 ± 19.24 cm^2 and 87.98 ± 33.11 cm^2, and no leaves were 10.0 ± 0.58 and 8.0 ± 0.52 for lettuce leaves and radish, respectively. This study demonstrates the potential of utilizing selected Bacillus spp. and Aspergillus spp. consortia as eco-friendly biofertilizers to replace chemical fertilizers. The microbial formulations significantly improved plant growth, offering a sustainable solution for agricultural productivity.

Keywords: *Agricultural productivity, Aspergillus spp., Bacillus spp., Biofertilizer, Plant growth promotion*

Development of an Industrial Motor Controls Trainer

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Abstract

The increasing demand for highly skilled technical professionals highlights the need for innovative educational tools that effectively bridge the gap between theoretical instruction and practical application. This study aims to develop a cost-efficient, industry-aligned industrial motor control trainer designed to improve hands-on learning in technical education. The trainer integrates industry-standard components, accommodates both single-phase and three-phase power configurations, and features built-in simulated faults to facilitate troubleshooting exercises. A descriptive-developmental research methodology was employed, utilizing validated surveys to collect data from students, instructors, and licensed electrical practitioners. The findings revealed a high level of acceptability across multiple criteria, including cost-effectiveness, safety, construction quality, functionality, and educational relevance. Results indicate that the developed trainer serves as an effective instructional tool, significantly enhancing students' comprehension of motor control circuits. Based on these findings, the study recommends the implementation of the trainer in technical schools and vocational institutions, along with further enhancements such as the integration of programmable logic controllers and potential mass production to increase accessibility. This research contributes to the advancement of technical education and workforce development, aligning with Industry 4.0 standards.

Keywords: *Isabela State University, Motor Controls, SDG 4, SDG 9.*

Development of Secure Health Management System Utilizing Blockchain Technology for Encrypted Patient Data Transmission

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Abstract

This system enables the secure management of hospital data about the interactions between health providers and their patients. The health provider can create a prescription file that is embedded with a patient's ID and other essential details about their health. The file is encrypted and submitted to the radiology, pharmacy, and surgery departments. Only staff who are authorized to those departments can decrypt the file with the use of a specific key for each department. To preserve confidentiality, the prescription was AES encrypted while in transit. After decryption, the staff can change the patient details in the hospital's database and perform necessary actions. When a patient record has to be modified, SHA-256 encryption ensures that there is no unauthorized access or changes made. This approach for storing patient details provides better accuracy to the data. It is intended for those who require the information, and the various silos are secured from unpermitted users. With multiple layers, the patient details are privately protected and efficiently managed across different sections of the hospital.

Keywords: *AES Algorithm, Open source blockchain, SHA-256 Algorithm.*

Preparedness and Awareness of Students in Emergement Incidents at Plmar: Basis for A Proposed Terminate Incident Plan

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Abstract

This study investigates the perceptions as regards to level of preparedness and awareness regarding critical incidents specifically Human-induced and Natural Disaster incidents among Criminology students at Pamantasan ng Lungsod ng Marikina. The primary aim of the research was to assess whether there are significant differences in preparedness and awareness across different year levels (freshmen, sophomores, juniors, and seniors) and to propose a comprehensive incident response plan.

The study employed a simple random sampling method, with 150 participants representing each year level: 37 freshmen, 43 sophomores, 41 juniors, and 29 seniors. A proportional allocation formula was used to determine the sample size for each group. Data were gathered using an electronic survey questionnaire administered via Google Forms. To analyze the data, the researchers used a one-way analysis of variance (ANOVA) on the assessment of differences in preparedness and awareness between the year levels.

The results revealed no significant differences in the perceptions as regards to level of preparedness and awareness between freshmen, sophomores, juniors, and seniors regarding both human-induced and natural disaster incidents. These findings suggest that the level of preparedness and awareness among Criminology students at Pamantasan ng Lungsod ng Marikina is generally uniform across all year levels. Based on the results, the study proposes the development of an incident response plan that can be applied to the entire student population. Overall, the findings of this research provide valuable insights for creating preparedness programs tailored to the needs of students in higher education institutions.

Keywords: *Isabela State University, Motor Controls, SDG 4, SDG 9.*

Application of Simple Nutrient Plus Vermitea on High-Value Crops for NFT Hydroponics System under Controlled Climatic Condition

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Abstract

This study examines how a Simple Nutrient Addition Program (SNAP) combined with Vermitea affects plant growth in an NFT hydroponics system under controlled conditions. The research aimed to assess plant development, system efficiency, and financial feasibility. An experiment was conducted using different SNAP and Vermitea concentrations on lettuce plants, measuring factors like height, number of leaves, leaf length, weight per plant, and root growth. Results showed that higher concentrations (75%-100%) led to better plant growth compared to lower ones (25%-50%). The system also proved to be cost-effective, with a return on investment (ROI) ranging from 102.48% to 295.60%, while using minimal electricity. The greenhouse setup improved climate control and nutrient management, making the system more efficient. These findings highlight hydroponics as a sustainable and productive alternative to traditional farming. To further improve this system, the study suggests optimizing nutrient combinations, incorporating renewable energy sources, and expanding hydroponics education for farmers and entrepreneurs. With the right support and policies, hydroponics can become a profitable and environmentally friendly solution, contributing to sustainable agriculture and food security.

Keywords: *Hydroponics, SDG 1, SDG 9, SNAP*

Exploring Efficient Cemetery Management: Practices, Challenges, and Innovations at new Bilibid Prison Cemetery as a Basis for Improved Operational Effectiveness and Sustainable Development

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Abstract

Efficient cemetery management is crucial for ensuring operational effectiveness and sustainable development, particularly in facilities with unique challenges like the New Bilibid Prison (NBP) Cemetery. This study investigated the existing practices, and challenges, and suggested innovative strategies to be implemented at the NBP Cemetery to improve its management and operations. Employing a mixed-methods approach, data were gathered through surveys and semi-structured interviews with six personnel responsible for cemetery operations. Findings highlight the identified existing cemetery practices, the challenges faced by NBP Cemetery in terms of its operational effectiveness and sustainability and lastly, the identified innovative solutions to be implemented in addressing these challenges.

Keywords: *Cemetery Management, Challenges, Practices, Cemetery Policies, NBP Cemetery*

Job Challenges and Level of Adjustment in the Curiculum of Drafting Technology in the Advent of Curriculum Migration

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Abstract

The drafting technology sector is undergoing significant change due to rapid technological advancements and automation. This study explores the challenges faced by employees in this field and the factors influencing their adjustment to these challenges. Data was gathered from professionals across various organizations, including local government units, Sultan Kudarat State University, engineering firms, and the Department of Public Works and Highways. The sample included a notable gender imbalance, with most respondents holding bachelor's degrees and concentrated in the 31-40 age group, indicating substantial professional experience. Key challenges identified include rapid technological change, the gap between academia and industry, shifting industry demands, and competition from automation. A moderate positive correlation was found between job challenges and employee adjustment levels, indicating that increased challenges often lead to enhanced skills development. However, individual resilience, organizational support, and practical experience were found to be more critical in shaping adaptability. The study underscores the need for educational programs to cater to both experienced and early-career professionals and highlights the importance of collaboration between educational institutions and industry to keep curricula relevant. Targeted training initiatives are essential for enhancing employee capabilities, ultimately improving workforce preparedness and fostering innovation in the drafting technology field.

Keywords*: capabilities, ultimately*

Nematicidal Effect of Botanical Extracts of Moringa for the Management of Root-knot Nematode of Chilli

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Abstract

Management of root-knot nematodes is quit important to reduce yield losses in chilli (*Capsicum annuum*). Due to environmental concern; management tactics should be eco-friendly. This study aimed to identify the potential nematicidal effect of *M. oleifera* to control the *M. incognita* infestation in *C. annuum* at the field level. Varying concentrations of leaf extract per plant (1 % (T1), 10 % (T2), 25 % (T3), 50 % (T4), and 100% (T5)) were teste. The experiment arranged in a randomized complete block design (RCBD) (seven treatments with three replicates and each replicate consist of 42 plants). Negative control (T7) and the positive control (T6) were conventional chilli cultivation without treatments and treatment with commercial nematicide; *Velum prime* respectively. The treatments were done as soil application at the time of transplanting. Plant height, number of wilted plants, number of root-knot, and individual crop yields of *C. annuum* were investigated. Application of *M. oleifera* leaf extract in all tested concentrations were showed a significant difference in all tested parameters compared to control (One way Anova, $P<0.05$). Plant height in 100 % of *M. oleifera* leaf extract treatments significantly different ($p<0.05$) (70.99 cm) at 10 WAT compared to control plots (56.15 cm). Plots treated with 100 % and 50 % of *M. oleifera* leaf extract had significantly lower mean the number of wilted plants (4 and 5.67 respectively) and the control had a higher mean number of wilted plants (27). Also, the 100 % concentration of *M. oleifera* leaf extract had a significant effect on the population of *M. incognita* with the lowest mean number of root-knots (8.6) and ranked one while the control plots recorded with a higher mean number of root-knots (95.47). The yield also shows significantly higher mean values with a treatment concentration of 100 % (61.5 t/ha) and the control had the lowest yield of 22.57 t/ha. Therefore, among the *Moringa* leaf extract applied; 100 % of 50 ml of leaf extract per plant had significantly control the root-knot nematode infection and significantly improved the growth and yield of *C. annuum* plant.

***Keywords**: Moringa oleifera leaf extract, Root-knot nematodes, Meloidogyne incognita, Capsicum annuum*

Sustainability Roadblocks: Effect of Implementation Challenges on the Adoption of Circular Management Practices in Selected Manufacturing Firms in the Philippines

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Abstract

This study investigates the extent to which problems in implementing circular management practices relate to circular management adoption by manufacturing firms in the Philippines. The argument follows that circular management associated with sustainability, waste reduction, and resource efficiency is crucial for sustaining long-term business performance and decreasing the environmental footprint of businesses. Yet, the imperative and essential implementations of these practices differ among firms owing to various hindrances, which may lead to a weak adoption of sustainable practices.

Quantitative research was conducted whereby data were sourced from manufacturing firms across different industries in the Philippines. The results indicated a significant negative relationship between the problems and the adoption of circular management practices, meaning, the higher the number of problems encountered regarding high initial investment cost, lack of technological know-how, limited government support, and resistance to change- the less ability and willingness to adopt circular strategies into their operations. These finding advocates that these barriers need to be surfaced and address to enhance the adoption of circular management practices among manufacturing companies.

Moreover, the result also indicates a stronger need of policy supports, financial incentives, and capacity development initiatives for encouraging firms to overcome those challenges. Thus, this would allow manufacturing enterprises to make an effective transition toward circular management, implying sustainability in itself and market competitiveness. Future studies may find out the challenges faced by industries and government regulations in further boosting the adoption of circular economy practices in the Philippine manufacturing sector.

Keywords: *Circular management practices, adoption, implementation challenges, manufacturing firms, sustainability, Philippines.*

Social Media as a Marketing Tool: Perceptions of Entrepreneurship Students in Cavite State University- Imus Campus

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Abstract

Social media has revolutionized the marketing sector, providing companies with inexpensive means of advertising brands, interacting with consumers, and increasing sales. As future entrepreneurs, students taking an entrepreneurship degree have to learn social media marketing in depth. What they perceive about its usefulness, difficulties, and uses is unknown. This research will explore the attitudes of Cavite State University–Imus Campus students studying entrepreneurship towards social media as a marketing tool.

Descriptive-correlational design was used in the study with the assistance of quantitative and inferential statistical analysis. A survey questionnaire based on example was given to entrepreneurship students so that their demographic profile, popular social sites visited by them, appropriateness of social media advertising through audience engagement, brand awareness and popularity, conversion and influencing sales, and cost-appropriateness and affordability, along with their pros and cons, could be measured. Also, the study examined the students' confidence to apply social media marketing practices and the correlation between the application of social media and confidence. Also, the study examined whether perceptions of the efficacy of social media differed significantly as a function of demographic profile.

Studies showed that TikTok, Facebook, and Instagram were the most utilized marketing tools. Social media was found to be highly effective in increasing engagement of the audience and brand visibility but had mixed views for effectiveness in the sales conversion as well as value for money. Issues like algorithm updates, challenges in content creation, as well as online competition were observed. Statistical tests indicated that students' engagement with social media was strongly associated with their self-efficacy in using marketing strategies. Also, statistically significant differences in perceived usefulness were there based on certain demographic variables.

From the research findings, the study provides recommendations for entrepreneurship education improvement by incorporating experiential social media marketing training, workshops, and online business simulations. The study's findings can be used in preparing future entrepreneurs with the skills to tap into the full capacity of social media for business development.

Keywords: *Social Media Marketing, Audience Engagement, Brand Awareness, Sales Conversion, Digital Marketing*

Evaluation of Serianthes grandiflora Benth. as an Agroforestry Crop for Biodiversity Conservation on Hinatuan Island, Surigao, Philippines

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Abstract

Hinatuan Island in Tagana-an, Surigao Del Norte, presents a unique ultramafic ecosystem that has been transformed into lateritic soils due to surface mining for nickel extraction, posing threats to biodiversity in both coastal and marine ecosystems. This study investigated the habitats of honok (Serianthes grandiflora Benth.) to evaluate its potential as an agroforestry crop for conservation on the island. An island reconnaissance survey and vegetation assessment were conducted using a modified belt transect (1 km each) bisecting natural forest and reforestation areas. Species composition, abundance, diversity, and conservation values were determined across biophysical site conditions.

Honok trees generally grow along beach forests under type 2 climate conditions, with a mean soil pH of 7.63 and an average nickel content of 5,757 ppm. The natural forest canopy comprised 8 species, 6 genera, and 5 families, including Artocarpus blancoi (Elmer) Merr, Cordia dichotoma G. Forst, Cratoxylon celebicum Blume, Cratoxylum sumatranum (Jack) Blume, Leucaena leucocephala (Lam.) de Wit, Syzygium cumini (L.) Skeels, Syzygium brevistylum [C. B. Rob] Merr, and Ficus benjamina (L.). Serianthes grandiflora Benth. was found to be abundant, with the highest importance value of 109.53%. Generally, the plant diversity index on the island was low, with some species declared as threatened. The understory comprised nine woody and herbaceous species. Only two species were encountered in the reforestation areas, S. grandiflora and Casuarina equisetifolia L.

Overall, S. grandiflora is considered a viable agroforestry crop due to its ability to associate with beneficial N-fixing rhizobia and mycorrhizas, and lack of allelopathy, favoring nickel-rich soils. Structurally, its pinnately compound leaves allow more light penetration. It is recommended for the rehabilitation of coastal areas and the conservation of other noteworthy species on the island through agroforestry practices.

Keywords: *agroforestry potential crop, conservation values, nickel-rich soil*

The Role of Public Sector Innovations in the Competitiveness of Local Government: Evidence in the Province of Cavite, Philippines

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Abstract

The province of Cavite has been consistently in the top 5 most competitive provinces in the Philippines since 2017. It comprises 8 component cities, eight first-class municipalities, and seven municipalities under the 3rd-5th class LGU. This paper attempted to explore the factors of local competitiveness of the twenty-three local government units in the province of Cavite using the five competitiveness indicators developed by the National Competitiveness Council. The paper utilized the 6-year (2019-2024) overall competitiveness scores and the annual scores per pillar of the LGUs released by the Department of Trade and Industry. The paper applied Analysis of Variance, with post-hoc comparisons, to compare the annual competitiveness of the LGUs. In addition, correlation and regression analyses were performed to estimate the relationship between the overall score and the score per indicator/pillar. Findings show significant differences in the performance of the LGUs concerning government efficiency, infrastructure, and public sector innovation. The correlation between the overall score and the five indicators was significant. The coefficients ranged from 0.452-0.855 with p-values lower than 5%. The infrastructure and innovation pillars were strongly correlated to the overall competitiveness, with coefficients of 0.855 and 0.782, respectively. Innovation was significantly correlated with government efficiency, infrastructure, and resiliency pillars. The final regression model revealed that the four competitiveness pillars- innovation, economic dynamism, infrastructure, and resiliency were significantly related to the overall competitiveness of LGUs in the province of Cavite. The findings underscore the need for sustaining innovative actions among LGUs to enhance overall competitiveness.

Keywords: *competitiveness, innovation, local government, Cavite*

Dispositional Resilience, Cognitive Appraisal, and Academic Isolation of Adolescents During Online Classes Amidst Covid-19 Pandemic

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Abstract

This research investigated the relationship between dispositional resilience, cognitive appraisal, and academic isolation of adolescent college students during online classes amidst the COVID-19 pandemic, and the difference among variables according to demographic profile. The study tested if dispositional resilience and cognitive appraisal significantly predict academic isolation and proposed a psychological intervention program that can alleviate academic isolation. Sequential explanatory research design was employed, consolidating the data from 828 screened highly lonely first year students. Dispositional Resilience Scale, Primary and Secondary Cognitive Appraisal Scale, Academic Isolation Scale, and a semi-structured interview guide were used. Data were analyzed using non-parametric tests, and thematic analysis. Results revealed the evidence of commitment and challenge dispositional resilience, high level of cognitive appraisal and moderate level of academic isolation among students, which differed according to some demographic characteristics. Only challenge dispositional resilience, and challenge and coping cognitive appraisal can predict academic isolation. Emergence of themes self-determination for dispositional resilience, coping mechanism for cognitive appraisal, and need for social connectedness for academic isolation became evident. A psychological intervention program, adopting the Dialectic Behavioral Model by Marsha Linehan, was developed to strengthen dispositional resilience and cognitive appraisal of adolescent college students who are susceptible to academic isolation. Utilization of the program is recommended to prevent and alleviate academic isolation of students.

Keywords: *dispositional resilience, cognitive appraisal, academic isolation*

Development of Big Books using the Mother Tongue-based Multilingual Education (MTB-MLE) on Climate Change and Disaster Response

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Abstract

In 2012, the Department of Education in the Philippines implemented the use of Mother Tongue-Based Multilingual Education (MTB-MLE) in public schools, specifically in Grades 1, 2, and 3. Initially, 12 languages were used, with an additional seven languages introduced in 2013. Given the Philippines' vulnerability to natural disasters, it is crucial that children develop a strong understanding of disasters and disaster response. To address this need, the researcher developed "Big Books" designed to provide young children with an engaging and enjoyable learning experience about disasters. This study employed action research, using the Big Books as an intervention tool. The books facilitated easier communication and comprehension, enabling teachers to effectively explain disaster-related concepts to children. Consistent with previous studies, the use of Mother Tongue helped foster a sense of pride in both teachers and learners regarding their heritage, language, and culture. The Big Books were written in Ilocano and told the story of a boy named Dino, who survived various disasters, including floods, fire, volcanic eruptions, storm surges, tornadoes, typhoons, earthquakes, and landslides. In the story, Dino and his family navigate and survive these disasters through proper preparation. Observations during Big Book reading sessions revealed that children were highly engaged and delighted. They actively participated, expressing amazement when the characters in the book popped up. Based on these observations, it can be concluded that the Big Books were highly accepted by the children, particularly in the Kankanaey tribe. The reading sessions created lasting, enjoyable memories for the children, and there was a strong desire for the Big Books to be translated into other languages. Given the positive response from both children and teachers, it is recommended that more Big Books be developed, with careful consideration of their design and content to enhance the children's learning experience. Future recommendations include creating Big Books for other types of disasters, adding sound effects, registering for ISBN and copyright, translating the books into different languages, developing electronic versions, and conducting reading sessions for pre-elementary and primary school children. Further research is needed to assess the content validity and acceptability of the Big Books.

Keywords: *Kankanaey, effectively*

A Fuzzy Logic-Based Decision Support System for Academic Program Selection in Higher Education: Development and Evaluation

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Abstract

The selection of an appropriate academic program is a critical decision for students entering higher education, as it significantly influences their academic performance and career trajectory. This paper presents the development and evaluation of a fuzzy logic-based decision support system (DSS) designed to assist students in selecting optimal academic programs. The system integrates multiple data inputs, including standardized entrance exam scores and cumulative academic performance metrics, to generate personalized program recommendations. Using a Rapid Application Development (RAD) methodology, the system was designed with a modular architecture, featuring a fuzzy logic engine to handle uncertainty and imprecise data, and a web-based interface for user interaction. The system's performance was rigorously evaluated using ISO/IEC 25010 software quality standards, with results demonstrating high levels of functionality (mean score: 4.58), usability (mean score: 4.66), and reliability (mean score: 4.60). These results underscore the system's effectiveness in providing accurate, user-friendly, and reliable recommendations. The significance of this research lies in its potential to improve student decision-making, enhance academic advising processes, and reduce dropout rates by aligning students with programs that match their strengths and interests. Future work will focus on expanding the system's scope to include additional academic disciplines, integrating machine learning algorithms to enhance prediction accuracy, and conducting longitudinal studies to assess the system's long-term impact on student retention and academic success.

Keywords: *Decision support system, web-based management system, information systems.*

Correlating Job Satisfaction and Faculty Depth Analysis of Factors-Attrition: An In Affecting Instructor Retention at Colegio de Manaoag-San Juan de Letran

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Abstract

Faculty attrition is a complex phenomenon that can disrupt the continuity of educational services and compromise the icate institution's knowledge capital, impacting both institutional stability and educational quality. This study examines the intr relationship between job satisfaction and faculty attrition, focusing on various influencing factors such as professional development opportunities, recognition, workload management, administrative support, institutional policies, supervision , terpersonal relationships. Utilizing a quantitative research approach with a correlational design, data compensation, and in known organizational psychologist and-were collected through Standardized survey questionnaires by Paul E. Spector, a well researcher specializing in Job satisfaction, workplace behavior, and organizational health. One of his most notable The contributions is the Job Satisfaction Survey (JSS), a widely used tool to assess job satisfaction across various industries. distribute standardized questionnaires are d via online to faculty across basic education and college levels using google he form. The ANOVA revealed that there is a significant relationship between job satisfaction and faculty attrition, therefore t Value: 0.000006 is less than the-Crit: 3.95, while P-Value: 23.14 is greater than F-null hypothesis is rejected. Showing that F Alpha: 0.05. To support the findings from ANOVA, Pearson Coefficient indicates moderate negative relationship, indicating orrelation. The study 0.52 c-inverse relationship between variables; one increases, the other decreases with the the result of 3 years of experience–dominated faculty, with most holding Bachelor's Degrees and 1-highlights a younger, female . Satisfaction is high in areas like compensation, workload management, and institutional support, though limited career advancement and insufficient faculty development remain concerns. Key attrition factors include low compensation, lack of life balance. Addressing intrinsic and extrinsic factors through better-professional growth, heavy workload, and poor work salaries, professional growth, mentorship, and career paths is essential for retention. The correlation matrix shows varied relationships between variables, emphasizing the complexity of the issue. For future research about the applicable strategies that might help the reduce the faculty attrition for the institution.

Keywords: *Faculty Attrition, Job Satisfaction, Professional Development Opportunities, Recognition, Work Management*

Indigenous Fruits as Natural Dyeing Agent

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Abstract

Rosalinda B. Velasco Isabela State University-San Mateo The global natural dyes market is driven by the innovations in treatment plants and systems. The improvement in living standards and an increase in per capita disposable income will propel the demand for natural colorants in the global market. From the concepts, findings in related literature and studies, the IPO model was used since the study aims to determine the present status of the extracted plant dyes in terms of its acceptability. It was discovered that the only fruit dyes that are suitable in terms of acceptance are achuete and bignay, although they require a greater amount of fruit. The colored cloth for the Bignay has improved in color brightness and vitality. Even though the textiles smelt slightly sour, they were not offensive to the nose. The color brilliance and vitality of the colored fabric Atchuette (Annatto) have improved. Furthermore, the scent is neutral, and the color is a bright yellow that is color-friendly.

Keywords: Acceptability, Dyeing Agent, Fruit Dye, Indigenous fruit

Free Irrigation Service Act: The Case of Communal Irrigation System (CISs) Irrigators's Association (IAs) in the Province of Tarlac

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Abstract

This case study research analyzed the experiences of thirty (30) Communal Irrigation Systems (CISs) in the National Irrigation Administration Tarlac Irrigation Management Office (NIA Tarlac IMO). This paper examined the problems, the causes, and the CIS's experiences with the implementation of the Free Irrigation Service Act. The type of sampling that the researcher used was purposive and stratified sampling. The instruments used were an interview guide and documentary analysis. The researcher interviewed the IA Presidents of the Thirty (30) Communal Irrigation Systems that participated in the study. Based on the profile of the Irrigators' Association, findings revealed that most of the CISs of NIA Tarlac IMO were established in 1986 up to 1990, wherein 11 CISs from different municipalities were organized. In terms of the service area, the average service area of a CIS organized by NIA Tarlac IMO is approximately to have with less than 299 hectares. The problems encountered by the CISs of NIA Tarlac IMO were stated during the conduct of the research. Also, the study proposed measures that may help the NIA Tarlac IMO and CISs in responding and addressing to these problems. Presented in the study were the recommendations that may be enacted by the CISs and NIA Tarlac IMO to further improve the CISs in Tarlac Province. The researcher intended that the implementation of the FISA by the NIA together with other government supports and programs for the farmers had impacted the farmers' productivity that would contribute to the improvement of the irrigation services and agricultural productivity of the irrigators' associations.

Keywords: *Communal Irrigation System, Free Irrigation Service Act, Irrigation, National Irrigation Administration*

Enhancing Practices for Operational Strategies of Laundry Shops: A Focus in Water and Energy Conservation

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Abstract

This qualitative research study explores the operational practices of local laundry shops in the community and determining effective strategies to conserve water and energy for the sustainable small business enterprises. The study aims to assess current practices, identify challenges, and propose strategies to improve sustainability in the laundry industry. There were five informants, including owners and employees of local laundry shops were interviewed to gather insights on their operational methods, awareness of current conservation practices, and the consumption of water and energy-saving measures. Through thematic analysis, the researchers able to identify common practices and barriers in their current operational methods that affects high volume of consumptions of water and energy. Through this analysis, the researchers able to discover potential significant practices that can be applied and adapted in their laundry shops to maintain water and energy-saving practices. The researchers therefore determine these challenges like lack of awareness of environmental sustainability, financial constraints, and lack of access to modern equipment. The researchers identified key influences on the adaption of more efficient method like to highlight the need for greater awareness and more accessible technologies to optimize resource used in the laundry sectors. The study concludes by providing recommendation for adapting eco-friendly technologies, improving training or resource management and collaborating with local stakeholders to enhance operational efficiency while promoting sustainability in the local laundry industries in local community. This research contributes valuable insights into enhancing environmental sustainability of small-scale laundry businesses in rural settings.

Keywords: *Energy Efficiency, Operational Strategies, Sustainable Practices, Water Conservation.*

Evaluation of Service Delivery of Drug Abuse Treatment & Rehabilitation Centers (DATRCS) in Region III

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Abstract

Drug addiction poses a significant global public health challenge, affecting individuals, families, and communities. Drug rehabilitation centers play a vital role in facilitating recovery and reintegration into society, yet their effectiveness varies widely. This study evaluates the service delivery of Drug Abuse Treatment and Rehabilitation Centers (DATRCs) in Region III, identifying their best practices, challenges, and opportunities for the improvement of their programs and services. Using a quantitative descriptive research design, data were gathered from medical and administrative personnel, as well as patients, across two DoH-accredited Government owned rehabilitation centers. Findings reveal a generally positive assessment of rehabilitation services, with high satisfaction in the Matrix Intensive Outpatient Program (Treatment Modality), Screening and Assessment of Persons Who Use Drugs (PWUDs), and Drug Dependency Examination (DDE) for the severity of use. However, community-based rehabilitation centers received lower ratings, indicating service delivery gaps. Key challenges include insufficient employee benefits, lack of regularization, high turnover rates among personnel, and financial barriers affecting patient participation. Despite these obstacles, the study highlights notable best practices such as individualized patient-centered treatment models, holistic and evidence-based therapeutic interventions, and structured recovery programs. Addressing these challenges requires policy reforms, increased funding, and stronger community support systems to enhance rehabilitation services. Strengthening collaboration among healthcare professionals, policymakers, and social service organizations is crucial for bridging service gaps and improving accessibility. This study offers critical insights for policymakers, healthcare professionals, and community organizations striving to refine addiction treatment strategies. By tackling key challenges and reinforcing best practices, rehabilitation programs can become more effective, accessible, and sustainable—fostering healthier communities, improving recovery rates, and reducing the social and economic burden of substance abuse. Therefore, the action plan may be considered to enhance the drug rehabilitation centers in the country.

Keywords: *Community-Based Drug Rehabilitation Centers, Dangerous Drugs Board, Drug Rehabilitation Centers, Rehabilitation Programs, Treatment Approaches*

The Philippine Army's Doctrine Manual Backlogs towards an Improved Doctrine Development System

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Abstract

This study analyzed the Philippine Army's doctrine manual backlog to improve its doctrine development system. Utilizing a quantitative descriptive research design, the study assessed data from 2019 to 2023, identifying significant gaps, inefficiencies, and areas requiring enhancement in the doctrine development process. A structured questionnaire was administered to 110 respondents, including planners, writers, proponents, end-users, and stakeholders involved in the doctrine manual creation process. Results indicated an increasing trend in doctrine manual backlogs due to unmet yearly targets. While the tracking of backlogs was generally perceived as effective, strategies to minimize backlogs and corrective actions for individuals or units involved were viewed less positively. Additionally, clarity of yearly targets was highly rated, yet consistency in meeting these targets revealed significant dissatisfaction among respondents. The study further evaluated doctrine development programs, policies, processes, proponents, and writers, highlighting favorable perceptions regarding clarity and communication of policies, adequacy of program funding, and the qualifications and experience of doctrine iv proponents and writers. However, stakeholder involvement and the effectiveness of feedback mechanisms for doctrine writers received moderate ratings, indicating room for improvement. Recommendations include enhancing stakeholder engagement, adopting agile project management methodologies, and improving resource allocation and training for doctrine writers. This research underscores the necessity for strategic interventions and institutional reforms in the doctrine development process, ultimately contributing to enhanced operational readiness, efficiency, and national security for the Philippines.

Keywords: *development programs, policies, processes, proponents*

Enhancing Customer Satisfaction Through Advanced Mobile Banking: A Study in Tanza, General Trias and Trece Martires City, Cavite

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Abstract

The rapid shift from traditional banking methods to mobile banking has transformed the financial industry. This study investigates how advanced mobile banking services enhance customer satisfaction in Tanza, General Trias, and Trece Martires City, Cavite. The research evaluates key factors such as security, perceived usefulness, ease of use, cost, and reliability. A survey of 100 mobile banking users was conducted to analyze their experiences and expectations. Findings indicate that security concerns and costs negatively affect satisfaction, while ease of use, reliability, and perceived usefulness positively influence customer experience. The study recommends that banks enhance security measures, streamline transaction costs, and optimize mobile banking features to align with customer expectations and improve retention rates

Keywords: *mobile banking, customer satisfaction, security, perceived usefulness, ease of use, cost, reliability, user expectations, financial industry, customer experience.*

Applying Systems Thinking to Chicken Production and Consumption: A Circular Economy Perspective from the Philippines

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Abstract

This research applied a systems thinking approach to analyze the sustainability of the Philippine chicken industry, examining its production and consumption cycle through the lens of a circular economy. The study investigated the interconnected components of the industry, from feed production and farming practices to waste management and consumer behavior. It identified critical challenges to sustainability across environmental, economic, and social dimensions. Environmentally, the study considered resource depletion, pollution, and waste generation resulting from current industry practices. Economically, it analyzed the viability and profitability of various stakeholders throughout the value chain, from smallholder farmers to large-scale producers and retailers. Socially, the research examined issues such as access to safe and nutritious food, fair labor practices, and community impacts of chicken production and consumption. Employing systems thinking, the research aimed to move beyond linear, fragmented approaches to problem-solving and instead offered a holistic understanding of the chicken industry's complex dynamics. This framework acknowledged the interdependencies between different parts of the system and helped reveal unintended consequences of interventions that focus on isolated components. The project proposed practical, circular economy-based interventions to address the identified challenges. These included promoting sustainable and locally sourced feed alternatives, optimizing farming practices to improve animal welfare and reduce environmental impact, developing efficient waste management systems that valorize byproducts and minimize waste disposal, and educating consumers about responsible consumption patterns. The study's ultimate goal was to strengthen the resilience and long-term sustainability of the Philippine chicken industry within a circular economy framework. This involved ensuring food security, supporting livelihoods, and fostering economic development while minimizing environmental harm and promoting social well-being. By transitioning toward circularity, the research envisioned an industry that operated in harmony with ecological boundaries, contributing to a more equitable and prosperous future for all stakeholders involved. The research findings provided policymakers, industry leaders, and community members with valuable insights for promoting sustainable development within the Philippine chicken sector and beyond.

Keywords: *Circular Economy, Chicken Industry, Systems Thinking, Philippines.*

GUnify: A Comprehensive and Optimized Event Management Solution Utilizing the Deflate Compression Algorithm

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Abstract

This study focuses on the development of the GUnify Information Management System as a platform to validate the effectiveness of the Deflate compression algorithm in optimizing storage requirements for associations with limited resources. GUnify addresses the challenges of managing memberships, events, web portals, and financial reports, providing a cost-effective solution for organizations unable to procure high-end computing resources. Integrating the Deflate algorithm significantly reduces data storage and transmission costs while maintaining performance and functionality. Developed iteratively using Agile Scrum methodology, GUnify adapts to evolving organizational needs and fosters stakeholder collaboration. Its architecture includes Membership Management, Event Management, Web Portal, and Finance Management modules, enabling process automation and enhanced data integrity. The Deflate algorithm ensures efficient storage and retrieval of key data such as member profiles, event schedules, financial reports, and transaction histories. Workflow diagrams illustrate how automation reduces manual tasks and supports decision-making. Additionally, the system's software quality was rigorously evaluated using the ISO 25010 standard, ensuring compliance with criteria such as functional suitability, performance efficiency, usability, reliability, security, and maintainability. This study demonstrates that the Deflate algorithm is a viable solution for optimizing storage and operational efficiency in resource-constrained environments, making GUnify a practical and scalable tool for association management.

Keywords: *GUnify Information Management System, Membership Management, Event Management, Web Portal, Finance Management. Deflate Compression Algorithm, ISO 25010*

Blue Ocean Economy Strategy for Sustainable Development of Aurora

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Abstract

Ascertain and analyze sustainable development opportunities in Aurora Province by leveraging Philippine Rise's resources through the Blue Ocean Economy Strategy, targeting inclusive growth in marine-based sectors such as fisheries, eco-tourism, renewable energy, and marine biodiversity conservation. Sustainable Development Goals aligned, the research fosters economic, social, and environmental resilience within coastal communities by promoting sustainable practices that prioritize local and national interests. Using a ***quantitative descriptive research design***, it studies marine sector initiatives that contribute to poverty alleviation (SDG 1) supports sustainable fisheries management, directly impacting food security and livelihoods, ensuring food for local population (SDG 2) job creation, enhanced food security, support health, and well-being (SDG 3) promoting resilient ecosystems, and enhance gender equality (SDG 5) on emergent renewable energy sources to energy accessibility and sustainability in coastal economics (SDG 7) empowering women workforce. SDG 8 emphasizing decent work and economic growth by optimizing Aurora's coastal economy, supporting fair labor conditions, generating sustained income within fisheries and eco-tourism. Study addresses innovation in marine industries (SDG 9), the development of sustainable coastal cities (SDG 11), and responsible production practices (SDG 12) to ensure balanced growth. Climate action (SDG 13), marine ecosystem protection (SDG 14),terrestrial ecosystem conservation (SDG 15) is explored, governance structures and strategic partnerships essential for preserving ecosystem health and resilience. Supporting clean energy (SDG 7), reducing inequalities (SDG 10),fostering industry and infrastructure (SDG 9), research illustrates how Aurora's Blue Economy achieve sustainable, inclusive growth. It concludes recommendations for partnerships (SDG 17) that enhance regulatory frameworks, promote environmental stewardship, advance economic and social equity in alignment with the SDGs. This study creates a strategic blueprint for sustainable resource management in Aurora and Philippine Rise, promoting long-term prosperity that is both economically inclusive and ecologically responsible.

Keywords: *blue ocean economy strategy, Philippine Rise, sustainable development goals, Aurora Province*

Analysis of Environmental Literacy and Sustainable Development Goals (SDGs) Competence Among Community Leaders: Bases for Technology-Assisted Module for Green Management Advocates

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Abstract

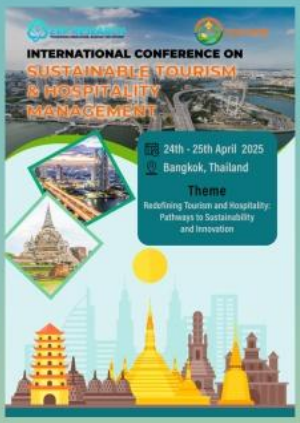
This study assessed the environmental literacy and Sustainable Development Goal (SDG) competence of community leaders in Aklan to develop a Technology-Assisted Green Management Module aimed at enhancing sustainability leadership. The study utilized the ADDIE Model (Analysis, Design, Development, Implementation, and Evaluation) to systematically address research objectives and evaluate the effectiveness of the intervention. The Analysis phase involved conducting surveys, Focus Group Discussions (FGDs), and In-Depth Interviews (IDIs) to examine the environmental literacy and SDG competence of community leaders. The study analyzed demographic factors such as age, gender, and geographical location, revealing disparities in engagement and leadership capabilities. Thematic analysis was used to identify key themes related to the environmental challenges and leadership gaps in sustainable practices. The triangulation of quantitative and qualitative data enhanced the reliability of the findings by combining statistical trends with deeper insights into the leaders' environmental practices and sustainability initiatives. The Needs Analysis identified significant gaps in environmental literacy, SDG competence, and green management skills. The analysis revealed that although leaders demonstrated some level of awareness, practical application of sustainability practices was weak. Younger and marginalized leaders exhibited a need for tailored interventions that addressed both their leadership training and resource constraints. In the Design phase, the KAP Framework (Knowledge, Attitudes, Practices) was applied to develop the Technology-Assisted Green Management Module, which sought to fill the identified knowledge gaps, influence attitudes toward sustainability, and improve practical environmental management skills. The Development phase involved a Quality Assurance (QA) process, during which experts in environmental education and technology-based learning refined the module's content to ensure cultural relevance, adaptability, and scalability across different communities. The Implementation phase utilized pre-tests and post-tests, alongside module deployment through a Facebook page and capacity-building seminars, to evaluate the impact on participants' knowledge and behavior. Statistical analysis of the pre- and post-test results showed a significant improvement in participants' environmental knowledge, attitudes, and sustainability practices. The Evaluation phase involved collecting feedback through surveys, observations, and interviews to assess the module's

usability, effectiveness, and relevance. Despite its positive impact, the evaluation highlighted the need for improvements in emotional engagement, digital interactivity, and platform optimization, especially for younger and marginalized groups. The study found a strong positive correlation between environmental literacy and SDG competence, suggesting that enhancing environmental literacy can directly improve leaders' abilities to implement SDGs effectively. Based on these findings, the study recommended that government agencies, NGOs, educational institutions, community leaders, and technology developers collaborate to strengthen sustainability education, integrate SDGs into local policies, and promote inclusive leadership training. The multi-stakeholder approach is crucial to ensuring long-term environmental resilience and policy integration. This research underscores the critical role of digital learning tools in fostering environmental literacy and leadership, positioning the Technology-Assisted Green Management Module as a scalable model for community-based sustainability education.

Keywords: *abilities to implement SDGs effectively, scalability across*

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