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"Pioneering Innovation, Shaping the Future"

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Advancing Knowledge Through Interdisciplinary Research and Innovation

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Acknowledgement

ZEP Research is hosting the 4th International Conference on Engineering, Management and Social Sciences (4th ICEMSS-26) at SONIC CITY ソニックシティ 〒330-0854 Saitama, Omiya Ward, Sakuragicho, 1 Chome−7−5, Tokyo, Japan on 04th - 05th November, 2026. 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,

It is with great pleasure that we present the proceedings of the 4th International Conference on Engineering, Management, and Social Sciences (4th ICEMSS-2026), held on 04th –05th November 2026 in a hybrid format in Japan.

The conference provided a dynamic platform for scholars, researchers, academicians, and professionals from different parts of the world to exchange knowledge, present their research findings, engage in meaningful discussions, and explore innovative solutions to contemporary global challenges.

The theme of this year's conference, "Integrating Engineering, Management, and Social Sciences for a Sustainable Future," highlights the importance of interdisciplinary collaboration in addressing complex societal, technological, economic, and environmental challenges. By bringing together diverse perspectives and research contributions, 4th ICEMSS-2026 aimed to encourage innovation, promote sustainable development, and strengthen international academic collaboration.

This proceedings volume brings together a collection of research papers covering various aspects of engineering, management, and social sciences. Each contribution reflects the dedication of researchers and their commitment to advancing knowledge, addressing emerging challenges, and creating meaningful impacts across academic and professional communities.

We extend our sincere gratitude to all the authors, presenters, keynote speakers, session chairs, reviewers, and participants whose valuable contributions made ICEMSS-2026 a meaningful academic gathering. We also express our appreciation to the organizing committee, ZEP Research, and our academic collaborators and institutional partners for their continued support and cooperation.

We sincerely hope that this proceedings volume will serve as a valuable academic resource, inspire further research, encourage international collaborations, and contribute to the advancement of knowledge and

sustainable societal development.

Warm Regards,



Ken'ichiro Higuchi
Organizing Secretary
4th ICEMSS-2026

Preface

ZEP Research is hosting the 4th International Conference on Engineering, Management, and Social Sciences (4th ICEMSS-2026) on 04th –05th November 2026 in Japan. This edition of the conference will be held in Japan in a hybrid format (onsite and online) to provide convenient participation opportunities for attendees from across the globe.

It is our pleasure to welcome Dr. Joseph Berlin P. Juanzon, PhD; Prof. Charisma Samparani Ututalum; Dr. Elenita M. Tiamzon; Dr. Chai Ching Tan; Kristian Paul M. Lazo, EdD; Dr. Tao Ke; Dr. Alexander Bull; and Prof. Ken'ichiro Higuchi as our distinguished Keynote Speakers. Their valuable expertise, academic contributions, and insights will enrich the conference through keynote addresses and interactive academic discussions.

The ICEMSS-2026 conference aims to establish a collaborative platform for exploring new dimensions in research and encouraging interdisciplinary knowledge exchange. It is designed to facilitate meaningful discussions on the challenges and opportunities involved in the practical application of emerging knowledge across Management, Education, Social Sciences, Applied Sciences, Engineering, and Technology.

This conference serves as an important platform for researchers, academicians, practitioners, and industry professionals to exchange ideas, share research findings, and establish academic collaborations. Through keynote presentations, technical sessions, panel discussions, and interactive academic exchanges, we aim to explore recent developments, innovative approaches, emerging trends, and ethical considerations across diverse fields.

We are honoured to welcome distinguished experts and enthusiastic participants from different countries, each contributing unique perspectives, experiences, and expertise to this international academic gathering.

We extend our heartfelt gratitude to all participants, authors, keynote speakers, session chairs, reviewers, academic collaborators, and organizers whose dedication and valuable contributions have made this event possible.

Let us embark on this journey of discovery, innovation, and collaboration.

Welcome to the International Conference on Engineering, Management and Social Sciences.

4th International Conference on Engineering, Management and Social Sciences

04th - 05th November, 2026

Tokyo, Japan

Organizer's Message



Mrs. Priyanka Sahu
Founder
ZEP Research, India

Dear All,

It is with great pleasure that we present the proceedings of the 4th International Conference on Engineering, Management, and Social Sciences (ICEMSS-2026), held on 4th–5th November 2026 in Japan. This compilation of scholarly contributions represents the collective efforts of researchers, academicians, industry experts, and practitioners dedicated to advancing knowledge and fostering innovation in their respective fields.

The 4th ICEMSS-2026 served as a platform for intellectual exchange, interdisciplinary discussions, and the dissemination of pioneering research bridging the domains of engineering, management, and social sciences. The papers included in this volume reflect a broad spectrum of research studies, innovative methodologies, and practical applications aimed at addressing contemporary global challenges.

With the theme "Integrating Engineering, Management, and Social Sciences for a Sustainable Future," the conference emphasized the importance of interdisciplinary approaches, international academic collaboration, and innovative thinking in promoting sustainable development and societal progress.

We extend our sincere gratitude to all the authors, reviewers, keynote speakers, session chairs, and participants for their invaluable contributions. Special appreciation is extended to ZEP Research, our academic collaborators,

institutional partners, organizing committee, technical team, and advisory members for their unwavering dedication and support in making this conference a success.

As we move forward, we hope that the insights and discoveries shared in this proceedings volume will inspire further research, strengthen international collaborations, and encourage meaningful advancements across disciplines. We look forward to continuing this journey of academic excellence, knowledge sharing, and innovation in future editions of ICEMSS

Priyanka Sahu

Mrs. Priyanka Sahu
Founder, ZEP Research, India

Keynote Speaker



Dr. Chai Ching Tan
Professor
NIDA, Thailand

Message

I am pleased to join the 4th International Conference on Engineering, Management and Social Sciences (ICEMSS 2026) in Tokyo, Japan. I extend my warmest congratulations to the organizers and sincerely welcome all distinguished scholars, researchers, and participants.

This conference provides a timely opportunity to strengthen interdisciplinary dialogue, exchange fresh perspectives, and explore how knowledge across engineering, management, and social sciences can collectively address emerging global challenges.

I particularly value the opportunity to engage with colleagues from diverse academic and cultural backgrounds, whose experiences and insights can inspire new research directions and meaningful collaborations.

May ICEMSS 2026 be a rewarding gathering of minds, fostering lasting academic partnerships and transforming shared knowledge into innovation and positive societal impact.

Warm Regards,

Professor Chai Ching Tan
Keynote Speaker
4th ICEMSS- 2026



Dr. Tao Ke
Director of the Continuing Education Center
Guangxi University
School of Arts, China

Message

It is a distinct pleasure to participate in the 4th International Conference on Engineering, Management and Social Sciences (ICEMSS 2026) in Tokyo, Japan. I sincerely appreciate the organizers' efforts in bringing together scholars and practitioners from diverse disciplines and cultural backgrounds.

As a researcher and practitioner in arts and design, I particularly welcome this opportunity to explore how artistic creativity, cultural understanding, and design thinking can enrich interdisciplinary research and innovation.

I believe this conference will encourage meaningful exchanges between the arts, engineering, management, and social sciences, opening new possibilities for culturally meaningful, human-centered, and sustainable development.

I look forward to sharing perspectives, learning from fellow participants, and developing new academic friendships and collaborations. May ICEMSS 2026 inspire creative thinking, mutual understanding, and lasting international partnerships.

Warm Regards,

Dr. Tao Ke
Keynote Speaker
4th ICEMSS- 2026



Dr. Elenita M. Tiamzon
Professor
University of Marikina (Pamantasn ng Lungsod ng Marikina)
Philippines

Message

It is a privilege to be a keynote speaker at this intersection of **Engineering, Management, and Social Sciences**.

We live in an era where technology moves faster than ever, but technology alone is not enough. True innovation happens when engineering precision meets strategic management and is guided by a deep understanding of human behavior and social impact.

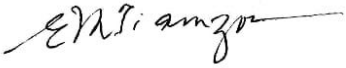
As researchers, innovators, and leaders, our goal is not just to build smarter systems or optimize industries, but to ensure that our advancements create a more sustainable, equitable, and human-centric world.

I believe that ICEMSS-26 will provide a platform for an excellent international conference and provides lot of benefits to the participants in discussing the latest findings on Engineering, Management and Social Sciences.

In the next few days, I challenge you to look beyond your specific disciplines, collaborate, and discover how your work can bridge the gap between technical capability and societal progress.

Thank you and I look forward to an inspiring conference.

Welcome to all the participants.



Dr. Elenita M. Tiamzon
Keynote Speaker
4th ICEMSS- 2026



Kristian Paul M. Lazo, EdD
President & Chairman
Asia-Pacific Society of Educators, Researchers, and Professionals, Inc.
Philippines

Message

It is a great honor to extend my warmest greetings to all participants, researchers, professionals, and distinguished guests of the ICEMSS-26.

This conference represents more than an academic gathering. It is a meeting of minds, disciplines, and perspectives united by a shared commitment to advancing knowledge and creating meaningful solutions for an ever-changing world. The convergence of engineering, management, and social science reminds us that meaningful progress is achieved not in isolation, but through collaboration and the exchange of ideas.

My sincere appreciation goes to Zep Research, the Asia-Pacific Society of Educators, Researchers, and Professionals, Inc. (APSERP) for bringing together this international community of scholars and practitioners. Your collective efforts have created a valuable platform where research can cross borders, disciplines can intersect, and ideas can be transformed into action.

To all our participants, may your contributions inspire new partnerships, challenge conventional thinking, and generate research that makes a lasting difference in our institutions, communities, and society.

As we gather in Tokyo, may ICEMSS 2026 remind us that the true measure of knowledge is not simply what we discover, but what we do with what we

discover.

May this conference be a celebration of collaboration, innovation, and shared purpose—and a meaningful step toward building a more sustainable, inclusive, and human-centered future.

Welcome to 04th ICEMSS 2026, and may our ideas today become the impact of tomorrow.

Warm Regards,



Kristian Paul M. Lazo, EdD
Keynote Speaker
4th ICEMSS- 2026



Prof. Charisma Samparani Ututalum
President
Sullu State University, Philippines

Message

It is a distinct honor to be part of the 4th International Conference on Engineering, Management and Social Sciences (ICEMSS 2026), an international platform that brings together scholars, researchers, and professionals in advancing knowledge, fostering innovation, and addressing the complex challenges of our time.

In an increasingly interconnected world, the pursuit of knowledge must transcend institutional and geographical boundaries. Higher education institutions have a vital responsibility not only to generate knowledge but also to translate research and innovation into meaningful solutions that advance human development, strengthen communities, and promote a more sustainable and inclusive future. Through interdisciplinary collaboration and the exchange of diverse perspectives, we can transform ideas into initiatives that create lasting impact. At Sulu State University, we remain committed to advancing academic excellence, strengthening research and innovation, and fostering meaningful partnerships that contribute to local development and global progress. We believe that universities can make their greatest contribution when they connect intellectual inquiry with the needs of society and ensure that the benefits of education and research reach beyond the confines of the academe. May ICEMSS 2026 serve as a catalyst for new discoveries, enduring partnerships, and transformative ideas. May our collective pursuit of knowledge inspire us to build a future where innovation is purposeful, leadership is responsible, and progress is shared by all.

I extend my sincere appreciation to the organizers, distinguished speakers, researchers, and participants whose contributions make this gathering a

meaningful celebration of intellectual collaboration. May this conference be both a testament to what we have achieved and an inspiration for what we can accomplish together.

Warm Regards,



Prof. Charisma Samparani Ututalum
Keynote Speaker
4th ICEMSS- 2026



Joseph Berlin P. Juanzon, PhD
Professor
College of Engineering, Pamantasan ng Lungsod ng Maynila
Philippines

Message

It is both a profound honor and a meaningful responsibility to join the 4th International Conference on Engineering, Management, and Social Science (ICEMSS 2026) as a Keynote Speaker. I extend my sincere appreciation to the organizers for creating a global platform that
brings together visionary thinkers, innovators, and leaders united by a shared commitment to shaping a more sustainable and resilient future.

We stand at a crucial moment in human history. The challenges of climate change, environmental degradation, and rapid urban transformation call upon engineers to rise beyond conventional roles and become architects of sustainable progress. Engineering is no longer
defined solely by technical achievement, but by its capacity to harmonize innovation with environmental stewardship, societal well-being, and long-term global resilience.
Sustainable and green engineering represents more than a technical discipline—it is a mission.

It challenges us to design infrastructure that preserves our planet, to develop systems that strengthen communities, and to lead with foresight, responsibility, and purpose. Through the integration of engineering excellence, systems thinking, and responsible management, we have
the opportunity to transform today's challenges into pathways for sustainable growth and shared prosperity.

This conference symbolizes the power of international collaboration and collective vision. By bringing together diverse expertise and perspectives, we strengthen our ability to create meaningful solutions that transcend borders and generations. The ideas exchanged here will
not only advance knowledge, but also inspire action and leadership in building a more sustainable world.

I am deeply honored to be part of this distinguished gathering and look forward to contributing to the dialogue that will help engineer sustainable futures for humanity.

Warm Regards,



Joseph Berlin P. Juanzon, PhD
Keynote Speaker
4th ICEMSS- 2026



Prof. Dr. Alexander Bull
Professor
DGUV University of Applied Sciences
Germany

Message

It is a privilege to be a keynote speaker at the 4th International Conference on Engineering, Management and Social Sciences, contributing to meaningful discussions on current challenges and future opportunities.

Best regards and looking forward to the Conference in Tokyo.



Prof. Dr. Alexander Bull
Keynote Speaker
4th ICEMSS- 2026

Organizing Secretary



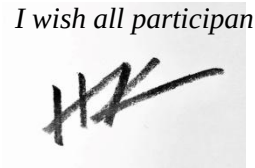
Ken'ichiro Higuchi
Professor
Sugiyama Jogakuen University, Japan

Message

It is my pleasure to welcome researchers and professionals from around the world to the 4th International Conference on Engineering, Management and Social Sciences (ICEMSS 2026) in Tokyo, Japan.

As Organizing Secretary, I hope this conference will provide a valuable opportunity for meaningful dialogue across disciplinary and national boundaries, the exchange of diverse perspectives, and the development of lasting international research collaborations.

I wish all participants a productive and rewarding conference.



Ken'ichiro Higuchi
Keynote Speaker
4th ICEMSS-2026

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ABSTRACTS

Structural Concrete from Recycled Aggregates: Systematic Review of Material Performance and Mix Design Strategies

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Abstract

The growing environmental burden of cement production and construction and demolition waste (CDW) has intensified the search for sustainable alternatives in the construction industry. Cement manufacturing places 5%-8% of the total world carbon dioxide emission and more than 12.7 billion tonnes of building and demolition waste produced within the construction industry each year. Recycled concrete aggregate (RCA) has emerged as a promising solution within the circular economy paradigm; however, its adoption in structural concrete remains constrained by performance uncertainties and variability in material properties. This study presents a PRISMA-compliant systematic review of RCA-based structural concrete, focusing on material performance, mix design strategies, and optimization techniques.

A total of 21,273 records were identified and screened across major databases, resulting in a curated dataset of over 2,140 mix designs and 277 experimental cases. The review critically examines the physical, mechanical, and durability characteristics of RCA, with particular emphasis on the role of supplementary cementitious materials (SCMs) in enhancing performance through microstructural modification. Furthermore, the integration of data-driven approaches, including machine learning, is evaluated as a means of optimizing mix design and reducing experimental uncertainty.

The findings indicate that while untreated RCA exhibits high water absorption and reduced density, appropriate mix design adjustments and SCM incorporation can enable structural-grade concrete. Un-treated RCA requires ≤30% substitution without SCMs while binary and ternary SCM blends (fly ash, silica fume, metakaolin, GGBS) at 15-25% mass of the binder attain 30-90 MPa as water absorption drops to 4-8%. Chloride resistance is enhanced but shrinkage and creep continue to be issues above 50% RCA. However, significant gaps remain in long-term durability assessment and the integration of environmental and economic evaluation frameworks. This study contributes a comprehensive synthesis of current knowledge and proposes pathways for advancing RCA-based structural concrete toward large-scale, sustainable implementation. Moreover, the focus of future work should be on machine learning mix optimization and policy development towards adoption of the circular economy.

***Keywords**: Construction and Demolition Waste, Machine Learning, Recycled Concrete Aggregate, Supplementary Cementitious Materials.*

Public Administration in Agriculture: Foreign Experience and Development Prospects in Azerbaijan

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Abstract

As a key sector of the economy, the agricultural sector has been able to maintain its position at the global, regional and global levels. The stability of this position justified the need to address the problems of population growth, climate change, and food security. Problem solving should be carried out with acceptance at the national and global levels. To this end, countries strive to create favorable conditions for the activities of government agencies, global associations, agencies and specialized groups in this field. Economic, regulatory, administrative, organizational and technical methods are used to implement the theoretical tasks of public administration in the agricultural sector. The article identifies current challenges (climate risks, price disparity, staff outflow, digital divide) and management issues. To this end, countries strive to create favorable conditions for the activities of government agencies, global associations, agencies and specialized groups in this field. Economic, regulatory, administrative, organizational and technical methods are used to implement the theoretical tasks of public administration in the agricultural sector. The article identifies current challenges (climate risks, price disparity, staff outflow, digital divide) and management issues. Effective public administration of the agricultural sector is the creation of an ecosystem, and the state should become a "platform": provide data, infrastructure, science and reduce risks. Based on the international experience of some countries of the world, some practical recommendations are given: the creation of an "Azerbaijani AgriTech Hub" based on the model of the Netherlands on the basis of Ganja Agrotechnology Park, the effective use of subsidies by the state not on a hectare of area, but on the results of harvesting, the provision of a state order for the selection of drought-resistant plants, the creation of an "electronic agronomist" on a single digital For example, the promotion of cooperatives through the Ziraat-Bank model based on the experience of Turkey. It has been revealed that Azerbaijan's main priority is to reduce crop losses during harvesting and create the “Made in Karabakh” brand using the TIM Agency's experience in Turkey.

Keywords*: Agricultural Sector, Government Regulation, Foreign Experience, Development Prospects.*

Development of Culturally Responsive Digital History Modules: An ADDIE Model-Based Study of the History of the Padri War in Indonesia

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Abstract

The integration of local cultural values into digital history learning provides an opportunity to develop more contextual, meaningful, and culturally responsive learning experiences for students. This study aimed to develop an ABS-SBK-based digital e-module on the Padri War and to examine its feasibility, practicality, and effectiveness in improving high school students' understanding of local history. This research employed a Research and Development (R&D) approach using the ADDIE development model, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. The developed e-module presents the history of the Padri War, including its background, historical figures, conflicts, consequences, and reconciliation, while integrating the Minangkabau cultural philosophy of *Adat Basandi Syara', Syara' Basandi Kitabullah* (ABS-SBK). The e-module was also supported by multimedia elements, including historical illustrations, videos, audio, interactive activities, and reflective quizzes. The product was validated by material and media experts and subsequently tested with history teachers and high school students in West Sumatra. The results showed that the e-module achieved a material validation score of 96% and a media validation score of 92%, indicating a high level of feasibility. Practicality testing also produced very positive responses, with an average student score of 90%. Furthermore, students' mean achievement increased from 64.6 on the pre-test to 86.1 on the post-test, representing a 33.3% increase. The Wilcoxon test demonstrated a statistically significant difference between pre-test and post-test scores ($p < 0.001$), while the N-Gain score of 0.59 indicated a moderate level of improvement. These findings suggest that integrating local cultural values into digital history materials can support students' understanding of local history while providing a contextual and interactive learning resource for history education.

Keywords: *digital history learning; local history; ABS-SBK; Padri War; e-module; cultural values; history education.*

Climate Change and ESG-Based Sustainability Assessment of the Building Sector in Mongolia

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Abstract

The building sector is increasingly exposed to the impacts of climate change while simultaneously contributing to energy consumption, material use, and greenhouse gas emissions. In Mongolia, where severe winters, rapid urbanization, and high heating demand create significant environmental and operational challenges, integrating environmental, social, and governance (ESG) principles into building-sector decision-making is becoming increasingly important. This study aims to develop an ESG-based framework for assessing sustainability and climate resilience in Mongolian buildings. The research applies a qualitative and analytical approach by reviewing climate-change impacts, building energy and material considerations, occupational and social factors, and governance practices relevant to the construction sector. Environmental indicators include energy efficiency, greenhouse-gas emissions, heating performance, material efficiency, waste management, and the potential use of renewable energy. Social indicators focus on occupational health and safety, indoor environmental quality, accessibility, and user well-being. Governance indicators address procurement transparency, regulatory compliance, accountability, risk management, and stakeholder participation. The proposed framework links these indicators with climate-resilience objectives and sustainable development principles, providing a structured basis for evaluating building performance beyond conventional economic criteria. The study indicates that an integrated ESG approach can improve resource efficiency, reduce climate-related risks, strengthen social responsibility, and support more transparent governance in the construction sector. It also supports evidence-based prioritization of renovation, energy-saving investments, and long-term operational improvements under Mongolia's conditions. The framework is intended to provide a practical foundation for policymakers, construction organizations, educational institutions, and building managers seeking to align building development with climate adaptation, mitigation, and sustainable development goals in Mongolia.

***Keywords**: Climate Change; ESG; Sustainable Buildings; Energy Efficiency; Mongolia*

Consultative Decoupling: Participatory Governance and Procedural Trust in a Tropical Secondary City

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Abstract

Secondary cities in the tropical Global South face accelerating urbanisation, climate exposure, infrastructure deficits, and governance constraints. In this setting, the central participation problem is not always the absence of consultation. More often, participation is formally recognised, procedurally performed, and publicly visible, yet remains weakly connected to agenda-setting, feedback closure, shared decision-making, co-design, and co-governance. This paper develops the concept of consultative

Decoupling to explain this governance condition. Using Digos City in the southern Philippines as a case, the study undertakes a distinct secondary analysis of a broader mixed-methods urban foresight project. The analysis draws on key informant interviews, focus group and Causal Layered Analysis outputs from government, business, academe, and community sectors, and a cleaned survey dataset (N = 497) derived from a broader pool of 552 returned responses. The quantitative analysis focuses on procedural governance indicators, including policy consistency, transparent decision-making, collaborative leadership, community involvement, citizen feedback, inclusion, regulatory credibility, and dispute resolution fairness. Findings show that participation in Digos is visible and recognised through public hearings, barangay-level inputs, civil society participation, and inter-office coordination. However, these mechanisms do not consistently mature into shared influence. Survey results show generally favourable perceptions of procedural governance, but with weaker scores on inclusive and transparent decision-making, citizen feedback platforms, and dispute resolution fairness. Sectoral comparison further indicates that industry respondents rated procedural governance lower than government, academe, and community respondents.

The paper argues that procedural trust in secondary-city governance depends less on the existence of consultation events and more on institutional mechanisms that close the loop between voice, decision, implementation, and public accountability. The paper contributes to urban policy and planning by specifying consultative decoupling as a mechanism through which secondary cities may perform participation while leaving shared authority under-institutionalised.

Keywords: *Participatory governance; procedural trust; secondary cities; urban planning; co-governance; Philippines; public participation*

Development of an Interactive Puzzle Storybook to Enhance Resilience to Bullying among Children Aged 4–6 Years at TK Aisyiyah Tempurrejo, Ngawi, East Java, Indonesia

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Abstract

Bullying in early childhood can undermine children's social-emotional development and place them in situations that require the ability to recognize problems, regulate emotions, make appropriate decisions, and seek support. Previous research on bullying in early childhood education has primarily emphasized bullying recognition, prevention, and the development of prosocial behavior, while less attention has been given to instructional media specifically designed to foster children's resilience in responding to bullying through active and play-based learning experiences. In addition, existing story-based media for social-emotional learning tend to rely on storytelling and discussion, with limited integration of interactive puzzle activities that allow young children to explore and practice appropriate responses to challenging social situations. This study aimed to develop an interactive puzzle storybook to enhance the resilience of children aged 4–6 years in responding to bullying at TK Aisyiyah Tempurrejo, Ngawi, East Java, Indonesia. The study employed a research and development approach using the ADDIE model, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. The analysis stage identified children's learning needs, developmental characteristics, and bullying-related challenges; the design and development stages focused on developing the interactive puzzle storybook; the implementation stage involved product trials; and the evaluation stage assessed the feasibility and effectiveness of the developed media. Data were collected through observations, interviews, documentation, and expert and child assessment instruments and were analyzed descriptively according to the objectives of each development stage. The resulting product integrates developmentally appropriate narratives depicting social situations with interactive puzzles that encourage children to recognize bullying, identify emotions, select safe and adaptive responses, and identify sources of support. The findings indicate that the interactive puzzle storybook met the established feasibility criteria and can be used as an instructional medium to support the development of children's resilience in responding to bullying. The novelty of this study lies in integrating storytelling, interactive puzzles, social decision-making, and resilience-building within a single developmentally appropriate learning medium for children aged 4–6 years. The developed media provides an alternative play-based approach through which young children can explore and practice adaptive responses to bullying in contextual, active,

and meaningful learning experiences.

Keywords: *early childhood; resilience; bullying; interactive storybook; puzzle-based learning; ADDIE.*

Challenges of Teaching English to Young Learners in Border Context: A Comparison Between Teachers with and without English Education Background

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Abstract

Teaching English to Young Learners (TEYL) in border context remains a significant challenge due to limited educational resources, restricted English exposure, and unequal access to qualified teachers. This project focuses on the challenges of English teaching in primary schools in Kefamenanu, a border area near Timor-Leste, by comparing teachers with and without an English education background. The project aims to identify the challenges faced by teachers, examine differences in teaching practices, and propose practical solutions for TEYL in low-resource contexts.

The project was informed by interviews with two primary school teachers representing different educational backgrounds. The findings reveal that teachers with an English education background tend to implement more communicative and interactive learning activities, while teachers without such a background rely more on repetition, memorization, and imitation. However, both teachers experience similar contextual challenges, including limited professional development opportunities, inadequate learning resources, minimal English exposure outside school, and students' socioeconomic constraints. These factors significantly influence the quality of English learning experiences for young learners.

Based on these findings, several practical solutions are proposed, including context-sensitive TEYL training, teacher collaboration and peer mentoring, the use of low-cost teaching resources, and the development of motivating classroom environments. This project contributes to a deeper understanding of TEYL practices in border contexts and highlights the importance of addressing both teacher competence and contextual inequalities to improve English learning opportunities for young learners.

***Keywords**: border context, English teacher competence, low-resource contexts, Teaching English to Young Learners (TEYL), young learners*

Some Issues in The Theory of Policy for Disaster Risk

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Abstract

In the field of strengthening national disaster risk management capacity and disaster risk reduction, the "National Program for Strengthening Disaster Management Capacity (2015-2025)", "National Program for Community-Based Disaster Risk Reduction (2015-2025)", and "Medium-Term Strategy for Implementing the Sendai Framework for Disaster Risk Reduction in Mongolia (2017-2025)" have been adopted and implemented, defining the policy and strategy for disaster management activities, and have contributed to ensuring the security and sustainable development of the country.

With the development of any country, it is becoming a pressing issue to create a scientific method for developing disaster management policy documents that create realistic conditions for reducing disaster risk, preventing disasters, and taking prompt response measures, starting from organizational policies and objectives to government policies.

When evaluating the implementation of disaster risk management policies, it is evident that disaster risk management policies have had varying effects on these six indicators: the impact of disaster risk management policies on socio-economic development, the impact of disaster risk management systems, the impact of disaster risk management activities on the legal environment, the impact of disaster risk reduction activities, the impact of disaster risk management information and communication technologies, and the impact of disaster risk management forces. This shows that disaster risk management policies have had varying effects on these six indicators.

The study results indicate that appropriate reforms are needed in disaster management policies aimed at ensuring the country's sustainable development

***Keywords**: Disaster risk, systems theory, security, sustainable development, capacity*

Assessing and Managing Compound Dzud Risk in Mongolia: A Multilevel Framework for Livestock and Pastoral Livelihood Resilience

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Abstract

Dzud is a recurrent severe winter disaster in Mongolia that occurs when extreme cold, heavy snow, ice cover, drought-related pasture degradation, or combinations of these conditions reduce livestock access to forage and water and result in substantial livestock mortality and livelihood losses. Although previous studies have examined the climatic drivers, household vulnerability, pastoral adaptation, and socioeconomic consequences of dzud, there remains a need for an integrated risk management approach that connects hazard, exposure, vulnerability, adaptive capacity, and risk treatment across multiple governance levels.

This study aims to develop a multilevel framework for assessing and managing dzud risk in Mongolia by integrating disaster risk management theory with empirical evidence from major dzud events. The study uses a comparative descriptive approach based on livestock mortality data from the 2000–2002, 2009–2010, and 2023–2024 dzud periods and the 2024 dzud risk assessment conducted across 21 Mongolian provinces. Risk is conceptualized through four dimensions: hazard, exposure, vulnerability, and capacity. The study further categorizes risk treatment into three complementary mechanisms: risk reduction and prevention, risk transfer, and coping and resilience strengthening.

The comparative results show substantial variation in the spatial distribution of livestock mortality across the three major dzud periods. In the 2023–2024 event, the number of soums with livestock mortality below 5% increased to 158, while 54 soums recorded mortality above 20%. The 2024 provincial risk assessment produced an average risk score of 8.04, with particularly high assessed risk in Sukhbaatar, Zavkhan, Arkhangai. These areas were characterized in the underlying assessment by relatively high hazard and vulnerability and comparatively weak capacity.

Based on these findings, the study proposes a multilevel dzud risk management framework operating at national, provincial, soum, and herder-household levels. The framework emphasizes anticipatory risk reduction, financial and institutional risk transfer, and long-term adaptive capacity and livelihood resilience. The study contributes to disaster risk management literature by connecting dzud risk assessment with differentiated risk treatment and by emphasizing that effective dzud management requires a shift from predominantly response-oriented interventions toward integrated, anticipatory, and multilevel risk governance.

Keywords: *Disaster risk, zud, risk management, resilience; climate change.*

Reducing Speaking Anxiety among Genuine Beginner Adult Learners through Interactive Instructional Strategies

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Abstract

Speaking anxiety can be a significant barrier for adult beginners who are learning English from the very beginning. Limited vocabulary, unfamiliarity with English, and fear of making mistakes may discourage learners from participating in speaking activities and communicating with others. Based on the researcher's approximately seven years of direct teaching experience in an intensive English learning environment, these challenges have been frequently observed among genuine beginner adult learners. This study therefore aims to investigate instructional strategies that may help reduce speaking anxiety and encourage greater participation among beginner adult learners. A qualitative case study design will be employed, with data collected through direct classroom observations, semi-structured interviews with beginner learners, and tutor reflection logs. The study will focus on interactive instructional strategies, particularly game-based speaking activities and small-group discussions, as potential approaches to creating a supportive and low-anxiety learning environment. It will examine how learners respond to these activities, how they perceive speaking-related anxiety, and how collaborative practice influences their willingness to communicate. The findings are expected to provide practical insights into the use of interactive and collaborative strategies for supporting genuine beginner adult learners in intensive English learning contexts. The study is also expected to contribute to non-formal English language teaching by highlighting the importance of supportive opportunities for novice learners to practice speaking without excessive pressure. By systematically investigating classroom experiences identified through long-term teaching practice, this study seeks to provide an empirically grounded understanding of approaches to addressing speaking anxiety among adult beginners.

Keywords*: Adult learners, game-based learning, small-group discussion, speaking anxiety.*

Microfinance as A Livelihood Asset: Sustaining Informal Street Food Enterprises in A Rural Philippine Context

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Abstract

Informal street food enterprises provide an important source of livelihood in rural developing contexts, but many vendors have difficulty accessing appropriate financial resources. Although microfinance is commonly associated with enterprise development and growth, its role in sustaining small informal businesses needs further examination. This study examines whether microfinance serves mainly as a livelihood-sustaining asset or supports enterprise growth among informal street food vendors in a rural developing context. Guided by the Sustainable Livelihoods Framework, the study focuses on three areas: access to microfinance, livelihood sustainability, and enterprise growth. A sequential explanatory mixed-methods design was used, beginning with a structured survey of informal street food vendors, followed by interviews with selected participants to further explain the quantitative findings. Initial findings suggest that microfinance is particularly useful in sustaining business operations, meeting working-capital needs, and managing financial difficulties. Its contribution to enterprise growth is examined in relation to the continuing financial constraints faced by informal vendors. The interviews will further explain how microfinance affects business continuity and whether borrowed funds are used mainly to sustain existing operations or to support business expansion. The study contributes to the understanding of microfinance and the informal economy by examining microfinance not only as a means of enterprise development but also as a livelihood asset that may help informal street food vendors maintain their businesses and cope with financial challenges in rural developing contexts.

Keywords*: Microfinance; livelihood sustainability; informal economy; street food enterprises; financial inclusion; business continuity; rural development*

When Do Students Plan to Start a Business? Time Horizons of Entrepreneurial Intention Among University Students

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Abstract

This study examines whether university students' entrepreneurial intentions differ across post-graduation time horizons and identifies the factors that distinguish sustained, delayed, and immediate-only intentions. An online survey was conducted among 521 business students from satellite campuses in the Philippines. Four predictors were examined: university support, self-efficacy, risk-taking, and opportunity recognition. Entrepreneurial intention was assessed at two-time horizons, immediately after graduation and five years after graduation, and cross-classified into four intention profiles: sustained, delayed, immediate-only, and no stated intention. The three substantive profiles (n = 509) were compared using analysis of variance and multinomial logistic regression, including a sensitivity model that excluded invariant Likert-response patterns. Sustained intention accounted for 55.3% of respondents, delayed intention for 27.6%, immediate-only intention for 14.8%, and no stated intention for 2.3%. The predictors jointly distinguished the substantive profiles, likelihood-ratio $\chi^2(12) = 50.58$, $p < .001$, McFadden $R^2 = .051$. After adjustment for the other predictors, opportunity recognition was the only clear discriminator of delayed rather than sustained intention (RRR = 0.478, 95% CI [0.310, 0.737], $p < .001$). This finding remained stable after excluding invariant responses. By conceptualizing entrepreneurial intention according to its time horizon, the study demonstrates that deferred entrepreneurial aspiration represents an empirically distinct intention pattern rather than simply a weaker form of sustained intention. For universities in geographically marginal regions, the findings highlight the potential value of opportunity recognition activities grounded in local markets alongside broader entrepreneurship education.

Definition of symbols/statistical used in the abstract:

n - number of respondents included in a particular analysis or subgroup.
χ^2 - chi-square statistic, used here for the likelihood-ratio test of the multinomial logistic regression model.
12 in $\chi^2(12)$ - degrees of freedom for the chi-square statistic.
p - probability value used to assess statistical significance.
< .001 - indicates that:the probability value is less than .001.
R^2 - coefficient of determination, representing model explanatory power; McFadden R^2 is a pseudo-R^2 measure used for logistic regression models.

RRR - relative risk ratio, the ratio of the relative risk of membership in one outcome category versus the reference category for a one-unit increase in a predictor.
0.478 - estimated relative risk ratio for opportunity recognition in distinguishing delayed from sustained entrepreneurial intention.
95% CI - 95% confidence interval, indicating the range of plausible values for the estimated relative risk ratio.
[0.310, 0.737] - lower and upper limits of the 95% confidence interval.
$p < .001$ - indicates that the observed association is statistically significant at the .001 level.

Keywords: *entrepreneurial intention, opportunity recognition, risk-taking, self-efficacy*

Consumer Demographics as a Mediator of the Relationship Between Social Media Marketing and Brand Awareness: Evidence from a Fast-Food Chain in the Philippines

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Abstract

Social media has transformed how fast-food brands engage consumers and build brand awareness; however, the extent to which consumer characteristics shape this relationship remains underexplored. This study examined the relationship between social media marketing and brand awareness and determined whether demographic profile mediates this relationship in a selected fast-food chain. Using a descriptive-correlational research design, the study surveyed 100 customers through purposive sampling. Social media marketing was assessed in terms of entertainment, interaction, trendiness, customization, word of mouth, and promotion, while brand awareness was measured through brand familiarity, visual simplicity, aesthetic attraction, brand emotion, and social reputation. Descriptive statistics, Pearson correlation, and Hayes' PROCESS Model 4 were employed to analyze the data.

Findings revealed very high perceptions of social media marketing across most dimensions, with entertainment receiving an overall mean of 3.36. Brand awareness was likewise rated very high, with social reputation obtaining an overall mean of 3.43. Pearson correlation analysis demonstrated a significant positive relationship between social media marketing and brand awareness ($r = .297$, $p = .003$). Mediation analysis further indicated that demographic profile significantly contributed to the relationship, with a significant indirect effect and a direct effect remaining statistically significant. These findings indicate that the influence of social media marketing on brand awareness is not solely a direct process but may also operate through differences in consumer characteristics.

The study contributes to digital marketing research by highlighting the importance of considering consumer heterogeneity when examining social media-driven brand development. The findings provide practical implications for fast-food marketers seeking to design audience-responsive content, personalized communication, and differentiated digital engagement strategies. More broadly, the study demonstrates how demographic-sensitive social media marketing can contribute to stronger brand recognition within an emerging-market context.

Keywords*: social media marketing; brand awareness; consumer demographics; mediation; digital marketing; fast-food industry; Philippines*

System Dynamics Modelling and Simulation Analysis of the Mongolian Coal Market

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Abstract

Mongolia's coal sector has developed rapidly over the past decade, and studying it as an integrated system in order to arrive at well-grounded policy decisions is of considerable importance for the country's future development. Although the Mongolian coal sector has been the subject of many studies, none has so far approached it from a system dynamics perspective. This study identifies and analyses the factors that influence the Mongolian coal market, constructs a system dynamics model of those factors, and presents the results of scenario simulations. The results show that the trends in Mongolia's coal exports and coal production follow the trend of the coal export price. Where the export price rises as a consequence of domestic factors, coal exports decline; where the increase is driven by conditions on external markets, it raises economic growth.

Keywords*: coal export, Mongolia, simulation, system dynamics model.*

An Integrated Model of Event Management in Mongolia: Film Festivals and Traditional Festivities Compared

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Abstract

Since the 1990s, event management has grown worldwide into an independent academic and professional field, becoming a determinant of institutional sustainability and economic return for the cultural and creative sector (Bowdin et al., 2024; Getz, 1997). Little research, however, has synthesized this theoretical body of knowledge for a nomadic-heritage, post socialist economy such as Mongolia through a concrete comparative case. This paper draws on international event-management theory (Bowdin et al., 2024; Getz, 1997; Getz & Page, 2024; Goldblatt, 1990; Jago & Shaw, 1998) together with core strategic-management instruments — SMART objectives, SWOT analysis, the 7P marketing mix, Gantt scheduling, risk-assessment matrices — through document analysis, producing a four-layer Integrated Event Management Model (IEMM). To validate the model, the author examines two contrasting cases from Mongolia's cultural sector: internationally oriented, market-driven film festivals (Cannes, Busan, Tallinn's PÖFF, the Ulaanbaatar International Film Festival) and heritage-based, ritual-driven traditional festivities rooted in nomadic culture (Tsagaan Sar, the National Naadam Festival). Comparing the two cases across the model's four layers reveals that, despite sharply different objectives, funding sources, and success criteria, both cases are governed by the same underlying logic at the levels of strategic planning, risk and legal compliance, and evaluation. The finding indicates that IEMM functions as a genuinely universal framework spanning both modern and heritage-based events, with implications for education, policy, and practice.

Keywords: *event management, film festivals, Naadam, Tsagaan Sar, festival theory, Mongolia, integrated model.*

MetaMethodology: Meta-Learning Framework for Few-Shot Software Development Methodology Selection with Large Language Models

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Abstract

Software development methodology selection is a context-dependent organizational decision, yet data-driven systems often require substantial organization-specific histories. This study presents MetaMethodology, a proposed meta-learning framework for adapting software methodology recommendations from limited examples. The framework combines Model-Agnostic Meta-Learning (MAML), organizational context encoding, uncertainty-aware ranking, and a natural-language explanation component. Our approach integrates Model-Agnostic Meta-Learning (MAML) with uncertainty-aware decision making and organizational context encoding. The framework consists of four key components: (1) a hierarchical encoder that captures both project features and organizational characteristics using graph neural networks, (2) a meta-learning adaptation engine that optimizes for rapid convergence across organizational contexts, (3) an uncertainty-aware ranking module combining Flow Entropy Sort with Bayesian neural networks for calibrated confidence estimation, and (4) a meta-learned explanation generator that provides contextually appropriate natural language justifications. Experimental validation across 50 diverse organizational contexts demonstrates transformative performance. With only three example projects, MetaMethodology achieves 78.2% accuracy compared to 42.1% for conventional Multi-Criteria Decision-Making approaches—a 36.1 percentage point improvement. Remarkably, the system maintains 65.3% accuracy with a single example, establishing genuine few-shot learning capabilities. The framework reduces organizational adaptation time from weeks to minutes while providing well calibrated uncertainty estimates (Expected Calibration Error = 0.087). Cross-domain transfer experiments show 73.7% average accuracy when adapting between industries, validating broad generalizability. Real-world deployment across startup, enterprises, and regulated environments demonstrates measurable business impact: project success rates improved from 71% to 84%, regulatory approval times decreased by 23%, and stakeholder satisfaction increased from 67% to 89%. These results establish MetaMethodology as both technically sound and practically viable, opening new directions for adaptive, context aware decision support in resource-constrained organizational environments.

Keywords*: Large Language Models, MetaMethodology, Model-Agnostic Meta-Learning, Multi-Criteria Decision Making, Software Development Methodology*

Machine Learning Model Evaluation of Pothole Detection for Road Condition Monitoring

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Abstract

Manual road inspection is labor-intensive, costly, and inefficient, severely constraining continuous infrastructure monitoring. To achieve practical and usable road condition monitoring, this study evaluates machine learning model paradigms ranging from traditional classifiers (LS-SVM, ANN) to deep object detectors (Faster R-CNN, SSD, YOLO) to establish an optimal trade-off between localization accuracy, and operational latency. Based on comparative evaluation, YOLO11n was selected as the identified model to be integrated into an end-to-end usable monitoring system featuring real-time GPS georeferencing and dual local-cloud database synchronization. Evaluated on a dataset of 1,358 road images (272 validation images containing 301 annotated pothole instances), the determined YOLO11n model achieved a mAP50 of 85.5%, mAP50–95 of 58.8%, and class-specific pothole precision, recall, and F1-score of 84.0%, 77.3%, and 80.5%, respectively. Demonstrating high computational efficiency, the model achieved an inference latency of 7.8 ms per image (11.0 ms total execution time) on an entry-level GPU (NVIDIA GeForce RTX 2050), supporting real-time edge deployment. By embedding the identified machine learning model within a fault-tolerant spatial data pipeline, this study bridges model evaluation with real-world usability, providing a scalable, deployment-ready solution for data-driven road maintenance and smart city infrastructure management.

Keywords*: machine learning model evaluation, operational latency, pothole detection, road condition monitoring*

Edge-AI-Enabled Distributed Traffic Signal Control Prototype: Design and Field Demonstration in Baguio City, Philippines

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Abstract

This paper presents an edge artificial intelligence-enabled, distributed traffic-signal prototype for heterogeneous urban traffic in Baguio City, Philippines. Seven roadside nodes were organized into two intersection groups using Raspberry Pi 5 edge computers, camera modules, Arduino Nano phase controllers, nRF24 radio links, and solar-assisted battery backup. A custom four-class YOLO-family detector was deployed as an integer-quantized TensorFlow Lite model, and lane-level counts were converted into green intervals through a transparent throughput-weighted queue-clearance rule. Lane-specific regions of interest, temporal smoothing, and peak retention supported the visual observations used for timing. The evaluation covered vehicle classification, agreement with manual counts, timing response, backup-power runtime, and controlled fail-safe demonstrations. Daytime classification trials achieved 94.4% recall, corresponding to 17 correctly classified targets among 18 cases. Nighttime recall was 5.9%, or one of 17 vehicle targets, establishing the importance of automatic transfer to fixed-time operation under low illumination. In a separate daytime count assessment, 50 systematically sampled records yielded 49 valid nonzero-manual-count pairs. The automated and manual totals were 367 and 411 vehicles, respectively; the mean absolute error was 1.22 vehicles per frame and the mean absolute percentage error was 13.95%. Across seven approaches, the controller assigned green intervals from 10 to 49 s in response to observed demand. Solar assistance increased mean operating time from 164.67 to 188.33 min across three paired trials. Controlled tests confirmed the configured timing responses to low illumination and prolonged absence of detections. The contribution is a field-demonstrated architecture that couples local learned perception with interpretable timing, distributed phase execution, communication recovery, emergency-preemption signaling, and continued operation through predefined fallback modes. These results provide implementation and feasibility evidence for a portable traffic-control platform assembled from commercially available embedded hardware.

Keywords: *demand-responsive traffic control, distributed embedded systems, edge artificial intelligence, intelligent transportation systems*

MIRI: A Smart Buddy for Bridging the Intention–Action Gap Among Students

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Abstract

Students often experience an intention–action gap, where academic goals are disrupted by digital distractions and unproductive smartphone use. To address this challenge, this study developed MIRI, a privacy-first ambient productivity companion that integrates an Android application with a Bluetooth Low Energy (BLE)-enabled Smart Buddy device. The system monitors smartphone usage behavior and uses a quantized Artificial Neural Network (ANN) deployed through TensorFlow Lite (TFLite) to classify users into four productivity states: Deep Work, Shallow Work, Distracted, and At-Risk. MIRI was developed using a hybrid approach combining Agile Software Development through the Scrum framework and Hardware–Software Co-design, supporting the integration of the mobile application, machine learning model, wireless communication, and embedded hardware. Using a seven-feature behavioral vector, the proposed ANN achieved 93.35% classification accuracy and a 93.08% macro F1-score under stratified five-fold cross-validation, with an inference latency of less than 2 ms. The resulting predictions are processed locally on the Android device and transmitted through BLE to the Smart Buddy, which provides corresponding ambient feedback through movement, visual indicators, and audio cues. The results demonstrate the feasibility of integrating privacy-preserving Edge AI and embedded ambient interaction for real-time productivity support.

Keywords*: ambient intelligence, behavioral classification, edge AI, human–computer interaction, on-device machine learning, privacy-preserving computing.*

ALS Teachers Stance on Using AI as Educational Tools in Improving ALS Teaching Quality: A Sentiment Analysis

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Abstract

This descriptive study investigated the stance of Alternative Learning System (ALS) teachers towards their intention to the use of Artificial Intelligence (AI) Educational Tools (ET) for improving ALS learners' literacy. Toward this goal, 100 ALS teachers participated in the study. They completed an open-ended online survey form that revealed their stance on using AI tools in ALS non-formal education. Descriptive statistics revealed that over 80% of the ALS teachers in the Division of Cavite Province supported using AI as Educational Tools (AIET), but they had certain limitations. The word 'tool' has the highest frequency in the dataset confirming that the data collection of discussion was viewed as a tool supporting ALS teacher's educational task. The dataset contains diverse words expressing the ALS teachers' stance with no single word appearing overwhelmingly prominent. Topic modelling revealed that teachers shared similar position with learners regarding the use of AIET for ALS. The sentiment analysis shows a clear dominance of positive sentiment (77%), suggesting strong approval and perceived usefulness of AI among ALS teachers. Meanwhile, neutral or cautious sentiment accounts for 16%, reflecting conditional acceptance with an emphasis on the need for guidance and policy. The Support Vector Machine (SVM) prediction model achieved a good weighted F1 and accuracy scores of 77% and 79%, respectively. Additional testing revealed that the model correctly identified over one-half of teacher stances in a new dataset. Therefore, the teachers' stances are mostly mixed, their positions are like those of ALS learners, and the model can reasonably predict the teachers' stances. Implications are also presented in Alternative Learning System non-formal education context.

Keywords: *Alternative Learning System (ALS), Artificial intelligence, non-formal education, Out-of-School Children, Youth and Adult (OSCYA)*

Agentic AI for Omnichannel Retail: A Multi-Agent Framework for Unified Customer Engagement and Sales Optimization

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Abstract

The worldwide retail industry is drastically changing as a result of fragmented digital touchpoints and rising customer expectations for seamless, personalised experiences. Customers today navigate multiple platforms including websites, apps, chats and offline stores. But these channels are often separated from one another which damages conversion and loyalty further down the line. This paper presents a new Agentic AI framework for an omnichannel retail environment based on a conversational Sales Agent orchestrating a collection of specialised Worker Agents for unified contextual customer engagement in all channels. The proposed system takes into account current developments in multi-agent systems, LLM-powered reasoning, and omnichannel integration theory. This system will capture journey data from customers, consider non-purchase interactions as signals to identify purchase intent, and create a customer profile which gets consistently updated. As the profile gets enriched, recommendations can be made more relevant. This can help boost customer loyalty, and thereby improve the conversion rate with time. Physical retail extends this system to an in-store kiosk with 3D try-on and reservation. Our solution is proposed to focus on the three key business objectives – which are increasing the Average Order Value (AOV), increasing Customer Lifetime Value (CLTV) and improving conversion over time. From a customer's perspective, our goal is to make the user journey more efficient and make the user experience better.

Keywords: *omnichannel retail, agentic AI, multi-agent systems, sales agent, worker agents, large language models, customer engagement, conversational AI, recommendation systems, customer journey, sales optimization.*

IntelliHire: AI-Powered Intelligent Resume Screening & Smart Hiring System Using NLP and Google Gemini

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Abstract

Recruitment is perhaps one of the most important decisions that any organization can make; however, despite advancements made in the last two decades, the technology most organizations use to recruit—the keyword-based ATS—is essentially the same. ATS is fast but very shallow, effectively eliminating good candidates simply because they used different words when describing their skills. This paper introduces IntelliHire, a full-scale end-to-end recruiting system powered by artificial intelligence using React 18 + TypeScript frontend, Node.js + Express backend, MongoDB Atlas database, and Google Gemini large language model (LLM). Instead of searching for keywords, IntelliHire analyzes resumes the way an expert recruiter would—semantically. Once the candidate uploads their resume, the Google Gemini LLM creates a structured profile with eight components—technical skills, work experience, projects, research, certifications.

Keywords*: Resume screening, NLP, ATS score, Google Gemini, Semantic matching, Recruitment automation, Explainable AI, Bias mitigation, Full-stack, MERN, Large language model*

Chronocrypt : Autonomous Offline Time-Synchronised Access Code Generator

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Abstract

The current access control systems use networked servers to generate and validate One-Time Passwords (OTPs). This opens vulnerabilities to attacks from the network and communication lags. To circumvent this problem, we have come up with a solution called ChronoCrypt, which is an offline OTP based access control system that guarantees secure access control in isolated and resource-limited IoT settings. We propose a device, developed using a NodeMCU ESP8266 microcontroller, together with a cryptographic TOTP generator that uses HMAC-SHA1 and time counters synchronization. This device generates 4 digit deterministic passwords, which are updated after pre-defined time intervals (10s, 30s and 60s). The OTP is displayed on an 8X8 LED matrix, which can then be used by the authorized individual to perform authentication.

In contrast to cloud-based OTP solutions, the device carries out both processes; generation and validation, locally. It has no dependence on internet connectivity as it works completely offline. There is a provision for incorporating a tamper detector, which helps in enhancing the security of the device by wiping off any cryptographic keys in case the attacker tries to open it. In addition, the system also has a 4 channel relay interface to activate the lock or other actuators directly.

Keywords: *Offline Authentication, TOTP, ESP8266, IoT Security, HMAC-SHA256, Tamper Protection, Hardware Root of Trust, Offline-First Framework, Zero-Trust Architecture, Energy Harvesting*

Ensemble Machine Learning Framework for Multi-Horizon Electricity Demand Forecasting Across Indian Grid Regions

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Abstract

This paper presents a multi-model ensemble framework for electricity demand forecasting across major regional grids in India. The proposed approach integrates three complementary models—Long Short-Term Memory (LSTM), Transformer-based architecture, and XGBoost—to capture temporal dependencies, long-range patterns, and nonlinear feature interactions in multi-source time-series data. The dataset consists of historical load demand, meteorological variables, temporal indicators, and socio-economic factors, processed into a unified feature space through structured preprocessing and feature engineering. The forecasting system is evaluated across short-term (24-hour) and medium-term (30-day) horizons using standard regression metrics including Mean Absolute Percentage Error (MAPE), Root Mean Square Error (RMSE), and R^2 score. Results indicate that the ensemble model consistently outperforms individual models in terms of predictive stability and error reduction across different regions and time horizons. A comparative analysis with baseline models demonstrates improved generalization performance, particularly under varying seasonal and operational conditions. The study highlights the effectiveness of combining heterogeneous learning architectures for robust load forecasting in complex and non-stationary energy systems. The proposed framework provides a scalable approach for regional electricity demand prediction and can support applications in grid management, resource planning, and energy analytics.

Keywords*: Electricity Demand Forecasting, Ensemble Learning, Load Forecasting, Time-Series Forecasting.*

JSON Web Tokens vs. Session-Based Authentication: A Case Study in Architecture Trade-offs for Academic Systems

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Abstract

Academic management systems experience unique traffic patterns characterized by dormant periods punctuated by severe, bursty concurrent loads during critical institutional windows. Selecting the optimal authentication architecture is vital for maintaining system availability, particularly on budget- constrained infrastructure. This paper presents a case study evaluating the performance and security trade-offs between state- less JSON Web Token authentication and stateful session-based authentication. Using EduNexus, a production-grade academic portal, both mechanisms were implemented and tested under identical conditions using Apache JMeter. We simulated loads from 50 to 500 concurrent users across both lightweight metadata fetches and database-intensive attendance reporting.

Our testing environment utilized containerized resource con- straints (8 vCPUs, 3.74 GB RAM container ceiling) to identify performance inflection points under stress. Empirical results demonstrate a critical Architectural Inversion: while JWT pro- vides superior response times for lightweight tasks (1593 ms at 500 users compared to 2030 ms for sessions), stateful sessions show significantly higher stability and 29.3% lower latency during database-intensive operations under peak concurrent stress (23781 ms vs 33644 ms at 500 users). This study provides a practical decision-making framework for software engineers developing high-traffic academic platforms.

Keywords: *JSON Web Token (JWT), Session-based authen- tication, Web Security, Performance Evaluation, Load Testing, Scalability, Distributed Systems.*

Behind the Numbers: A Critical Realist Exploration of the Persistence of Non-Readers in Elementary Schools in City Division in Northern Luzon, Philippines

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Abstract

This study explored the persistence of non-readers among elementary learners in a city school division in Northern Luzon, Philippines despite the extensive implementation of literacy intervention programs. Anchored on the philosophical tradition of Critical Realism, the study examined the deeper instructional, institutional, and contextual mechanisms shaping persistent non-readership beyond observable reading assessment results. Using a qualitative research design, the study employed purposive sampling involving five teachers, five school heads, and five parents of frustration-level readers. Data were gathered through semi-structured interviews and analyzed thematically. The findings revealed that persistent non-readership is shaped by multiple interacting mechanisms including cumulative learning deficit, structural inequality and educational vulnerability, misalignment between intervention and learner context, internalized failure and learned helplessness, and fragmented shared responsibility between schools and families. The study found that literacy difficulty develops cumulatively across grade levels and is further intensified by socioeconomic disadvantage, weak literacy exposure, emotional disengagement, and insufficient contextual responsiveness of interventions. Guided by Critical Realism, the study concludes that non-readership is not merely an individual learner deficit but a structurally conditioned and socially mediated educational phenomenon. The findings highlight the need for more context-responsive, collaborative, and system-sensitive literacy interventions capable of addressing the deeper realities shaping learner reading difficulties.

Keywords*: Critical Realism, non-readers, literacy intervention, reading difficulty, elementary learners, frustration reading level, literacy development*

Community Contribution to Madrasah Worth Learning Study on the Impact of Baznas Assistance

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Abstract

This study established a theory of impact called the Four Relation Dimension Effect (RDE) by qualitatively analyzing the social psychology of the community, resulting in impacts. These impacts are four factors that will result from a good deed. Baznas assistance, in this case, is a good deed carried out at an Islamic Madrasah, resulting in an impact, namely, fostered social relationships through four dimensions of impactful relationships. These four dimensions are Baznas (the good actor), the principal (the recipient), the parents (the specific community), and the community (the impacted). This study analyzes educational management strategies within the scope of madrasah education. However, the focus of the research is to examine the impact of the Baznas (National Alms Agency) Learning Assistance program on madrasahs in Bone Regency. The impact of the assistance on the community is seen in supporting the creation of a safe and comfortable learning environment for students. This assistance was provided to three elementary madrasahs in Bone Regency: MI DDI Seppange, MI Al-Fatanah Bellu, and MI Assalam Ancu. Practically, this research contributes to social management and its implementation in education. In this case, Baznas assistance represents a social effort undertaken by individuals with shared concerns. This Baznas assistance can foster a sense of community and harmony, as well as foster ongoing emotional closeness.

***Keywords**: Madrasah, Impact, Baznas*

Gamification, Utilization of SM Chart, and Engaging Student-Teachers (G.U.E.S.T) Strategy in Teaching Science

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Abstract

Future teachers learn and use various pedagogies to be effective in the classroom. Extensive preparation is essential for them to become competent and dedicated educators. This study focused on the development and implementation of strategies for teacher education students specializing in science. The action research process utilizing quasi-experimental methods was applied. Total enumeration was employed for data collection. Data were gathered in a real classroom setting over one semester. Frequencies, mode, percentages, weighted means, and t-tests were used for data analysis. The study found that 76.47% of the respondents had an extremely positive attitude towards teaching, with an average baseline teaching performance of 87.33 (satisfactory). The implementation of the G.U.E.S.T. strategy as an intervention increased the percentage of students with extremely positive attitudes to 88.24% and improved their teaching performance to 89.78 (Very Satisfactory).

Keywords: *action research, attitude, teaching performance, teaching strategy, teacher education*

Leadership Level and Performance Outcome of Filipino Managers in Japanese Manufacturing Firms at Region Iv-A, Philippines: A Development of Performance Enhancement Framework

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Abstract

Manufacturing has been one of the crucial sectors in building an economy. In the Philippines it plays a vital part as backbone of the economy, with the Japanese Firms having one of the largest contributors. As the sector thrives to grow, the continuous development for leadership and management is very much essential. This study focuses on understanding leadership level, with leadership style and management competency as its key indicators, and its impact to overall organizational performance outcome of Filipino Managers working in Japanese Manufacturing firms located at Region IV-A, Philippines. With the use of descriptive-correlational design of research, data were gathered in key economic zones through purposive sampling for Filipino Managers through Survey Questionnaires. The result reveals that there was significant relationship between leadership level and performance outcome of the organization. Although, the results showed that the most preferred style were Transformational leadership, it does not have statistically significant influence in organizational performance, emphasizing the importance of managerial skills and competencies rather than the use of certain leadership style alone in managing an organization. With the results that had obtained, a Performance Enhancement Framework was developed that could be use by current Filipino Managers in order to further strengthen, develop, and improve their skills and competency which required a more sustainable and long-term growth of Manufacturing Sector.

***Keywords**: Leadership Level, Leadership Style, Managerial Competency, Performance Outcome, Filipino Managers, Japanese Manufacturing*

Talent Management in Project-Based Organizations Under Remote and Hybrid Work: An Integrated Framework

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Abstract

Project-based organizations deliver work through temporary teams that assemble around an assignment and disband at its close, and a growing share of that work is now performed remotely or in hybrid form. Talent management theory was built on a permanency assumption that neither condition satisfies, leaving organizations without a coherent account of how to keep dispersed, repeatedly reassigned talent capable, engaged, and retained. The objective of this paper is to develop an integrated conceptual framework linking workforce adaptability, employee engagement, and talent retention in project-based organizations operating under remote and hybrid work models. Methodologically, the paper follows a theory-synthesis design: it integrates the project-based organizing literature and the remote and hybrid work literature, which have developed largely apart, drawing on boundary theory, the job demands-resources model, swift trust theory, and psychological contract theory, and anchoring every proposed relationship in published empirical evidence, including randomized-trial and meta-analytic findings. The resulting framework positions workforce adaptability, comprising proactivity, adaptability, resilience, and competence, as the capability through which project talent absorbs recurring transitions across assignments and locations; employee engagement as the psychological state converting that capability into retention; and retention as spanning both a continuous form and a novel boundaryless form, in which talent remains attached to an organization's project ecosystem across assignments. Five testable propositions specify four conditioning mechanisms: human resource quadriad clarity, e-leadership quality, swift trust formation, and fulfilment of a flexibility-based psychological contract. The significance is twofold: the framework gives project-based organizations a diagnostic for where adaptability, engagement, or retention practices break down under distributed working, and it supplies researchers with a falsifiable agenda, including the longitudinal designs needed to resolve the causal ordering the workforce agility literature has left unsettled.

Keywords*: talent management; project-based organizations; remote and hybrid work; employee engagement; talent retention*

Caseload Burden, Coping Mechanisms, and Mental Well-Being Among Public Social Workers

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Abstract

This study examined the caseload burden, coping mechanisms, and mental well-being of public social workers. Specifically, it described the demographic profile, workload characteristics, coping strategies, and well-being indicators of public social workers, with emphasis on identifying possible risk factors for burnout and emotional distress. The study involved 84 public social workers from different public social work settings. Findings showed that most respondents were young, with 61% belonging to the 26–35 age group, and predominantly female, comprising 85% of the respondents. The respondents also represented different years of experience and varied work settings, indicating a diverse public social work workforce. Results further revealed that caseload size and weekly working hours varied widely, with indications of excessive workloads and regular overtime. These conditions suggest increased vulnerability to emotional exhaustion, stress, and burnout among public social workers. In terms of coping mechanisms, the most commonly used strategies were informal and personal, such as talking to friends or family, listening to music or podcasts, and engaging in hobbies or activities outside work. However, formal organizational supports, such as Employee Assistance Programs, workload adjustments, and workplace resources, were less frequently used. This finding suggests a possible gap in access, trust, awareness, or perceived usefulness of institutional support systems. The study concludes that public social workers, particularly those in early-career stages and those managing demanding caseloads, may be at increased risk of burnout and emotional strain. It recommends strengthening wellness programs, promoting emotional resilience, improving workload management, enhancing institutional mental health support, and integrating burnout prevention and coping strategies in social work education and practice.

Keywords: *Burnout, Caseload burden, Coping mechanisms, Mental well-being, Public social workers.*

Institutional Support, Management Practices and Student Satisfaction: A Predictive Model for Quality Assurance in Higher Education Institutions

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Abstract

Higher Education Institutions (HEIs) are vital to global progress, facing increased pressure to enhance academic quality, infrastructure, and management amid rising demand and sustainability goals (UNESCO, 2023)[1]. This study investigated the levels of institutional support, management practices, and student satisfaction in HEIs in the City of Biñan, Laguna using a descriptive-correlational design. A total of 357 students from a population of 4,904 participated via a validated survey. Findings indicated high levels of institutional support (overall mean 3.44) with financial assistance (3.52), career development (3.50), and technological support (3.45) receiving the highest ratings. Management practices were likewise rated favourably (mean 3.44), with particular strengths observed in delivering quality instruction and ensuring effective student support services.. Student satisfaction was very high (mean = 3.37), especially regarding instruction, support services, and the campus environment. Moderate correlations were found among the variables, with regression analysis showing that career development and management practices significantly predict student satisfaction. In conclusion, strong institutional support and effective management practices are key to high student satisfaction, underscoring the need for a comprehensive action plan to further strengthen these areas.

Keywords*: Institutional Support, Management Practices, Satisfaction of Students*

Generative AI Literacy and Responsible Use among College Students: The Role of Critical Evaluation and Ethical Decision-Making

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Abstract

Generative artificial intelligence (GenAI) is becoming increasingly common in higher education, giving college students new ways to search for information, develop ideas, create content, and support their academic work. However, the growing use of these tools also brings concerns about whether students can properly assess AI-generated information and use GenAI in responsible and ethical ways. This study aims to examine generative AI literacy and responsible GenAI use among college students, focusing particularly on their ability to critically evaluate AI-generated information and make appropriate ethical decisions. A quantitative survey research design will be used, with approximately 200 college students serving as respondents. Data will be collected through a structured questionnaire that measures students' generative AI literacy, responsible use of GenAI, critical evaluation practices, and ethical decision-making. Descriptive statistics will be used to describe the respondents' levels across the study variables, while appropriate statistical tests will be applied to examine the relationships among these variables. The study seeks to determine whether students who demonstrate stronger AI literacy are also more likely to evaluate AI-generated information carefully and use GenAI responsibly. It also examines the possible contribution of critical evaluation and ethical decision-making to responsible GenAI use. The findings are expected to provide practical insights for educators and higher education institutions as they develop strategies for promoting AI literacy and responsible use of emerging technologies. More than simply teaching students how to use GenAI tools, the study highlights the importance of helping them question AI-generated information, recognize its limitations, and make responsible decisions when using it for academic purposes. The study may contribute to ongoing discussions on the responsible integration of generative AI in higher education.

Keywords*: generative artificial intelligence, AI literacy, responsible AI use, critical evaluation, ethical decision-making, college students, higher education.*

Natural Blueprint for a More Environmentally Sustainable and Disaster-Resilient Ateneo de Manila Senior High School Campus

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Abstract

Rising temperatures and intensified monsoons present drastic environmental threats to many urbanized educational institutions in the Philippines. This study addresses the current risks of urban heat island effects and localized flooding within the Ateneo de Manila Senior High School campus through the development of a "natural blueprint", a scalable green infrastructure model employing specialized local flora. To validate the framework, a 1:193 scaled physical diorama of the campus was constructed, using modified materials to accurately simulate the biomechanical and hydrological capabilities of the selected flora. The diorama was used to execute and simulate four empirical tests evaluating hydrological infiltration, passive shading, active transpiration, and geotechnical stability against a bare substrate control. Quantitative analysis was performed through independent t-tests stating that the selected flora achieved a 49.93% increase in mean water infiltration ($p < .001$) and a significant surface temperature reduction of 1.10℃ ($p = 0.002$). The designed material-root system quantitatively optimized geotechnical stability, achieving a 50.64% improvement in geomechanical resistance to erosion. A digital version of the proposed blueprint was constructed by the researchers, in the case for any potential further studies. The research's findings provided empirical evidence that nature-based solutions can mitigate microclimate and hydrological stressors. Altogether, integrating biological defense systems into institutional architecture offers a sustainable, cost-friendly, and disaster-resilient blueprint to safeguard educational continuity and serves as a framework for urban disaster risk reduction across the Philippines.

Keywords: *Nature-based solutions, green infrastructure, campus sustainability, disaster risk reduction, diorama simulation*

Analisis Perubahan Tutupan Lahan Tahun 2020 dan 2025 di Desa Loa Lepu Kecamatan Tenggarong Seberang

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Abstract

Penutupan lahan memainkan peran penting dalam menjaga keseimbangan ekosistem, melindungi keanekaragaman hayati, dan mendukung kegiatan ekonomi di daerah pedesaan. Tujuan utama penelitian ini adalah menganalisis perubahan tutupan lahan di Desa Loa Lepu, Kecamatan Tenggarong Seberang, dan mengevaluasi dampaknya terhadap masyarakat melalui pendekatan kualitatif. Analisis ini menjelaskan perubahan tutupan lahan yang terjadi di Desa Loa Lepu, Kecamatan Tenggarong Seberang pada tahun 2020 dan 2025 dengan luas 1.189,5 Ha. Hasil interpretasi citra PlanetScope dengan menggunakan interpretasi visual berdasarkan Standar Nasional Indonesia (SNI) No.7645-1 Tahun 2014, ditemukan 17 kelas tutupan lahan yang merepresentasikan perubahan pola penggunaan lahan. Peningkatan signifikan tercatat pada kategori hutan lahan rendah sekunder kerapatan rendah dengan 95,82 ha menjadi 186,63 ha serta semak belukar dengan 83,79 ha menjadi 140,52 ha, sedangkan persawahan dengan 10,27 ha menjadi 3,15 ha dan lahan terbuka dengan 11,31 ha 0,95 ha mengalami pengurangan luas. Transformasi tersebut dipengaruhi oleh dinamika demografi, ekspansi sektor ekonomi, dan kebijakan tata ruang yang berlaku. Nilai akurasi keseluruhan interpretasi citra sebesar 96,65% dan akurasi kappa 0,97 menunjukkan tingkat akurasi yang sangat baik.

***Keywords**: Citra PlanetScope, Desa Loa Lepu, Tutupan Lahan, SIG.*

An AI Orchestration Agent for Classroom Co-Regulation: Learning Instructional Action Recommendations from Validated LMS-Derived Regulatory States

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Abstract

Classroom orchestration requires teachers to interpret multiple, rapidly changing indicators of student activity and decide how to respond while instruction is still underway. Prior work established a validated tri-variate behavioral state task alignment, behavioral dispersion, and temporal stability, computed from 60-second windows of LMS interaction logs that orients human experts toward consistent instructional choices. What remains untested is whether an AI agent informed by this learning-analytics representation can itself generate instructional-action recommendations at a level approaching expert consensus, and whether its reasoning is interpretable enough to support teacher trust. We train and evaluate such an agent on 381 expert-annotated classroom windows (four practicing teachers, six-category action taxonomy), drawn from a corpus of 1,728 windows collected from 23 undergraduate course sections over a ten-week period, using session-grouped cross-validation to prevent leakage across correlated within-session windows. The best configuration (validated state plus raw window features, gradient-boosted trees) achieves 74.4% accuracy and Cohen's $\kappa = .641$ against expert consensus, closing approximately 74% of the gap to a directly comparable human benchmark ($\kappa = .866$). SHAP-based interpretability analysis shows the validated regulatory state, not raw activity volume, is the dominant driver of the agent's recommendations, and the agent's error pattern reproduces the same category ambiguity found among human raters. A functional prototype pipeline—validated end-to-end on held-out raw log data, not simulated input—demonstrates the agent operating from raw LMS logs through to interpretable, teacher-facing recommendations.

Keywords*: learning analytics, artificial intelligence in education, AI agent, classroom orchestration, human–AI collaboration, interpretability, co-regulation*

Parenting Agreement from the Qur'anic Perspective: An Examination of Father–Mother Parenting Relations

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Abstract

Childrearing is an important aspect of the relationship between fathers and mothers, involving not only the fulfillment of children's needs but also the process of joint decision-making. Within Mark E. Feinberg's coparenting framework, *parenting agreement*, also referred to as *childrearing agreement*, is one of the dimensions that reflects the extent to which parents share agreement regarding children's values, goals, rules, discipline, education, and needs. This study aims to analyze the concept of *parenting agreement* from the perspective of the Qur'an and to explore the construction of parenting relations between fathers and mothers reflected therein. This study employs a library research method with a thematic interpretation (*tafsīr mawḍū'ī*) approach, using Qur'anic verses concerning parent–child relations and childrearing as primary sources, while Mark E. Feinberg's coparenting theory serves as the conceptual framework. The findings indicate, first, that the Qur'an positions childrearing as a responsibility that requires the involvement and agreement of both fathers and mothers, rather than as a unilateral decision made by one parent. Second, parenting agreement is established through the principles of *tarāḍin* (mutual consent or agreement) and *tashāwur* (mutual consultation), as reflected in Q.S. al-Baqarah [2]:233, particularly in decision-making concerning the weaning of a child. Third, such agreement does not merely aim at reaching consensus between fathers and mothers but is directed toward the interests and well-being of the child. These findings demonstrate a convergence between the Qur'anic principles of childrearing and the *parenting agreement* dimension of Feinberg's coparenting theory, particularly in terms of agreement, communication, and joint decision-making in childrearing. Therefore, *parenting agreement* can be understood as an important principle for establishing collaborative parenting relations between fathers and mothers that are oriented toward the best interests of the child.

Keywords: *parenting agreement, coparenting, Qur'an, childrearing*

Integrated Visual Analytics Framework for Simulation-Assisted Design of Automotive Electrical Distribution Systems

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Abstract

Modern electric vehicles depend on increasingly dense electrical distribution systems (EDS) that must satisfy electrical safety, packaging, variant, cost, and manufacturability constraints while supporting electrified and software-defined functions. Conventional EDS workflows remain fragmented across harness authoring systems, spreadsheets, simulation tools, and physical-prototype feedback, making early trade-off analysis difficult. This paper proposes an integrated visual analytics framework for simulation-assisted design of automotive EDS, with emphasis on high-voltage and low-voltage distribution networks in battery-electric vehicles. The framework converts heterogeneous engineering files into a traceable graph model of nodes, conductors, fuses, loads, connectors, requirements, and vehicle variants; evaluates scenario-based DC power-flow and thermal-risk indicators; and presents results through linked physical, topological, temporal, and comparative views. Proof-of-concept implementation is referred to as the Integrated Visual Analytics Tool (IVAT), where the framework denotes the generalizable method and the tool denotes its software realization. The contributions are: (i) a requirements-driven architecture for integrated EDS analytics; (ii) a graph-based data and metric model for variant analysis; (iii) a scenario-evaluation algorithm aligned with shift-left validation; and (iv) a representative benchmark showing how mass, voltage-drop, conductor-loss, and thermal-risk indicators can support early design decisions. The framework is positioned as a decision-support layer that complements, rather than replaces, established EDS authoring, calibration, network-test, and high-fidelity simulation environments.

Keywords: *automotive electrical distribution system; visual analytics; high-voltage wire harness; software-in-the-loop; DC power flow; graph model; electric vehicle design*

Women as a Narrative Strategy: South-South Postcolonial Feminism in Bumi Manusia and Lorong Midaq

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Abstract

The decolonization of the world literary canon faces an unresolved paradox: movements that claim to be working toward the decolonization of knowledge remain heavily reliant on texts from India, Africa, and the Caribbean as their primary empirical sources, while Southeast Asia and the Middle East, two regions with colonial experiences no less profound, are rarely discussed within a framework of direct comparative analysis. This study seeks to address this gap through a South-South comparative analysis of Pramoedya Ananta Toer's novel Bumi Manusia (2018) and Naguib Mahfouz's Lorong Midaq (1991), arguing that the utter failure of their female protagonists, Nyai Ontosoroh and Hamida, is not an individual tragedy but a deliberate narrative strategy to reveal how colonialism and patriarchy operate simultaneously, most destructively through the systematic destruction of the bodies and identities of indigenous women. This study employs a qualitative textual analysis method using a close-reading approach, comprising three stages: identifying patterns of oppression, conducting a comparative analysis of narrative strategies, and interpreting the significance of the characters' failures, cross-checked against the historical context of colonialism in Egypt and Indonesia. Drawing on Spivak's subaltern theory and McClintock's postcolonial feminism, this study demonstrates that two conflicting strategies, Hamida's use of beauty as capital and Nyai Ontosoroh's empowerment through education and the economy, both end in total ruin, while male characters in the same context still have room to bounce back. Theoretically, what is most significant is that Mahfouz and Pramoedya, two writers from two civilizations that seemingly never intersected directly, arrived at identical narrative strategies, a convergence that is not a cultural coincidence, but rather evidence that colonialism, as a global system, operates by the same logic wherever it functions, while also serving as a reminder that theories claiming universality still need to be continually tested with broader and more variety data.

Keywords: *Postcolonial feminism, subaltern women, South-South comparative, colonial patriarchy, canon decolonization*

A Comparative Assessment of The Minimum Age of Criminal Responsibility: A Systematic Literature Review

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Abstract

This systematic literature review examines the minimum age of criminal responsibility (MACR) across jurisdictions and considers what the international evidence means for the continuing Philippine debate on whether the present threshold of 15 years should be lowered. The review synthesizes 106 eligible international and Philippine sources identified through searches of Google Scholar, Consensus, Connected Papers, SciSpace, and additional legal and policy sources. The literature was examined through thematic analysis, with attention to legal age thresholds, developmental science, socio-economic conditions, public perceptions, the consequences of early justice-system contact, and the operation of diversion and welfare-based responses. The reviewed jurisdictions show substantial variation in MACR, broadly ranging from 6 to 11 years in several common-law systems, 12 to 14 years in a number of jurisdictions, and 15 years or higher in countries that place greater emphasis on welfare, rehabilitation, and child protection. Across the literature, however, a lower statutory age does not emerge as a reliable strategy for reducing juvenile crime. Instead, early formal contact with the justice system is repeatedly associated with labeling, disrupted education, social disadvantage, and increased risk of reoffending. Evidence from Denmark and Scotland is particularly instructive: lowering the age in Denmark did not produce the expected reduction in offending, whereas Scotland's increase in the MACR was followed by substantial reductions in offense referrals, convictions, and custody admissions. Developmental research likewise indicates that children and adolescents differ from adults in judgment, impulse control, risk assessment, and susceptibility to peer and emotional influences. For the Philippines, the findings favor retaining the current MACR under Republic Act No. 9344 while concentrating policy attention on diversion, rehabilitation, family and community support, institutional capacity, and prevention. The central policy question, therefore, is not simply how young a child can be made criminally responsible, but which response is most likely to protect the public while giving children a realistic opportunity to change course.

Keywords: *child development, diversion, juvenile justice, minimum age of criminal responsibility, rehabilitation*

Understanding The Effect of ChatGPT Usage to Students' Critical Thinking through Cognitive Offloading

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Abstract

As ChatGPT becomes a supporting learning tool in higher education, its influence on students' cognitive development has emerged as a central concern in learning analytics. This study examines the impact of ChatGPT usage on university students' critical thinking, highlighting the mediate role of cognitive offloading. In this study, cognitive offloading occurs when students are delegating information-processing tasks to ChatGPT in order to reduce their cognitive load. Utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM), data collected from 315 university students across undergraduate, master's and doctoral programs were analyzed. The research reveals that ChatGPT usage significantly drives cognitive offloading, as indicated by the path coefficient (β = 0.641, p = 0.000). Furthermore, this cognitive offloading serves as a positive and significant mediator between ChatGPT usage and critical thinking through a specific indirect effect (β = 0.344, p = 0.000). These findings indicate that ChatGPT usage does not directly affect students' critical thinking. Instead, the impact is fully mediated through cognitive offloading as students delegate their information-processing tasks to ChatGPT. Higher ChatGPT usage leads to increased cognitive offloading, which significantly impacts students' critical thinking. This research contributes empirical insights into AI-assisted education, encouraging academic institutions to design learning environments where ChatGPT is utilized responsibly to foster, rather than replace cognitive development.

Keywords: *ChatGPT Usage, Cognitive Offloading, Critical Thinking, University Students*

HyFlex Learning Preferences and Responsible Generative AI Use among Operations Management Students

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Abstract

This two-phase study examined learning-modality preferences and academic achievement among 100 Operations Management students. It also conducted a rapid systematic review of evidence on the responsible use of generative artificial intelligence in higher education. Seventy-four students preferred HyFlex learning, while 26 preferred other modalities. Although students who preferred HyFlex learning had a descriptively more favorable achievement distribution, the association was not statistically significant, Cramér's; a fixed-margin Monte Carlo exact test produced a similar approximate -value of .100. The review covered publications released from 2022 through September 2026 and synthesized 12 eligible empirical, review, and policy sources. Seven recurring dimensions were identified: purposeful use, academic benefit, verification, disclosure and citation, privacy and confidentiality, academic integrity, and institutional support. Findings from both phases were integrated into a Responsible Gen AI and Academic Integrity Framework for HyFlex Operations Management education. However, these review-derived dimensions were not assessed among the original respondents and require prospective empirical validation. Future research should use experimental designs to examine how these dimensions affect specific learning outcomes, particularly in complex fields such as supply chain management (Tang et al., 2024). Integrating pedagogical innovations such as simulation-based games with these frameworks may also strengthen procedural competence and higher-order cognitive skills (Berenji & Najmi, 2026, p. 1).

Keywords: *Academic achievement, academic integrity, generative AI, HyFlex learning, modality preference, Operations Management*

Soil Erosion and Composite Land Degradation Using USLE Model and Geomatics Approaches for Soil Conservation of Mount Data National Park

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Abstract

Mount Data National Park (MDNP) situated across the municipalities of Sabangan, Tadian, and Bauko in Mountain Province, Philippines (16°52′41″ N, 120°50′18″ E), encompasses approximately 3,502.10 hectares of ecologically critical, high-elevation land. This study assessed historical and projected soil erosion dynamics on the plateau, evaluated associated soil degradation risks, and identified key anthropogenic drivers to inform sustainable management strategies. Utilizing Remote Sensing and Geographic Information System (GIS) techniques alongside the Drivers, Pressures, State, Impacts, and Responses (DPSIR) framework adapted from regional literature, the study revealed significant spatio-temporal dynamics characterized by agricultural expansion and forest contraction. Between 1992 and 2022, agricultural land expanded from 1,267.99 ha to 1,774.73 ha, while shrub and grasslands increased from 549.37 ha to 600.08 ha. Conversely, forest cover declined markedly from 1,374.61 ha in 1990 to 941.91 ha in 2022, and built-up areas decreased from 307.10 ha to 181.42 ha. Predictive modeling through 2030 projects a further reduction in forest cover (by 73.68 ha or 2.13%) and built-up areas (by 61.99 ha or 1.78%), driven by continued gains in agricultural land (87.82 ha or 2.47%) and shrub/grassland (50.71 ha or 1.44%). DPSIR analysis indicates that these conversions trigger severe environmental and socio-economic degradation, including the loss of natural vegetation, terrestrial biodiversity decline, accelerated soil erosion and fertility loss, deteriorated water quality and yield, microclimate alteration, and escalating farm input costs that diminish crop quality. Anthropogenic pressures remain the primary driver of forest conversion to agriculture on the Mount Data National Park (MDNP). To achieve land degradation neutrality, the immediate, wide-scale adoption of sustainable land management (SLM) practices is imperative. It is strongly recommended that the *Sangguniang Panlalawigan* and congressional representatives of the affected areas enact legislative resolutions establishing an inter-agency committee led by the DENR–Protected Area Management Bureau (PAMB) to review, revise, and enforce sustainable land-use policies for MDNP.

Keywords: *National Park, soil erosion, degree and extent of soil erosion, composite land degradation, geomatics approaches, and universal soil loss erosion.*

Eggspert Tech: Real-Time Freshness Detection for Smarter Supply Chains

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Abstract

The research "A Developmental Study on Eggspert Tech: Real-Time Freshness Detection for Smarter Supply Chains" addresses the need for an automated system to accurately determine egg freshness, as traditional methods are often subjective and inefficient. Additionally, the lack of a standardized, technology-driven approach in small- and medium-scale egg production leads to inconsistencies in quality assessment, affecting consumer trust and market value. This study aims to develop a system using image-processing techniques and a weighing mechanism to classify eggs by freshness and size, ensuring a more reliable and standardized evaluation. The specific objectives include: developing a system that integrates image processing and weighing sensors to assess egg freshness and size; creating a standalone system with an onboard processing unit for classification; applying image processing algorithms to analyze visual characteristics such as length and width; and evaluating the system's functional suitability based on ISO 25010 standards.

Through testing and user evaluation, the system demonstrated effective performance, receiving a grand mean of 3.87 in survey results, indicating strong agreement among respondents that the system successfully met its objectives.

Keywords: *Automated Detection, Interfaces, Weighing System, Microcontroller, Mobile-based Application*

Hydrogeological Characterization of Quaternary Basalt Terrain of Southwestern Marawi City Using Geo-Electrical and Borehole Investigations

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Abstract

Groundwater exploration in volcanic terrains is challenging because subsurface materials are heterogeneous and groundwater-bearing zones may be difficult to identify from surface observations alone. This study assessed the use of geoelectrical anomaly profiling for hydrogeological characterization and preliminary aquifer delineation in a Quaternary basalt terrain in southwestern Marawi City, Philippines. Fifty-six geo-electrical survey locations were investigated using a PQWT-M200 portable natural electric field detector. The measured anomaly values were organized using a relative, site-derived classification and evaluated through descriptive, frequency, and vertical statistical analyses. Two boreholes were subsequently investigated to obtain lithological logs, Standard Penetration Test (SPT) records, groundwater observations, and representative soil samples for laboratory characterization. The geo-electrical results were correlated with the borehole and laboratory data to examine the relationship between anomaly classes and subsurface materials. High anomaly classes dominated the survey area, accounting for 44 of the 56 locations (81.5%), while Very High and Moderate classes occurred at 14.8% and 3.7% of the locations, respectively. Vertical analysis showed distinct changes in anomaly response with depth. Borehole correlation indicated that Moderate anomaly intervals were generally associated with silty sand, sandy silt, and other granular materials, with groundwater encountered within the corresponding interval in BH-2 at approximately 7.9 m depth. The integrated results supported the identification of a principal potential groundwater bearing zone and demonstrated the usefulness of combining geo-electrical reconnaissance with targeted borehole verification for preliminary groundwater assessment in heterogeneous basalt terrain. This approach provides a practical basis for subsequent aquifer testing and groundwater assessment in the study area.

Keywords: *Borehole investigation, Geo-electrical anomalies, Groundwater assessment, Hydrogeological characterization, Quaternary basalt.*

Exploring Students' Misalignment in Engineering Course Program: A Qualitative Study

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Abstract

This qualitative-phenomenological study investigates the academic challenges, lived experiences, and future outlook of misaligned Senior High School graduates enrolled in Engineering programs. Utilizing focus group discussions and snowball sampling among students across seven engineering programs, data was analyzed using manual coding and NVivo to identify core themes regarding subject difficulty, academic demands, teaching methods, and resource accessibility. The findings reveal that misaligned students face significant transition gaps due to a lack of foundational knowledge in Calculus, Physics, and Advanced Mathematics. This is intensified by instructor assumptions of prior preparation, fast-paced lectures, and a lack of bridging programs, alongside psychosocial pressures like urban relocation and isolation. Despite these formidable obstacles, participants display remarkable resilience, motivation, and a willingness to exert double the effort. To cope, they rely heavily on multimodal online tools, collaborative peer study groups, and strong support networks from family and professors. Ultimately, the study concludes that success in engineering is driven primarily by personal drive and resourcefulness rather than prior strand alignment, underscoring the critical need for inclusive teaching practices, structured support systems, and comprehensive bridging programs.

Keywords: *Academic Disadvantage, Engineering, Misalign, Coping Strategies*

Zero-Waste Innovations in The Abel Weaving Industry of Abra: Basis for A Sustainable Material Repurposing Model

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Abstract

The Abel weaving industry in Abra is an important cultural and economic heritage that sustains traditional textile craftsmanship and community livelihoods. However, weaving generates fabric scraps, excess threads or yarns, leftover production materials, packaging materials, and old or unused Abel materials that may be treated as waste. This study examined the sources of waste, current waste management and disposal practices, and innovative zero-waste and material-repurposing practices among active Abel weavers in Abra as a basis for a sustainable material repurposing model. A descriptive research design was used with a validated researcher-made five-point Likert questionnaire administered to 30 purposively selected Abel weavers. Data were analyzed using frequency counts, percentages, and weighted means. Findings showed that waste generation was a regular component of the weaving process, with an overall mean of 3.86. Leftover materials from production and old or unused Abel materials obtained the highest ratings (4.23 each), while damaged or defective woven products had the lowest rating (2.90). Current waste management and disposal practices were rated highly, with an overall mean of 4.29, particularly the reuse of waste materials in creating new products (4.53) and waste segregation (4.40). Innovative zero-waste and material-repurposing practices received the highest overall mean of 4.62. Small products crafted from leftover materials and collaboration with designers both obtained a mean of 4.73. These findings indicate that Abel weaving already contains community-based practices consistent with circular production, but further capacity building, partnerships, and systematic material recovery can strengthen their application. The study therefore proposes a Zero-Waste Model for Sustainable Abel Weaving in Abra that integrates waste identification, segregation, reuse and repurposing, product innovation, capacity building, and stakeholder collaboration. The model offers a locally grounded pathway for reducing material waste while supporting resource efficiency, livelihood opportunities, cultural heritage preservation, and the long-term competitiveness of traditional weaving.

Keywords: *Abel weaving; zero-waste innovation; material repurposing; sustainable textile production; circular economy*

A Multicriteria Analysis of Occupational Health and Safety Implementation in Construction Firms in Northern Samar Using the Analytic Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)

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Abstract

The construction industry remains one of the most hazardous sectors globally, with the Philippines experiencing significant challenges in implementing Occupational Health and Safety (OHS) standards despite existing regulatory frameworks. This study aimed to develop a structured, quantitative, and evidence-based framework for evaluating OHS implementation in construction firms operating in Northern Samar using a hybrid Multicriteria Decision-Making (MCDM) approach integrating the Analytic Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS).

The study employed a mixed-methods research design. The AHP phase involved ten subject matter experts who provided pairwise comparisons to determine the relative weights of three main OHS criteria: OHS Management and Administration, Technical Safety and Engineering, and Occupational Health and Welfare, along with their fifteen sub-criteria. The TOPSIS phase evaluated twenty-one construction firms using performance data collected from Safety Officers, Project Engineers, and Foremen through structured surveys, site observations, and document reviews. The analysis was complemented by a cost-benefit assessment examining compliance investments and non-compliance costs.

The AHP results revealed that Technical Safety and Engineering (0.329) was the highest-priority main criterion, followed by Occupational Health and Welfare (0.302) and OHS Management and Administration (0.231). At the sub-criterion level, Safe Use of Heavy Equipment (0.143) and Health Facilities and First Aid (0.136) emerged as the most critical factors. The TOPSIS analysis produced closeness coefficients ranging from 0.230 to 0.602, indicating substantial variation in OHS performance across firms. Six firms (28.6%) were classified as high performers, while six firms (28.6%) were categorized as low or very low performers. Firm characteristics—including PCAB category, company size, and years in operation—showed significant positive correlation with OHS performance, with larger, more established, and higher-classified firms consistently outperforming others. The cost analysis revealed that high-performing firms invested 89% more in compliance compared to low performers, achieving better safety outcomes and demonstrating a favorable return on safety

investment.

The study concludes that OHS implementation in Northern Samar's construction industry is highly uneven, with a clear performance gap between high-performing and low-performing firms. Technical safety measures and health facilities are the most critical determinants of OHS effectiveness. The study provides actionable recommendations for construction firms, government agencies, industry associations, and academic institutions to improve OHS implementation. These include prioritizing equipment safety, strengthening health facilities, investing in worker training, employing competent OHS personnel, and developing tiered regulatory approaches. The hybrid AHP-TOPSIS framework demonstrates potential as a replicable methodology for OHS assessment in other provinces and industries, contributing to the advancement of safety management practices in the Philippine construction sector.

Keywords: *Occupational Health and Safety, Analytic Hierarchy Process, TOPSIS, Multicriteria Decision-Making, Construction Industry, Northern Samar, Safety Performance, Construction Safety*

AI-Powered Augmented Reality E-Learning Application for Kindergarten Learners

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Abstract

Early childhood education relies heavily on foundational cognitive development, basic literacy, and numerical comprehension, which have traditionally been supported through static visual aids and physical tactile materials. While these methods are essential, modern digital-native learners benefit significantly from immersive media and dynamic visual feedback. This study presents the design, development, and evaluation of an AI-powered Augmented Reality (AR) e-learning Android application tailored specifically for kindergarten students. The proposed system merges mobile AR technologies with an adaptive machine learning analytics module to address core early education competencies, including alphabet recognition, numerical identification, basic vocabulary, colors, and geometric shapes.

The technical framework operates across native Android environments using the Agile Software Development Life Cycle (SDLC). Its architecture integrates a mobile AR software development kit (such as Google ARCore) to project interactive 3D models and animated educational assets directly into the student's physical surroundings, grounding abstract concepts into spatial visual experiences. Simultaneously, an embedded rule-based machine learning classification engine continuously monitors real-time user metrics—including error rates, response latencies, and completed exercises—to evaluate mastery levels and dynamically route students along personalized learning pathways.

The platform was systematically evaluated across five primary axes: system functionality, usability, technical performance, AI recommendation accuracy, and user experience (UX). Empirical findings demonstrated stable performance, maintaining a consistent frame rate of 55–60 Frames Per Second (FPS) during AR rendering and processing recommendation updates within 1.2 seconds. Usability assessments via adapted System Usability Scale (SUS) questionnaires exceeded the target baseline (>80/100), and the AI engine achieved a high correlation (>88%) with manual expert teacher evaluations. Furthermore, qualitative and observational metrics confirmed that the integration of AR visualization enhanced student engagement duration, while real-time summary dashboards provided instructors with actionable diagnostic feedback. Ultimately, this application demonstrates that fusing mobile augmented reality with adaptive artificial intelligence creates a robust, dual-purpose educational tool capable of reinforcing classroom instruction and structuring independent learning at home.

Keywords: *Artificial Intelligence, Augmented Reality, E-Learning, Kindergarten Education, Adaptive Learning*

Behind the Hustle of Republic Act 9178: Psychological Challenges and Survival Strategies of Barangay Micro Business Enterprises (BMBE)

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Abstract

This research explores the **psychological landscape** and **survival tactics** of small-scale entrepreneurs in the Philippines operating under the **Barangay Micro Business Enterprises (BMBE) Republic Act 9178**. While the law provides **tax exemptions** and **financial incentives** to spur local growth, business owners frequently struggle with **bureaucratic hurdles** and a significant lack of **technical resources**. A qualitative study of fifteen entrepreneurs in Sta. Ana, Pampanga, reveals that they face profound **financial anxiety**, **mental exhaustion** from multitasking, and a persistent **fear of failure**. To navigate these stressors, owners often rely on **short-term reactive strategies** and **community social capital** rather than long-term strategic planning. The findings emphasize that true sustainability for these micro-enterprises requires **holistic support** that addresses both **operational stability** and the **emotional well-being** of the proprietors. Overall, the text highlights a critical disconnect between **legislative intent** and the **practical realities** of managing a business amidst economic volatility.

Keywords: *Republic Act 9178, Psychological Challenges, Barangay Micro-Business Enterprises (BMBE)*

Enhanced Self-Learning Modules for Students' Academic Performance in Araling Panlipunan-11: Understanding Culture, Society, and Politics

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Abstract

This study aimed to evaluate the effectiveness of self-learning modules (SLMs) in Understanding Culture, Society, and Politics and to examine their relationship with students' scholastic performance based on self-rated comprehension. Using a descriptive-correlational research design, 100 students (14.51% of the population) were selected through cluster random sampling. Data were gathered via a researcher-developed questionnaire validated by three experts (Cronbach's $\alpha = 0.89$) and administered both online and face-to-face. Data analysis through SPSS employed descriptive statistics and Pearson's correlation. Findings showed that students rated the SLMs' effectiveness favorably, with a mean score of 3.85 (SD = 0.62) on a 5-point scale, while their mean academic performance was 87.3 (SD = 4.5). However, the correlation analysis revealed no significant relationship between students' academic performance and their perceived comprehension from the SLMs ($r = 0.08$, $p = 0.27$), indicating that students' evaluations of the modules were independent of their grades. The study concludes that although students view the SLMs as practical learning tools, their perceptions are not directly influenced by their scholastic performance. This highlights the need for curriculum developers and educators to further enhance instructional materials to support student learning outcomes better.

Keywords: *self-learning modules, academic performance, quantitative research, instructional materials, correlation*

Technological Transition in Grassroots Governance: A Community Needs Assessment and Technology Transfer Framework for Barangay Graceville

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Abstract

Manual and paper-based administrative workflows in frontline local government units can contribute to service delays, fragmented records, inefficient information retrieval, and difficulties in document verification. Although existing studies have established the potential of e-government and information technologies to improve public service delivery, limited attention has been given to community-responsive technology transfer approaches that systematically connect grassroots needs assessment, organizational readiness, technology requirements, capacity building, and long-term sustainability. This study addressed this gap by assessing the administrative, technological, and organizational needs of Barangay Graceville, San Jose Del Monte City, Bulacan, and developing an evidence-informed technology transfer framework for the ONE Graceville Barangay Information Management System (BIMS). Specifically, the study sought to identify operational bottlenecks in frontline services, assess technological and organizational readiness, determine functional and operational requirements, establish a technology transfer framework, and define performance and sustainability indicators for implementation and institutional handover. Employing a convergent mixed-methods community assessment and participatory action research approach, the study engaged 40 purposively selected stakeholders comprising barangay officials, administrative personnel, health-center personnel, and community representatives. Data were gathered through workflow audits, time-motion profiling, semi-structured needs interviews, and infrastructure readiness assessment. Findings revealed that certificate processing under the existing paper-based system required several hours to multiple business days, while resident and inventory records were maintained through fragmented paper logs and unstandardized spreadsheets, creating risks of data discrepancies and limiting efficient verification and retrieval. Based on the identified needs, the SALIN KAALAMAN TUNGO SA KAUNLARAN (SKTK)—Integration and Transfer of Technology for Educational Headway (ITECH) program developed and transferred the ONE Graceville BIMS, a centralized web-based platform integrating resident information management, document issuance, analytics, inventory, and personnel management functions. The technology transfer framework establishes measurable targets, including a 50% reduction in document processing time within six months, 90%

positive resident service satisfaction within one year, and digitization of core resident and asset records across five administrative functions. A five-year sustainability plan further provides for capacity building, system enhancement, interoperability, security strengthening, evaluation, and institutional handover. The study provides an empirically informed community-based framework for grassroots digital transformation and technology-enabled public service delivery aligned with Sustainable Development Goals 9, 11, 16, and 17.

Keywords: *Barangay Information Management System, E-Governance, Technology Transfer, Community Needs Assessment, Grassroots Digital Transformation*

Integrating Task Analysis and Stepwise Parametric Analysis for Enhancing Spatial Performance of Jewelry Workshops

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Abstract

Jewelry is a vital craft in Meycauayan City's economy and a demanding physical activity. Understanding spatial performance and indoor air quality (IAQ) in jewelry workshops is essential for designing user-centric spaces for micro-enterprises and home-based livelihoods. This study addresses spatial and health concerns arising from limited systematic planning in small-scale jewelry production. It aims to contribute to local jewelry artisans and micro-entrepreneurs by improving work conditions and ensuring safer, healthier, and more productive environments through a sequential exploratory mixed-method design using the analysis of actual jewelry-making tasks and workshop typologies in Meycauayan City, the study identifies spatial and environmental deficiencies that usually remain uncaptured by conventional architectural assessment methods. It examines barriers artisans face regarding spatial performance and IAQ, analyzing how workshop configurations directly affect physiological comfort. Findings reveal that existing spatial configurations are insufficient to support modern artisanal production and are further translated into evidence-based design guidelines for transitioning from cramped vernacular setups to modular, "right-sized" jewelry workshops that improve spatial and environmental performance while respecting artisans' dignity. This research reconciles spatial factors, framing the workshop as a "life-support production system" for both well-being and sustainability of the industry.

Keywords: *Jewelry Workshops, Spatial Performance, Stepwise Parametric Analysis, Task Analysis.*

Context-Aware Adaptive Attention Convolutional Neural Network: A Modified CNN Architecture for Dynamic Feature Reweighting and Enhanced Image Classification

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Abstract

Convolutional neural networks (CNNs) are effective for image classification, but conventional architectures do not explicitly use image-level contextual characteristics when determining feature importance. This study proposes the Context-Aware Adaptive Attention Convolutional Neural Network (CAA-CNN), a modified CNN architecture that combines a Context-Aware Analysis Layer (CAAL), an Adaptive Attention Layer (AAL), and a Feature Reweighting Layer (FRL). CAAL estimates selected contextual descriptors, including illumination, contrast, texture quality, and noise level. These descriptors are fused with learned CNN feature summaries to generate adaptive attention weights, which are then applied to the feature maps before classification. Gradient-weighted Class Activation Mapping (Grad-CAM) is incorporated as an explainability mechanism for examining the spatial evidence supporting predictions. The study uses a quantitative experimental design in which CAA-CNN is trained and evaluated on image-classification data and compared with a conventional CNN; SE-Net- and CBAM-style attention variants are also specified as stronger attention baselines when implemented. Performance is assessed using accuracy, precision, recall, F1-score, confusion matrices, robustness tests under contextual perturbations, computational cost, and ablation experiments. The proposed design is intended to determine whether explicit contextual information can improve dynamic feature reweighting, robustness, and interpretability without changing the task from image classification. Because the source proposal does not yet contain completed experiments, this manuscript presents the complete research design and analysis protocol and does not fabricate empirical results.

Keywords: *adaptive attention, convolutional neural network, context-aware learning, dynamic feature reweighting, Grad-CAM, image classification.*

Knowledge Management Practices and Perceived Organizational Performance of DASURECO: The Mediating Role of Individual Work Performance

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Abstract

Electric cooperatives rely on employees' technical knowledge, experience, and established work practices to maintain reliable administrative, operational, and service functions. In organizations where important knowledge is concentrated among experienced personnel, weak documentation and limited knowledge sharing may create continuity problems when employees are absent, transferred, or leave the organization. This study examines whether knowledge management practices are associated with perceived organizational performance in Davao del Sur Electric Cooperative, Inc. (DASURECO), and whether individual work performance helps explain this relationship.

An explanatory sequential mixed-methods design is being used. The quantitative phase consists of a cross-sectional survey covering knowledge acquisition, sharing, creation, codification, and retention; task performance, contextual performance, and counterproductive work behavior; and perceived organizational performance. Eligible regular and direct-project employees with at least six months of continuous service will be invited through total enumeration from a direct employee population of 436. Confirmatory factor analysis and covariance-based structural equation modeling will be used to assess the measurement structure, direct relationships, and the indirect relationship between knowledge management practices and perceived organizational performance through individual work performance. Semi-structured interviews will follow the quantitative phase to help explain important statistical patterns.

Data collection and analysis are still in progress, and no empirical findings are reported at this stage. The study is intended to clarify how organizational knowledge practices relate to employee work behavior and perceived organizational outcomes in an electric-cooperative setting. The results may help DASURECO identify practical priorities for knowledge documentation, sharing, retention, and employee development while also offering relevant insights for other electric cooperatives facing similar knowledge-continuity challenges.

Keywords: *electric cooperative, individual work performance, knowledge management practices, perceived organizational performance.*

HR Digitalization, HR Competence and Employee Productivity in Bukidnon II Electric Cooperative (BUSECO), Inc.

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Abstract

The rapid shift toward digital transformation has reshaped how organizations manage their human resources, making it increasingly important to understand how these changes affect employee competence and performance, particularly in institutions that are still adjusting to digital systems. This study examines the relationship between HR Digitalization, HR Competence, and Employee Productivity among regular and probationary employees of Bukidnon II Electric Cooperative (BUSECO), Inc. Using a quantitative research design, the study employed Structural Equation Modeling (SEM) to determine the level of HR Digitalization within the cooperative, assess employees' HR Competence, and evaluate their combined effect on Employee Productivity, with particular attention to whether HR Competence mediates the relationship between HR Digitalization and Employee Productivity. Data were gathered through a survey questionnaire administered to 132 regular and probationary employees of BUSECO, who were selected as respondents for the study. The results reveal the extent to which digital HR tools and systems influence employee skills and, in turn, their productivity within the organization. These findings are expected to offer valuable insights into how digital transformation in HR practices shapes employee competence and performance, providing BUSECO and similar organizations with a basis for strengthening their HR digitalization strategies to better support their workforce. Furthermore, this study contributes to the growing body of literature on HR digitalization in cooperative organizations, particularly within the Philippine electric cooperative sector, and may serve as a useful reference for future research exploring the connection between technology adoption and human resource management outcomes.

Keywords:*HR Digitalization, HR Competence, Employee Productivity, Structural Equation Modeling (SEM), Digital Transformation, Human Resource Management, Electric Cooperatives, BUSECO.*

HOLD ON: Human-Oriented Linkage Device For Opposing Nicotine, A Bentengan-Based Campaign For Adolescent Tobacco Control

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Abstract

Background: In Indonesia, Survei Kesehatan Indonesia (SKI) 2023 shows the number of child smokers age 10-15 increased from 4.1 million in 2018 to 5.9 million in 2023. Most children start smoking when they spend a lot of time with school friends, HOLD ON is a campaign that in elementary school. It takes a traditional Indonesian game called *bentengan* and turns it into a modern game. **Objectives**: This project aims to to build adolescent's subjective norms around smoking, by creating a cooperative game that needs peer support to work. **Methods**: The system has two machines in the schoolyard. Each machine has a sensor. Both sensors must be pressed at the same time to get a reward. Screens on the machines show how many students are still needed. There are three levels. Each level also makes the two machines farther apart. Every time students succeed, they get a card with facts about smoking and a puzzle piece. The puzzle shows a picture of children who don't smoke. Students need one week to finish the puzzle, and they need many classmates to help to finish it. **Results**: This campaign is a health campaign for future impact. To check if it works, we will use a survey uses the Theory of Planned Behavior construct. **Conclusion**: HOLD ON Campaign takes children to not just listen to anti-smoking messages, but to actively change their own group's attitude about smoking.

Keywords: *Tobacco Control, Gamified Health Promotion, Proposed school-based Intervention*

Moderating Role of Reading Comprehension in The Nexus Between Perceived Problem-Solving Ability and Mathematical Competence Among High School Students

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Abstract

Reading comprehension plays a pivotal role in students' mathematical competence by enabling them to interpret problem statements, extract relevant information, and implement effective problem-solving strategies. This study investigated the moderating role of reading comprehension in the relationship between students perceived problem-solving ability and mathematical competence. A total of 300 Junior High School students from six public schools in the Division of Pampanga were selected using a stratified sampling technique. Findings indicated that students self- reported high levels of perceived problem-solving ability, reading comprehension, and mathematical competence. Regression analysis revealed that perceived problem-solving ability significantly predicted mathematical competence. Moreover, reading comprehension was found to moderate this relationship, strengthening the link between problem-solving perception and actual mathematical performance. These results suggest that reading comprehension is essential not only for understanding mathematical problems but also for actualizing students' problem-solving potential. The study recommends that educators incorporate reading strategies into mathematics instruction to enhance both literacy and numeracy, particularly for students with lower reading proficiency.

Keywords: *Reading Comprehension, Problem-Solving Ability, Mathematical Competence*

Digital Mindful Eating for Adults With Overweight or Obesity: A Systematic Review of Randomized Trials

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Abstract

Background and Objective

Digital platforms increasingly deliver mindful eating training, but whether these programs improve eating behavior or body weight in adults with overweight or obesity remains uncertain. This systematic review aimed to assess randomized trials of interventions that explicitly taught eating-focused mindfulness through mobile applications, websites, telephone services, or online sessions. It considered what was randomized, which outcomes improved compared with controls, and whether the evidence was at risk of bias.

Methods

Search records were exported from Scopus, PubMed, and ScienceDirect. The exports contained 538 records; 55 duplicates were removed, 483 titles and abstracts were screened, and 33 full-text reports were assessed. Twelve randomized-trial reports were selected for a structured narrative synthesis. Information on participants, intervention content, digital delivery, comparison groups, follow-up, and eating- and weight-related outcomes was extracted. Risk of bias was evaluated using the revised tool for randomized trials.

Results

The trials differed markedly in intervention content, control conditions, outcome scales, and follow-up. Some randomized comparisons favored digital mindful eating-related programs for selected measures of emotional eating, binge-eating symptoms, or eating restraint; other comparisons showed limited or no additional benefit. Effects on weight and body mass index were less consistent. Several interventions combined mindful eating with dietary or psychological treatment, whereas others randomized only additional coaching or text-message support. Consequently, improvements observed in these trials cannot always be attributed to mindful eating itself. Missing follow-up data and self-reported outcomes also reduced confidence in parts of the evidence.

Conclusions

Digital mindful eating interventions may help improve selected eating behaviors, but their added effect on body weight remains uncertain. Future trials should isolate key intervention components, report clear between-group outcomes, and improve follow-up.

Keywords: *Digital health, Eating behavior, Mindful eating, Overweight and obesity, Randomized controlled trials*

Digital Innovation in Public Health Service Delivery: A Systematic Review of Teledentistry Implementation for Children's Oral Health in Low- and Middle-Income Countries

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Abstract

Background and Objective: Teledentistry is increasingly explored to improve access to children's oral health services, particularly in low- and middle-income countries (LMICs). This systematic review examined teledentistry interventions for children's oral health, focusing on delivery methods, diagnostic performance, feasibility, and reported outcomes.

Methods: Records were retrieved from Scopus and ScienceDirect, yielding 358 records. After removing six duplicates, 352 records underwent title and abstract screening, and 12 studies were included in a structured narrative synthesis. Data on study characteristics, participants, technologies, diagnostic accuracy, user acceptability, implementation feasibility, and oral health outcomes were extracted and synthesized narratively.

Results: The 12 studies addressed remote caries assessment, diagnostic accuracy, user acceptance, implementation feasibility, and digital oral health promotion. Smartphone-based imaging and intraoral cameras showed potential for remote caries screening, although diagnostic performance varied by device and lesion threshold. Individual studies reported smartphone sensitivity of 68.5%–73% for selected caries outcomes, while another reported sensitivity above 80% and specificity above 90%. Implementation-focused studies reported favorable acceptance among children, caregivers, and community health workers. Digital monitoring interventions also showed improvements in selected oral hygiene behaviors and clinical indices. However, variations in study methods and characteristics should be considered when interpreting the findings and comparing results across studies.

Conclusion: Teledentistry may support children's oral health services through remote screening, consultation, monitoring, and health promotion. Effective implementation requires standardized imaging protocols, operator training, appropriate referral pathways, and further rigorous evaluation of diagnostic performance and clinical effectiveness.

Keywords: *Teledentistry; Children's oral health; Digital health; Diagnostic accuracy; Public health; Low- and middle-income countries.*

The Effect Of Dasureco Portal Services on Customer Satisfaction: Assessing The Digital Customer Service Experience

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Abstract

This study aims to assess the effect of DASURECO Portal Services on customer satisfaction, with emphasis on the digital customer service experience of customers of the Davao del Sur Electric Cooperative, Inc. (DASURECO). As digital platforms become increasingly important in delivering customer services, electric cooperatives are expected to provide services that are accessible, convenient, reliable, and responsive to customer needs. The study seeks to determine how customers perceive DASURECO Portal Services in terms of accessibility, ease of use, reliability, responsiveness, and convenience, and how these dimensions influence their overall customer satisfaction. The study will employ a mixed-methods research approach, utilizing a structured survey questionnaire to gather quantitative data from DASURECO customers, supplemented by qualitative customer feedback to gain deeper insights into their digital service experiences. The quantitative data will be analyzed using appropriate descriptive and inferential statistical techniques to determine the level of portal service experience and customer satisfaction and to examine the relationship between the variables. Meanwhile, qualitative responses will be analyzed to identify recurring themes, concerns, and suggestions related to the use of DASURECO Portal Services. The study is expected to provide DASURECO with customer-based evidence that can support improvements in digital service delivery. The findings may identify the strengths and areas for improvement of the portal and provide practical recommendations for enhancing customer experience, service efficiency, and satisfaction. Ultimately, the study aims to contribute to the development of a more accessible, reliable, responsive, convenient, and customer-centered digital service platform that addresses the evolving needs and expectations of DASURECO customers.

Keywords: *Customer Perception, Customer Satisfaction, DASURECO Portal Services, Digital Customer Experience, Service Quality*

Customer Perception, Customer Satisfaction, DASURECO Portal Services, Digital Customer Experience, Service Quality

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Abstract

Digital payment channels provide electricity consumers with alternative means of settling their bills, potentially improving payment convenience, accessibility, and timeliness. However, the relationship between digital payment adoption and payment compliance among member-consumer-owners (MCOs) of electric cooperatives remains an important area for investigation. This study aims to examine the adoption of digital payment channels and its relationship with payment compliance among residential MCOs of South Cotabato II Electric Cooperative, Inc. (SOCOTECO II). An explanatory sequential mixed-methods design will be employed, beginning with a quantitative cross-sectional survey of 385 residential MCOs, with the sample size based on a 95% confidence level and a 5% margin of error. The survey will assess digital payment adoption in terms of awareness, usage, perceived convenience, accessibility, and reliability, alongside respondents' electricity bill payment practices. Quantitative data will be analyzed to determine the extent of digital payment adoption, the level of payment compliance, and the statistical relationship between these variables. Subsequently, semi-structured interviews with selected respondents will explore their experiences, perceptions, and challenges associated with digital payment channels. Particular attention will be given to transaction fees, internet connectivity, service interruptions, digital literacy, and access to assistance. The qualitative findings will be used to explain and contextualize the quantitative results. And the integrated findings will be expecting to provide an evidence-based understanding of the relationship between digital payment adoption and timely electricity bill settlement. The study may also inform recommendations for improving digital payment accessibility, addressing barriers to adoption, and strengthening payment compliance among residential MCOs of SOCOTECO II.

Keywords: *accessibility, digital payment adoption, payment compliance, perceived convenience*

Accessibility, Digital Payment Adoption, Payment Compliance, Perceived Convenience

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Abstract

The demographic bonus provides a strategic opportunity for Indonesia to jump from a developing country to a developed country. However, the abundance of the productive age population does not automatically encourage economic growth without an effective human capital transition. This study aims to analyze the human capital transformation strategy in optimizing the demographic bonus to increase Indonesia's global economic competitiveness. Through a descriptive-analytical approach, this study identifies three main pillars of the transition: education reform based on the needs of industry 4.0, strengthening the research and innovation ecosystem, and upskilling and reskilling the workforce inclusively. The results of the analysis show that failure to manage this transition risks being trapped in the middle-income trap and increasing the educated unemployment rate. On the contrary, directed investment in the quality of health, higher education, and mastery of digital technology is able to transform demographic potential into highly competitive national productivity. In conclusion, collaborative synergy between the government, academia, and the industrial sector is the main key to locking the demographic bonus pillar as the main driver of the Golden Indonesia vision.

Keywords: *Demographic Bonus, Human Capital Transition, Global Competitiveness, Middle-Income Trap.*

From Category A to Triple AAA: A Structural Equation Modeling Study of Transformational Leadership, Employee Engagement, and Organizational Performance among First Bukidnon Electric Cooperative (FIBECO), Inc. Employees

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Abstract

Achieving and sustaining the highest performance category of Triple AAA under the National Electrification Administration (NEA) framework represents a significant organizational goal for electric cooperatives in the Philippines. Behind this performance rating are leaders who inspire employees who are engaged and a shared commitment to excellence for the benefit of its member-consumer-owners. This study examines the relationships among transformational leadership, employee engagement, and organizational performance among employees of the First Bukidnon Electric Cooperative (FIBECO), Inc. It is based on the idea that effective transformational leadership can improve employee engagement and contribute to better organizational performance. Although previous studies have examined these variables, limited research has explored their interrelationships within Philippine Electric Cooperatives, particularly FIBECO, with the potential mediating role of employee engagement in the relationship between transformational leadership and organizational performance.

The study will involve 143 employees from a total population of 227 and will use an explanatory mixed-methods research design. The quantitative part will use a structured survey to measure employees' perceptions of transformational leadership, employee engagement, and organizational performance. Currently, data gathering is still in progress, and no interviews have been conducted yet. Once data are gathered, the data will be analyzed using descriptive statistics, correlation analysis, regression analysis, and Structural Equation Modeling (SEM). The qualitative part will involve an interview with a FIBECO manager to gain insights into leadership practices, employee engagement, organizational challenges, and performance improvement strategies. The interview data will be analyzed thematically.

The study is expected to contribute to a better understanding of how transformational leadership and employee engagement may be associated with organizational performance in the electric cooperative sector. Its findings may inform leadership development, employee engagement initiatives, and organizational improvement strategies within FIBECO and other electric cooperatives operating in similar contexts.

Keywords: *Electric Cooperative, Employee Engagement, Organizational Performance, Transformational Leadership*

Electric Cooperative, Employee Engagement, Organizational Performance, Transformational Leadership

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Abstract

Small island developing States are challenged with both decarbonizing their electricity supply and ensuring the provision of essential services during climate hazards. Commissioning renewable infrastructure does not prove resilient service delivery, although it can help to decrease fuel dependence. This study explores the evidence gathered from documentary sources carried out in Malekula and Espiritu Santo, Vanuatu, to inform engineering priorities for climate resilience.

A structured comparative documentary review was conducted on disclosures for projects, reports from electricity regulators and relevant national policy documents and available research that were created up to 13 October 2026. Evidence was sorted by location, reporting period, indicator and status with infrastructure delivery, reported operation, projections and recommendations separate. No attempt was made to resolve any discrepancies between sources by assuming that they were in conflict, merely that they were cross source. The focus of analysis was generation availability, network protection, capacity and continuity of maintenance of critical services.

Different operational priorities are shown across the cases. The reported development for Malekula is hydropower development and extension of the distribution system, while the reported development for Santo is extension and feeder protection and fault location. Other areas involved include an emergency hydropower shutdown and operator training needs in Malekula, and protection concerns on Santo's long network. Sustained renewable energy production and comparative performance of resilience cannot be estimated because of conflicting reporting of hydropower operations and the lack of monthly generation reporting. Later tariff notices relate to reliability investment and hydro generation requirements to service regulation. These findings are for operational weaknesses and evidence quality, and not to suggest that the reported faults were due to climate hazards.

The study builds a framework for hazard screening, the protection of assets, capability of operations and verified service recovery based on the evidence. It is recommended that the following priorities be followed: Coordinated network protection, maintainable flood protection, operator support, and targeted assessment of solar/battery backup power for critical loads. The contribution is an engineering comparison that is traceable and distinguishes renewable deployment from proven resilience, and sets a practical basis for the monitoring of performance and investment appraisal in other island systems.

Keywords: *Renewable electricity; climate resilience; Vanuatu; island power systems; documentary case study*

Renewable Electricity; Climate Resilience; Vanuatu; Island Power Systems; Documentary Case Study

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Abstract

Long-distance running, a physically demanding activity, requires persistence, proper diet, and adequate rest. This study examined the association between coconut-oil supplementation, perceived endurance, perceived recovery, consumer acceptance, and purchase intention of long-distance runners in the province of Rizal. It was also conducted to identify whether long-distance runners' experience with the efficacy of coconut-oil supplementation correlated with perceived endurance and perceived recovery, and to correlate perceived endurance, perceived recovery, and consumer acceptance to purchase intention for coconut-oil-based sports-nutrition products. This was a quantitative, non-experimental, descriptive-correlational, cross-sectional study using a descriptive survey research design. Data were collected using a research instrument comprising a 15-item questionnaire with a 5-point Likert scale. The research instrument measured the following elements: coconut-oil supplementation, perceived endurance, perceived recovery, consumer acceptance, and purchase intention. The target participants were adult runners who trained weekly for 5 km or more.

For illustrative purposes, this capstone included 169 responses. The descriptive findings suggested generally positive perceptions of coconut-oil supplementation on the five constructs. Pearson correlations suggested that coconut-oil supplementation was significantly and positively correlated with perceived endurance and perceived recovery. Perceived endurance, perceived recovery, and consumer acceptance were also significantly positively correlated with purchase intention. The multiple regression suggested that perceived endurance, perceived recovery, and consumer acceptance could collectively account for 39.5% of the variance in purchase intention. Among the three predictors, consumer acceptance showed the largest standardized regression coefficient. The findings imply that the perceived product-specific benefit and consumer acceptance may be taken into account in product development. However, the implications of the findings are limited given that the study only measures perceptions rather than physiological responses. The study produces consumer-oriented evidence useful for product formulation, positioning, pricing research, promotion, and future product trials.

Keywords: *coconut oil, long-distance runners, perceived endurance, perceived recovery, consumer acceptance, purchase intention, sports nutrition, product development*

Pharmacists as Vaccinators: Evaluating Patient Satisfaction & Perceptions of Pharmacy- Based Immunization in the National Capital Region Philippines

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Abstract

Community pharmacies such as SouthStar Drug are increasingly becoming an accessible venue for preventive healthcare, shifting routine immunizations away from traditional hospital and clinic settings. In the Philippines, Resbakuna sa Botika, launched during the pandemic demonstrated that retail pharmacies can deliver this kind of care. For large pharmacy chains, expanding pharmacy-based immunization is not only a public health contribution but also an opportunity to develop a new, sustainable profit stream. However, delivering clinical services within a retail setting brings challenges, particularly around cold- chain storage, staffing, and resource allocation. This study examines patient experience and perceived service quality as a basis for developing an immunization model that can build business profitability. This study follows a quantitative, cross-sectional research design, grounded in a pragmatist research paradigm. A survey will be administered to 400 adult patients across eight Southstar Drug branches in the National Capital Region. Service quality will be assessed using a 5-point scale across the five SERVQUAL dimensions: Reliability, Assurance, Tangibles, Empathy, and Responsiveness. Descriptive and correlational analyses, along with regression modeling, will examine how demographic profile and service quality relate to overall patient satisfaction. The study is expected to identify the operational and service factors that most influence patient satisfaction and the likelihood of returning for future vaccinations. Statistical modeling should highlight which SERVQUAL dimensions represent the greatest gaps, as well as how these perceptions vary across demographic groups within an urban retail context. By examining how service quality relates to patient satisfaction and return intention, this study offers a practical, evidence-based basis for program evaluation. The findings are intended to inform decisions on improving workflow efficiency, identifying branches with strong growth potential, strengthening patient engagement, and supporting the broader rollout of pharmacy-based immunization services.

Keywords: *Community pharmacy, Patient satisfaction, Pharmacy-based immunization, SERVQUAL, Service quality*

Cross-Promotion as a Digital Advertising Strategy: Its Impact on Brand Awareness and Purchase Intent Among Skincare Consumers

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Abstract

The skincare industry has become increasingly competitive as businesses leverage social media platforms such as Facebook, Instagram, and Tiktok to promote their products. Small and emerging skincare businesses often struggle to stand out online due to limited advertising budgets and intensifying competition. This study examined cross-promotion as a digital advertising strategy, wherein two or more businesses collaborate to promote each other's products or services. The primary objective was to determine the effectiveness of cross-promotion for skincare businesses in terms of brand awareness, customer reach, social media engagement, and potential customers' purchase intention. The study employed a quantitative descriptive-correlational research design. One hundred (100) respondents from selected local skincare businesses in the Philippines participated through purposive and stratified sampling. These respondents were business owners, managers, marketing staff, or social media staff with knowledge or experience in digital advertising, marketing, and promotional activities.

A researcher-made 15-item questionnaire using a five-point Likert scale was used to measure the extent of cross-promotion use had an overall mean of 4.24, indicating a high level of use. The overall effectiveness of cross-promotion obtained a mean of 4.46. Among the four areas, customer reach had the highest mean of 4.57, followed by brand awareness at 4.53, social media engagement at 4.35, and potential customers' purchase intention at 4.30. Correlation analysis revealed a significant relationship between the extent of cross-promotion use and its effectiveness, with a Pearson's r value of 0.87 and a p-value of 0.001. These results suggest that cross-promotion helps skincare businesses reach more people, enhance brand recognition, generate more social media interactions, and encourage potential customers to buy. The study provides useful information that can help skincare businesses create practical and collaborative digital advertising strategies.

Keywords: *cross-promotion, digital advertising, brand awareness, purchase intention, skincare industry, social media engagement*

The Effect of Technology-Driven Manufacturing Practices on Operational Efficiency and Product Quality of a Banana Powder Manufacturing Firm in Davao City

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Abstract

This study will examine the relationship between technology-driven manufacturing practices, operational efficiency, and product quality at Philippine Nutri Fruit Development Incorporated, a banana powder manufacturing firm located in Panabo, Davao del Norte. Given the company's operations in a competitive agro-industrial market, understanding these relationships will be important for both employees and management. The study will employ a quantitative approach using a non-experimental, descriptive-correlational research design. Data will be collected from 92 production employees, supervisors, and managers through a validated survey questionnaire, supplemented by semi-structured interviews to provide further insights into the findings. The data will be analyzed using mean, standard deviation, Pearson product-moment correlation, and simple linear regression to assess the levels of technology-driven manufacturing practices, operational efficiency, and product quality, as well as the relationships among these variables.

The study will seek to determine whether technology-driven manufacturing practices are significantly associated with operational efficiency and product quality and whether these practices can significantly predict the two outcome variables. The results are expected to provide insights into the role of technology in improving manufacturing operations and maintaining product quality. The findings may also help the company identify opportunities to enhance automation, strengthen employee training, and implement effective preventive maintenance practices. Ultimately, this study will contribute to a better understanding of technology-driven manufacturing practices and their potential implications for operational efficiency and product quality in the Philippine agro-industrial sector.

Keywords: *banana powder manufacturing, operational efficiency, product quality, technology-driven manufacturing*

A Thematic Analysis of Stakeholders' Perspectives on the Collaborative Forest Landscape Governance in the Selected Communities of Mount Makiling Forest Reserve, Philippines

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Abstract

The global community has recognized the complexity of forest management which resulted in landsc ape approaches such as Forest Landscape Restoration (FLR) to address these challenges by integrating sustainable land use practices within landscapes. However, the operationalization of these approaches on the ground has been limited. With this, the concept of Collaborative Forest Landscape Governance (CFLG) has emerged, aiming to enhance collaboration and achieve long-term ecological and socio-economic benefits in forested landscapes. This study explored the CFLG in the Philippines focusing on two communities at the Mount Makiling Forest Reserve: Santa Elena and San Vicente in Santo Tomas, Batangas. A series of two (2) Focus Group Discussions (FGDs) and 22 Key Informant Interviews (KIIs) were conducted to 45 respondents. Results revealed that 13 and 18 forest-related initiatives were conducted in Santa Elena and San Vicente, respectively, with 4 of them being inter-community programs. Meanwhile, the respondents offered diverse perspectives on the characteristics and capabilities of involved stakeholders for a successful CFLG implementation. Some of the themes generated from this aligned with existing literature, while others were unique to the local context. Respondents' definition and perception on the CFLG have generated a total of 17 themes, most of which were on "forest management," "participation," "cooperation", and "administration". Stakeholders demonstrate familiarity with CFLG terms individually and as a whole term, but have limited understanding of its operations. Good collaboration efforts exist, but the top-down management approach at the government level and limited inter-community programs pose challenges. Improving funding, linkaging, and stakeholder connections are also key findings in this study. Nevertheless, all of the participants expressed positive sentiments on implementing the CFLG in their respective communities. Recommendations include developing systematic management and needs-based strategy, increasing stakeholder engagement, information dissemination, and engaging with forest management experts for deeper understanding of the CFLG on the ground.

Keywords: *collaborative governance, forest governance, community, participation, forest management*

Strategic Budget Allocation in Digital Advertising: Perspectives of Digital Marketing Professionals on Campaign Effectiveness at Calibr8 Digital Inc.

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Abstract

Today, digital marketing is one of the most popular marketing strategies in the world. This medium has become important because of the increasing number of businesses that use online platforms to reach consumers for marketing their products, services, and campaign goals. With a multiplicity of platforms and activities from which businesses seek advertising capital, marketing professionals need to strategically organize and oversee these resources. This research aims to analyze the distribution of advertising budgets and the assessment of the effectiveness of advertising campaigns by digital marketing specialists at Calibr8 Digital Inc. Its goal is to determine the level of budget distribution, to assess the effectiveness of marketing activities, and to explore the experience and methods of people who make these decisions.

To achieve these goals, the present research will use a mixed-method approach employing quantitative and qualitative methods in a descriptive-correlational design. Quantitative data will be collected through a 15-item questionnaire with a five-point Likert scale to be administered to all sixteen digital marketing associates of Calibr8 Digital Inc. using total enumeration sampling. Data analysis will be done using descriptive statistics, including frequency, percentage, mean, and standard deviation. Furthermore, Partial Least Squares Structural Equation Modeling (PLS-SEM) utilizing SmartPLS will be employed to enhance comprehension of the interrelations among the study's components.

Semi-structured interviews will be conducted qualitatively to learn about respondents' actual experience and strategies on fund distribution and evaluation of campaign results. Thematic analysis will be used to analyze common themes and challenges to contextualize the quantitative results.

The present research attempts to combine these approaches to understand budget allocation methods and campaign effectiveness in the organization of Calibr8 Digital Inc.

Keywords: *digital advertising, budget allocation, marketing campaign effectiveness, digital marketing professionals, PLS-SEM, mixed-methods.*

Violence Against Men: Story of Adversity and Resilience

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Abstract

Violence against men remains an underrecognized social issue in the Philippines, particularly in terms of their lived experiences, the adversities they face, and the resilience mechanisms they employ, often influenced by cultural gender norms and limited policy support. This study examined the lived experiences of men who experienced adversity as a result of violence and the coping strategies and resilience mechanisms they employed in responding to these experiences. A qualitative narrative case study design was used with four male participants from the Cordillera region who had firsthand experiences of intimate partner violence. Data were gathered through semi-structured in-depth narrative interviews and analyzed through narrative and cross-narrative analysis. Findings showed that violence against men was a complex and cumulative experience that often began with relational and family stressors, such as jealousy and unemployment, and escalated into severe physical violence and life-threatening threats. Participants also experienced psychological distress, economic devaluation and provider-role stigma, and barriers to support and help-seeking. Despite these adversities, participants demonstrated resilience through spiritual faith, economic engagement, personal growth, and social support, enabling them to reclaim identity, safety, and personal agency. The study concludes that male victimization requires recognition as a legitimate social issue and inclusive institutional responses. It recommends strengthening awareness programs, support services, mental health interventions, safe support networks, and gender-inclusive domestic violence policies.

Keywords*: adversity, intimate partner violence, resilience, violence against men*

Lifelong Engagement and Fulfillment of Retired Teachers

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Abstract

Retirement represents a significant transition in the professional lives of teachers, creating opportunities for continued engagement beyond formal classroom instruction. Despite their extensive experience and expertise, limited studies have examined how retired teachers remain actively engaged and fulfilled after retirement, particularly within the Cordillera Administrative Region. This study investigated the lifelong engagements and level of fulfillment of retired teachers beyond the classroom. Specifically, it sought to identify the personal and professional engagements pursued by retired teachers after retirement and determine their level of fulfillment. The study employed an exploratory sequential mixed-methods research design. In the qualitative phase, semi-structured interviews were conducted with five (5) retired teachers, while the quantitative phase involved a survey of twenty (21) retired teachers using a researcher-developed questionnaire. The qualitative data were analyzed through thematic analysis, whereas the quantitative data were treated using frequency counts, percentages, and weighted means. The findings identified six major domains of lifelong engagement: civic leadership and community service, spiritual devotion and religious engagement, continued educational and professional involvement, leisure and wellness activities, family engagement, and agricultural and livelihood activities. Furthermore, the respondents attained an overall Fulfilled level of lifelong engagement, with family relationships and spiritual involvement emerging as the highest sources of fulfillment. The study concludes that retirement is not a period of disengagement, but a stage characterized by continued participation, meaningful contribution, and personal fulfillment. It is recommended that educational institutions, local government units, and other relevant stakeholders recognize and maximize the expertise of retired teachers by creating opportunities that encourage their continued engagement while supporting their overall well-being and active aging.

Keywords*: exploratory sequential mixed-methods, level of fulfillment, lifelong engagement, retired teachers.*

Parenting Under Constraint: Lived Experiences of Non-Incarcerated Parents in the Child Upbringing

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Abstract

This qualitative phenomenological study explored the lived experiences of non-incarcerated parents in child upbringing while their spouses were deprived of liberty. Guided by the need to understand the often-overlooked experiences of parents left to assume sole caregiving responsibilities, the study employed in-depth semi-structured interviews with six non-incarcerated mothers. Data were analyzed using Interpretative Phenomenological Analysis (IPA). Findings revealed that parents experienced significant realities, including Assuming Multiple Parenting Roles, emotional distress, social isolation, financial responsibility, and the emotional protection of their children. Despite these challenges, participants demonstrated resilience through drawing strength from their children, strategic household adaptation, maintaining emotional strength and a positive outlook, faith-based coping, seeking support from family, community, and institutions, and strengthening parenting through patience and sacrifice. The study concludes that non-incarcerated parents face multidimensional emotional, social, and economic burdens that reshape their parenting roles and family dynamics. Nevertheless, their commitment to their children, supported by adaptive coping strategies, enables them to sustain family stability despite prolonged adversity. The findings highlight the need for family-centered psychosocial interventions, strengthened institutional support, and policies that recognize and address the unique needs of families affected by incarceration.

Keywords*: Non-Incarcerated Parents, Lived experiences, Coping Mechanisms, Child Upbringing), Persons Deprived of Liberty (PDL), Parental incarceration*

AI Governance Readiness in Private Higher Education Institutions: Evidence from a Geographically Peripheral Philippine Region

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Abstract

Universities are adopting artificial intelligence (AI) systems faster than most institutions can govern them, and existing governance research draws largely on well-resourced settings in the Global North. Little is known about how tuition-dependent private institutions in geographically peripheral regions manage the technical and organizational demands of AI deployment. This study examines the governance readiness of private higher educational institutions (HEIs) in the Cordillera Administrative Region (CAR), Philippines. Semi-structured interviews were conducted with 10 institutional administrators, and the transcripts were subjected to thematic analysis. Data were coded inductively, and themes were refined through iterative comparison across participants' accounts. Four interrelated themes emerged from the interview data. Infrastructural determinism describes how uneven connectivity and limited technical capacity narrow the range of feasible governance options. Socio-cultural integrity reflects administrators' concern that AI systems may displace local values and academic norms. Organizational policy lag denotes the gap between the pace of AI adoption and the pace of institutional rule-making. Third-party proxy risks arise when vendors and external platforms, rather than the institutions themselves, determine how data are processed and decisions are made. The findings suggest that AI governance in resource-constrained settings is as much as a socio-technical design problem as a technical one. For institutional leaders, the results indicate that readiness depends on more than acquiring tools: it requires attention to connectivity, written policy, cultural fit, and the terms on which vendors handle institutional data. For policymakers and system developers, the findings also point to the need for context-sensitive governance arrangements that retain human oversight where infrastructure and regulatory capacity remain uneven.

Keywords*: AI governance, AI readiness, higher education institutions, qualitative study, socio-technical systems*

Digital Innovation in Public Health Service Delivery: A Systematic Review of Teledentistry Implementation for Children's Oral Health in Low- and Middle-Income Countries

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Abstract

Background and Objective: Teledentistry is increasingly explored to improve access to children's oral health services, particularly in low- and middle-income countries (LMICs). This systematic review examined teledentistry interventions for children's oral health, focusing on delivery methods, diagnostic performance, feasibility, and reported outcomes.

Methods: Records were retrieved from Scopus and ScienceDirect, yielding 358 records. After removing six duplicates, 352 records underwent title and abstract screening, and 12 studies were included in a structured narrative synthesis. Data on study characteristics, participants, technologies, diagnostic accuracy, user acceptability, implementation feasibility, and oral health outcomes were extracted and synthesized narratively.

Results: The 12 studies addressed remote caries assessment, diagnostic accuracy, user acceptance, implementation feasibility, and digital oral health promotion. Smartphone-based imaging and intraoral cameras showed potential for remote caries screening, although diagnostic performance varied by device and lesion threshold. Individual studies reported smartphone sensitivity of 68.5%–73% for selected caries outcomes, while another reported sensitivity above 80% and specificity above 90%. Implementation-focused studies reported favorable acceptance among children, caregivers, and community health workers. Digital monitoring interventions also showed improvements in selected oral hygiene behaviors and clinical indices. However, variations in study methods and characteristics should be considered when interpreting the findings and comparing results across studies.

Conclusion: Teledentistry may support children's oral health services through remote screening, consultation, monitoring, and health promotion. Effective implementation requires standardized imaging protocols, operator training, appropriate referral pathways, and further rigorous evaluation of diagnostic performance and clinical effectiveness.

Keywords: *Teledentistry; Children's oral health; Digital health; Diagnostic accuracy; Public health; Low- and middle-income countries.*

From Aid Dependence to Self-Reliance: Determinants of Aid Transition in Developing Countries

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Abstract

Although self-reliance is the goal of foreign aid, the lack of a clear aid transition strategy leaves many developing nations trapped in aid dependence. We define aid transition as a movement from a high to a lower level of aid dependence driven by structural economic progress. This transition is often linked to donors reducing assistance because the recipient country's need for aid has diminished over time. Crucially, aid transition reflects a country's relative reduction in dependence toward a self-reliant status, rather than complete independence or formal aid graduation. Aid graduation is often the process of the Organization for Economic Cooperation and Development's (OECD) Development Assistance Committee (DAC) removing a country from Official Development Assistance (ODA) eligibility after its per capita income exceeds $12,000 for three consecutive years. Examining high-to-low aid transitions from 1970 to 2019, this study uses parametric and non-parametric methods to compare countries that successfully reduced aid dependence against a large cohort trapped in high dependence. Results show that transition likelihood increases with high domestic investment, effective corruption control, a growing manufacturing sector, and robust economic growth. Conversely, a widening savings–investment gap, low-value-added foreign direct investment (FDI), and heavy reliance on primary exports hinder self-reliance or reduction in aid dependence. Notably, democracy alone does not drive transition unless the public holds power accountable. To reduce aid dependence, developing nations must implement a four-pillar strategy: institutional reform to combat corruption, a shift toward high-value-added FDI, proactive industrial policy, and stronger domestic resource mobilization. Ultimately, within complex multi-donor environments, recipient governments must retain the policy space to channel aid toward national self-reliance goals, ensuring development targets reflect bottom-up local metrics.

Keywords*: aid-dependence, corruption, exports, foreign direct investment, resource mobilization, self-reliance.*

Navigating Uncharted Waters: Struggles and Coping Mechanisms of Graduating BEED Volunteer Tutors in the Summer ARAL Program at San Mateo Elementary School

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Abstract

The Summer ARAL Program addresses learning gaps among marginalized learners through face-to-face volunteer tutoring, but implementing the program at San Mateo Elementary School with graduating BEED students from San Mateo Municipal College has created unique operational and emotional challenges for tutors. This mixed-methods study examines the struggles experienced by tutors and the coping mechanisms they employ to sustain engagement, well-being, and instructional effectiveness during this initial rollout. Quantitative data were collected through a structured questionnaire administered to 22 graduating BEED volunteer tutors who received a pre-program orientation. Tutors operated on an average 1:3 tutor-to-tutee ratio, serving 58 learners across Grades 1 to 5 Monday to Thursday. Fridays were allocated for weekly evaluation and reflection. The survey measured frequency and severity of challenges related to instructional adaptation, learner motivation, workload, emotional well-being, and resource management using a 4-point Likert scale. Qualitative data were gathered through semi-structured interviews. Quantitative data were analyzed using descriptive statistics and Pearson correlation, while qualitative data underwent inductive thematic analysis. Results indicate that the most prevalent struggles were difficulty sustaining attention of struggling readers during 2-hour sessions, managing diverse learning needs across Grades 1–5 within the 1:3 ratio, and emotional exhaustion. Stakeholder support for snacks and school supplies was rated as moderately effective in reducing learner absenteeism but created additional coordination and communication demands for tutors. A significant positive correlation was found between workload intensity and burnout levels. Tutors reported feeling unprepared for behavioral management despite the orientation, experiencing fatigue from the daily schedule, and valuing Friday evaluations and stakeholder engagement for peer debriefing and morale. Despite these challenges, tutors demonstrated resilience through peer collaboration and flexible instructional strategies. Institutional and stakeholder support emerged as the strongest predictor of tutor retention and satisfaction. Strengthening pre-service teacher training, clarifying stakeholder roles, and refining on-campus tutoring schedules to improve tutor sustainability and learner outcomes were recommended.

Keywords: *volunteer tutors, Summer ARAL program, struggling readers, coping mechanisms*

Stimuli and Determinants Influencing Pet Shop Customers in Purchasing Ornamental Fish as Basis for Enhanced Marketing Strategies

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Abstract

This study aimed to determine the stimuli and determinants influencing pet shop customers in purchasing ornamental fish as basis for enhanced marketing strategies. Specifically, it sought to determine the perception of the respondents regarding the stimuli affecting the purchase of ornamental fish in terms of significative stimuli, social stimuli, and symbolic stimuli; identify the determinants influencing purchasing decisions in terms of product, price, place, and promotion; determine the significant differences between the perceptions of pet shop customers and pet shop owners; and formulate recommendations to enhance marketing strategies within the ornamental fish industry.

The study utilized the descriptive method of research. The respondents consisted of 50 pet shop customers and 20 pet shop owners from selected pet shops in Cainta, Rizal, with a total of 70 respondents. A researcher-made questionnaire served as the primary instrument in gathering the necessary data. Weighted mean and t-test were employed as statistical tools in analyzing and interpreting the results of the study.

The findings revealed that social stimuli obtained the highest weighted mean among pet shop customers, while significative stimuli were identified as the primary stimulus perceived by pet shop owners. In terms of determinants, promotion emerged as the most influential factor affecting the purchase of ornamental fish among both groups of respondents. The results further indicated that health and quality of fish were the most important product-related determinants, while word-of-mouth recommendations were the most influential promotional determinant. Moreover, the computed t-values for both stimuli and determinants were lower than the tabular values at a 0.05 level of significance, leading to the acceptance of the null hypotheses. Consequently, no significant differences existed between the perceptions of pet shop customers and pet shop owners regarding the stimuli and determinants in purchasing ornamental fish.

Based on the findings, the study concluded that the purchasing behavior of ornamental fish customers is significantly influenced by social, symbolic, and significative stimuli, as well as by marketing determinants such as product quality, pricing, store reputation, and promotional strategies. Promotion, particularly through positive customer recommendations and online presence, plays a vital role in influencing purchasing decisions. The study recommends the implementation of enhanced marketing strategies focusing on product quality assurance, customer

engagement, reputation management, and promotional activities to further improve customer satisfaction and business competitiveness in the ornamental fish industry.

***Keywords**: ornamental fish, pet shop customers, consumer behavior, stimuli, determinants, marketing strategies.*

Civic Engagement of Teacher Education Students in "Third Spaces"

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Abstract

This study examined the civic engagement of teacher education students in "Third Spaces," focusing on the dominant forms of civic engagement, the enabling conditions that supported their participation, and the challenges they encountered. In this study, Third Spaces refer to environments outside formal classroom requirements where students interact with communities and participate in voluntary, community-oriented activities. A qualitative research design was employed, with data gathered through semi-structured interviews with teacher education students who had participated in civic engagement activities. The data were analyzed thematically to identify recurring patterns across the participants' responses. The findings showed that the participants engaged in various forms of civic engagement, including educational and literacy activities, environmental and health-related initiatives, and social compassion and faith-based activities. Their participation was supported by factors such as personal motivation, peer collaboration, family encouragement, and available institutional and community support. However, the participants also encountered challenges related to limited resources, time constraints, academic demands, communication difficulties, and community-related barriers. The findings highlight the importance of Third Spaces as environments where teacher education students can participate in community-oriented activities beyond formal classroom requirements while applying their knowledge, developing skills, and contributing to community welfare. The study further emphasizes the need to strengthen support systems and address participation barriers to encourage meaningful and sustained civic engagement among teacher education students.

Keywords: *Civic Engagement, Third Spaces, Teacher Education Students, Community Engagement, Student Participation*

MetaMethodology: Meta-Learning Framework for Few-Shot Software Development Methodology Selection with Large Language Models

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Abstract

Software development methodology selection is a context-dependent organizational decision, yet data-driven systems often require substantial organization-specific histories. This study presents MetaMethodology, a proposed meta-learning framework for adapting software methodology recommendations from limited examples. The framework combines Model-Agnostic Meta-Learning (MAML), organizational context encoding, uncertainty-aware ranking, and a natural-language explanation component. Our approach integrates Model-Agnostic Meta-Learning (MAML) with uncertainty-aware decision making and organizational context encoding. The framework consists of four key components: (1) a hierarchical encoder that captures both project features and organizational characteristics using graph neural networks, (2) a meta-learning adaptation engine that optimizes for rapid convergence across organizational contexts, (3) an uncertainty-aware ranking module combining Flow Entropy Sort with Bayesian neural networks for calibrated confidence estimation, and (4) a meta-learned explanation generator that provides contextually appropriate natural language justifications. Experimental validation across 50 diverse organizational contexts demonstrates transformative performance. With only three example projects, MetaMethodology achieves 78.2% accuracy compared to 42.1% for conventional Multi-Criteria Decision-Making approaches—a 36.1 percentage point improvement. Remarkably, the system maintains 65.3% accuracy with a single example, establishing genuine few-shot learning capabilities. The framework reduces organizational adaptation time from weeks to minutes while providing well calibrated uncertainty estimates (Expected Calibration Error = 0.087). Cross-domain transfer experiments show 73.7% average accuracy when adapting between industries, validating broad generalizability. Real-world deployment across startup, enterprises, and regulated environments demonstrates measurable business impact: project success rates improved from 71% to 84%, regulatory approval times decreased by 23%, and stakeholder satisfaction increased from 67% to 89%. These results establish MetaMethodology as both technically sound and practically viable, opening new directions for adaptive, context aware decision support in resource-constrained organizational environments.

Keywords: *Large Language Models, MetaMethodology, Model-Agnostic Meta-Learning, Multi-Criteria Decision Making, Software Development Methodology*

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