CTU-MC COLLEGE OF ARTS AND SCIENCES RESEARCH AND DEVELOPMENT OFFICE
FUTURE SCIENCE AND TECHNOLOGY LEADERS OF THE PHILIPPINES
CEBU TECHNOLOGICAL UNIVERSITY - MAIN CAMPUS

14TH CAS RESEARCH CONGRESS AND 1ST SDG COLLOQUIUM

One College, One Agenda: Research Across Disciplines Toward the Sustainable Development Goals

MAY 13, 2026

14TH CAS RESEARCH CONGRESS AND 1ST SDG COLLOQUIUM

"One College, One Agenda: Research Across Disciplines Toward the Sustainable Development Goals"

May 13, 2026 | 8:00 AM – 5:00 PM | Centennial Building, Halls A, B, and C

7:00 – 8:00 AM	**Registration**
8:00 – 8:30 AM	**Preliminaries** **CTU Chorister** *National Anthem, ASEANHymn, CTU Hymn, & Invocation*
8:30 – 8:40 AM	**Welcome Remarks** **Dr. Raamah C. Rosales** *Dean, CTU-MC College of Arts and Sciences*
8:40 – 8:50 AM	**Inspirational Message** **Dr. Pet Roey Pascual** *Vice President for Research and Development, CTU*
8:50 – 9:00 AM	**Statement of Purpose** **Dr. Robert Jay N. Angco** *R&D Chair, CTU-MC College of Arts and Sciences*
9:00 – 9:05 AM	**Intermission (CTU Indayog Dance Troupe)**
9:05 - 9:15 AM	**Plenary Keynote** **Mr. John Rowen Miano** *President, FSTLP CTU-MC*
9:15 – 9:30 AM	**Orientation on Mechanics** Podium Research Presentation (Students) Poster Research Presentation (Students) Faculty Research Dissemination

CONGRESS PROPER

9:30 AM – 12:00 NN	**Presentation Proper (Arts Division - Hall A)** Development Communication, English Language Studies, Literary Studies, and Filipino
9:30 AM – 12:00 NN	**Presentation Proper (Science Division - Hall B & C)** Mathematics, Biology, Psychology, Nursing, and Statistics
1:00 – 2:30 PM	**Poster Presentations & Gallery Walk**
2:30 – 4:30 PM	**Faculty Research Presentations**
4:30 – 5:00 PM	**Awarding of Winners & Recognitions**
5:00 PM	**Closing Remarks & Photo Opportunity**

Organized by the ***College of Arts and Sciences Research and Development Office***
Co-organized by the ***Future Science and Technology Leaders of the Philippines CTU-MC***

PLENARY KEYNOTE

Development and Content Validation of an Instrument for Assessing Sustainable Development Goal Alignment for Undergraduate Thesis

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Abstract

Background/Rationale: Undergraduate research remains an underutilized vehicle for advancing the United Nations Sustainable Development Goals (SDGs). The absence of a standardized tool for evaluating SDG alignment in student theses limits institutional capacity to monitor and strengthen research contributions to the 2030 Agenda.

Objectives: This study aimed to develop and establish the content validity of the Sustainable Development Goal Alignment Assessment Instrument (SDG-ALAI) for systematically evaluating SDG alignment in undergraduate theses.

Methodology: The SDG-ALAI was developed to capture SDG awareness, intentional alignment, goal mapping, thesis component integration, and perceived impact across seven sections using Likert-scale, dichotomous, multiple-selection, and open-ended formats. Content validity was established through expert evaluation by five faculty validators from universities across the Philippines, with combined experience exceeding 50 years in research methods, instrument design, and thesis supervision. Validators rated each item on relevance and clarity using a four-point scale and provided qualitative feedback.

Results: All five validators affirmed that the instrument adequately captures SDG alignment. Recurring recommendations included refining operational definitions, incorporating SDG descriptors to reduce misclassification, clarifying the primary versus secondary SDG distinction, and adding evidence-based verification prompts. The instrument was subsequently revised to reflect expert feedback.

Conclusion: The SDG-ALAI demonstrates strong content validity and practical utility as a tool for assessing SDG alignment in undergraduate research. It offers institutions a replicable framework for embedding sustainability evaluation into thesis development and academic quality assurance processes.

Keywords: *SDG alignment, instrument development, content validation*

SDG Alignment: SDG 4 - Quality Education

BOOK OF ABSTRACTS

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POSTER PRESENTATIONS

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PSP-16 Understory Plant Diversity Across Different Canopy Cover Levels in Barangay Guba, Cebu City

PSP-17 Structural and Forecasting Analysis of Philippine Foreign Direct Investments and Manufacturing Subsector Gross Value Added Using VAR and ARIMAX (2004–2024)

PSP-18 Ecological Assessment in Fish Assemblages and Community Structure in the Urban Lagoon of Cebu City, Cebu Philippines

PSP-19 Spatio-Temporal Analysis of Road Accidents in Cebu City

PSP-20 Optimizing Integrated Control of Melon Fruit Fly (Bactrocera cucurbitae) in Ampalaya Using Attractant Traps and the Parasitoid Wasp Psyttalia fletcheri

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PSP-24 Mediating Role of Family Dynamics and Communication Patterns on the Emotional Resilience of Glass Children

PSP-25 The Electoral Preferences and Cognitive Biases in Voting Behavior Across Generation X, Y, and Z

PSP-26 Readiness of Takers for Psychometrician Licensure Examination

PSP-27 Socio-Behavioral Motivations and Perceived Risk of Merchandise Collecting Habit Among Filipino Fans

PSP-28 Lived Experience of the Ati Tribe in Accessing Mental Health Services in Cebu

PSP-29 Bridging Gaps: The Lived Experiences of Persons With Physical and Visual Impairments in Seeking Healthcare in a Selected Barangay in Cebu City

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FACULTY PRESENTATION

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FAC-2 Food Safety in Rural Cebu: Street Vendors; Knowledge, Attitudes, and Practices

FAC-3 Lived Experiences of Physical Education Teachers in an Online and Face to Face Modality

FAC-4 Influence of Peer-Led Information Campaign on the Awareness of Teenage Pregnancy in a Rural Area in Cebu Province

FAC-5 Mangrove composition, economic valuation, and disturbances in Mactan Island, Cebu, Philippines

FAC-6 The Semantic Shift: An Analysis of Polysemous Legal English in the Revised Penal Code and New Civil Code of the Philippines

FAC-7 Of Faith, Fathers, and Phantoms: Ruination in Maria Fernanda Ampuero's Mourning

MATH - **PDP-S1**

Multipatch Models for Wolbachia-based Suppression and Replacement Dengue Control Strategies in Cebu City

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Abstract

Background/Rationale: Dengue remains a major public health concern worldwide and in the Philippines. Its virus is transmitted by the Aedes aegypti mosquito in a human-mosquito-human cycle. Various control methods are being implemented to fight the disease, but their long-term effectiveness is limited. A promising intervention involving Wolbachia bacteria to reduce mosquito vector competence and slow down reproduction has recently been introduced and conducted in various countries.

Objectives: This study models, simulates, and analyzes Wolbachia control strategies in a multipatch context in Cebu City in order to understand its dynamics and forecast dengue transmission outcomes under both replacement and suppression strategies.

Methodology: The feasibility of Wolbachia-based control was assessed through mathematical modeling. A multipatch approach was developed to represent mosquito migrations under the two Wolbachia strategies – replacement and suppression. Local incidence and geospatial data were fitted to estimate model parameters, and simulations were implemented through computational methods.

Results: Results suggest up to 8.13% reduction in dengue cases and up to a 1.42-month delay of peak transmissions in a year of implementation, with the suppression method showing a higher drop of cases compared to replacement.

Conclusion: This study was able to demonstrate the potential of mathematical models to evaluate biological control strategies for dengue and other vector-borne diseases in the country. The multipatch Wolbachia model offers a valuable framework for informing evidence-based vector control policies.

Keywords: *mathematical biology; spatiotemporal epidemiology; transmission dynamics*

SDG Alignment: SDG 3 – Good Health and Well-Being; SDG 4 – Quality Education; SDG 11 –Sustainable Cities and Communities

BIO - **PDP-S2**

Antibacterial Evaluation of Acanthaster solaris Aboral Spines Saponin against Serratia spp. Associated with Tomato Wilt

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Abstract

Background/Rationale: The proliferation of *Acanthaster solaris* (Crown-of-thorns Sea star) threatens coral reef integrity in the Philippines. Although these sea species contain bioactive compounds such as saponins, regular sea star removal initiatives render them as waste. Saponins possess antibacterial and cytotoxic properties that suppress plant pathogen growth in agricultural crops. However, bacterial wilts associated with Serratia species remain a significant challenge in local tomato production.

Objectives: This study aimed to develop a protocol for extracting saponins from the aboral spines of Acanthaster solaris and investigate their antibacterial effects against Serratia species associated with tomato bacterial wilt (*Solanum lycopersicum*).

Methodology: Acanthaster solaris spines were collected from Capitancillo Islet, Cebu, and saponins were isolated using hot water decoction and N-butanol liquid-liquid partitioning. The crude extracts underwent saponin presence and concentration analysis, confirming the presence of steroidal glycosides, and were subjected to a Brine Shrimp Lethality Assay (BSLA). Antibacterial efficacy was evaluated in vitro using a disk diffusion method at varying concentrations.

Results: The toxicity assay revealed high bioactivity with an LC50 of 0.000281 mg/mL. Results indicated a significant inhibitory effect ($p < .001$) against Serratia spp. Notably, the 0.0015625 mg/mL concentration yielded the highest inhibition zone (2.02 mm), statistically surpassing the synthetic commercial bactericide (DuPont Kocide), demonstrating potent antibacterial activity.

Conclusion: This study concludes that repurposing marine pest biomass offers a sustainable candidate for an antibacterial agent for agriculture, effectively turning an ecological threat into a valuable resource.

Keywords: *Acanthaster solaris; in vitro antibacterial activity; Serratia spp.; spine-derived saponin; tomato bacterial wilt*

SDG Alignment: SDG 6 – Clean Water and Sanitation; SDG 8 – Decent Work and Economic Growth; SDG 9 – Industry, Innovation and Infrastructure

PSYCH - **PDP-S3**

Assessing In-Game Content Purchase Intentions and the Personality Traits of Gamers

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Abstract

Background/Rationale: The rise of freemium models in mobile gaming has significantly encouraged gamers to engage in in-game content purchases or microtransactions. However, the psychological factors that drive gamers to spend on in-game items remain underexplored, particularly in relation to personality traits.

Objectives: This study addresses that gap by examining personality traits rather than relying solely on demographic factors, offering an opportunity to gain new insights into the psychological drivers of digital consumer behavior in mobile gaming.

Methodology: This quantitative study employed a correlational research method to assess the relationship between gamers' in-game content purchase intentions and their personality traits. Data were gathered from 170 respondents via an online survey that used the Big Five Personality Test and the In-Game Content Purchase Intention Scale.

Results: Results revealed that despite neutral levels of the Big Five Personality traits (OCEAN) in gamers, only agreeableness and openness to experience showed a significant relationship with in-game content purchasing intentions. Gamers high in agreeableness often buy in-game content to strengthen social connections and maintain harmony, while gamers high in openness to experience tend to purchase in-game content to fulfill their curiosity and creativity.

Conclusion: The findings suggest that gamers who scored highly on these traits should be encouraged to practice mindful, responsible digital purchasing habits to maintain financial balance while enjoying the gaming experience.

Keywords: *big five personality traits; correlational research; in-game content purchasing intentions; microtransactions; mobile gaming*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 8 – Decent Work and Economic Growth; SDG 12 – Responsible Consumption and Production

NURSING - **PDP-S4**

Exploring the Lived Experiences of Deaf Patients During Hospitalization in Selected Government Hospitals in Cebu City

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Abstract

Background/Rationale: Communication is a foundational element in delivering safe, effective, and compassionate healthcare. However, for Deaf patients, hospital environments can become sites of exclusion, dependency, and marginalization when accommodations are not in place. Understanding these experiences is essential to improving inclusive healthcare practices.

Objectives: This study aimed to investigate the lived experiences of Deaf individuals during hospitalization in selected government hospitals in Cebu City, Philippines, and to understand their challenges, perceptions, and needs during their hospital stay.

Methodology: This qualitative phenomenological study utilized purposive sampling to select seven participants. Data were gathered through in-depth, face-to-face individual interviews, which were video-recorded with participants' consent and transcribed verbatim. Thematic analysis was conducted using Colaizzi's phenomenological method, providing a systematic framework for extracting significant statements, formulating meanings, and constructing a comprehensive description of the lived phenomenon.

Results: Through in-depth, semi-structured interviews and thematic clustering, four major themes emerged: (1) Dependence on Hearing Companions; (2) Exclusion from Direct Communication; (3) Struggles in Navigating the System; and (4) Preferences for Accessible Care. These findings reveal critical gaps in communication and inclusion that persist within healthcare institutions.

Conclusion: The study calls for a paradigm shift that recognizes communication as a human right and ensures that Deaf individuals are fully included as autonomous participants in their care. True equity in healthcare can only be achieved when the system listens to all forms of language, including the hands that speak.

Keywords: *communication barriers; sign language integration; healthcare accessibility; patient autonomy; inclusive healthcare*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 10 – Reduced Inequalities

STAT - **PDP-S5**

A Spatial Analysis of Poverty in the Philippines: An Asset-Based Approach

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Abstract

Background/Rationale: Income-based poverty measures may overlook long-term household deprivation, particularly in contexts where incomes are unstable or underreported. This study adopts an asset-based approach to examine poverty across Philippine provinces by focusing on durable indicators of welfare, including housing quality, access to utilities, and ownership of household assets.

Objectives: The study aims to construct a provincial asset-based poverty index and determine whether asset-based poverty exhibits statistically significant spatial clustering across Philippine provinces.

Methodology: Using data from the 2020 Census of Population and Housing, household asset indicators were transformed through Multiple Correspondence Analysis into an asset-based poverty index. Household-level asset indices were aggregated at the provincial level. Exploratory spatial data analysis was then conducted using distance-based spatial weights, Global Moran's I, Local Indicators of Spatial Autocorrelation, and Getis–Ord Gi hotspot analysis.

Results: Results revealed statistically significant positive spatial autocorrelation across all tested distance thresholds. Local spatial analysis identified High–High clusters of relatively asset-capable provinces primarily in Luzon and Low–Low clusters of asset-deprived provinces mainly in Mindanao. Hotspot analysis further confirmed spatial concentrations of asset-based poverty, indicating that deprivation is geographically patterned rather than randomly distributed.

Conclusion: The findings show that asset-based poverty in the Philippines is both structurally persistent and spatially clustered. Integrating asset-based measurement with spatial analysis provides a stronger basis for geographically targeted poverty reduction and regional development planning.

Keywords: *multiple correspondence analysis; spatial clustering; household welfare; material deprivation*

SDG Alignment: SDG 1 – No Poverty; SDG 10 – Reduced Inequalities; SDG 11 – Sustainable Cities and Communities

DEVCOM - **PDP-A1**

Gatekeepers and Gaps: Communication Barriers to Community Participation in Mangrove Conservation

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Abstract

Background/Rationale: Despite ongoing local government unit (LGU) initiatives, Sitio Dunggoan, Barangay Bolinawan, Carcar City still faces persistent mangrove degradation, particularly due to solid waste pollution. This suggests a significant gap between conservation efforts and sustained community engagement, pointing to underlying communication barriers that hinder participation.

Objectives: This study explores the communication barriers hindering community participation in mangrove conservation activities and examines how structural and personal factors influence residents' intention to engage in environmental stewardship.

Methodology: Using a qualitative narrative inquiry approach, the researchers interviewed 15 residents living near the mangrove areas. From these, 11 participants with the richest narratives were selected for in-depth analysis. Environmental Communication Theory (ECT) and Theory of Planned Behavior (TPB) served as theoretical frameworks.

Results: Results identified four major communication barriers: information is funneled exclusively through one individual, leaving non-members uninformed; residents' trust in LGU messages is based on authority rather than active engagement, leading to uncritical compliance; practical constraints such as age, health issues, and demanding work schedules; and organizational boundaries and leadership conflicts that exclude willing participants and erode collective trust.

Conclusion: The primary obstacle is not the clarity of conservation messages, but the structural centralization of information. To bridge the "knowledge-action gap," the researchers recommend diversifying communication channels such as social media or direct household outreach, providing material and financial incentives, and ensuring inclusive, transparent leadership to foster genuine community stewardship.

Keywords: *information gatekeeping; knowledge-action gap; solid waste pollution; centralized communication; Environmental Communication*

SDG Alignment: SDG 14 – Life Below Water; SDG 11 – Sustainable Cities and Communities; SDG 17 – Partnerships for the Goals

ENGLISH - **PDP-A2**

He Says, She Says: How Men and Women Speak the Language of Courtesy

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Abstract

Background/Rationale: Podcasts, such as Toni Talks, have become highly influential in the Philippines, especially among the youth who regularly consume digital media. As these platforms shape communication styles and social behavior, there are growing concerns about declining politeness among younger generations. This creates a need to examine how politeness is actually used in contemporary, real-life conversations that young people engage with and emulate.

Objectives: This study examines the politeness strategies used by Filipino men and women in the podcast Toni Talks as a basis for developing a digital infographic that illustrates politeness in real-life conversations, grounded in Brown and Levinson's Linguistic Politeness Theory, with supporting frameworks from Lakoff and Leech.

Methodology: This study employed a descriptive qualitative research design using conversation analysis. Data were drawn from selected episodes of Toni Talks published on YouTube. Dialogues were analyzed to identify, categorize, and compare politeness strategies (positive, negative, bald on-record, and off-record) used by male and female speakers.

Results: Male speakers predominantly employed positive politeness strategies (33.6%), while female speakers most frequently used negative politeness strategies (36.6%). Bald on-record strategies were least utilized by both men and women, at 18% and 10.9%, respectively. Men upheld positive face by emphasizing competence and involvement, whereas women maintained negative face through deferential expressions while fostering solidarity.

Conclusion: Both genders utilized all four politeness strategies, although their preferences differed in use and function. Politeness in Filipino podcasts is a strategic and culturally influenced practice shaped by gendered communication patterns. The study recommends the integration of podcasts such as Toni Talks in language discourse and pragmatic studies.

Keywords: *politeness strategies; podcast; gender and communication; Filipino politeness; face wants*

SDG Alignment: SDG 4 – Quality Education; SDG 5 – Gender Equality

LIT - **PDP-A3**

Portrayal and Navigation of Motherhood Double Binds in the Selected Palanca-Winning Short Stories from 2010–2023

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Abstract

Background/Rationale: Mothers are often expected to be perfect, loving, and selfless, but society makes it difficult for them to meet all these expectations simultaneously. This tension creates double binds that shape how motherhood is lived and portrayed, yet remains underexplored in Philippine literary scholarship.

Objectives: This study aims to deepen the understanding of how Filipino mothers are portrayed in literature by examining the nuanced double binds they navigate in selected Palanca-winning short stories from 2010 to 2023.

Methodology: Ten Palanca-winning short stories were selected — seven from the English division (Casocot, Salcedo, Suarez, Paulma, Abola, Cornelio) and three from the Filipino division (Lim, Santiago, Neri) — and examined using content analysis in four phases: (1) identification of paradoxes faced by mother narrators, (2) analysis of societal expectations as a 'birdcage,' (3) examination of double bind dichotomies, and (4) construction of a creative work.

Results: The findings show that double bind dichotomies are present in the portrayal and navigation of motherhood across all selected texts. Filipino mothers in these stories are consistently caught between contradictory societal demands, such as selflessness versus self-preservation and authority versus submission.

Conclusion: The study highlights how Filipino literature reflects the complexities of motherhood in a society that places contradictory expectations on mothers. These narratives serve as critical spaces for examining gender dynamics and advocating for more equitable social structures.

Keywords: *mother; feminism; paradox; societal expectations; double bind*

SDG Alignment: SDG 5 – Gender Equality; SDG 10 – Reduced Inequalities; SDG 16 – Peace, Justice and Strong Institutions

FILIPINO - **PDP-A4**

Pagsipat sa Wikang Gen Z: Pagkabuo, Gamit, at Impluwensiya sa mga Piling Estudyante sa Kolehiyo

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Abstract

Background/Rationale: Sa paglawak ng teknolohiya at kulturang digital, kapansin-pansin ang pagbabago sa paraan ng komunikasyon ng kabataan, lalo na sa paglikha at paggamit ng mga bagong salita, estilo, at ekspresyon. Ang mga GenZers ay madalas na gumagamit ng mga slang, emoji, at iba pang mga digital na elemento, na nagpapakita ng kanilang kakayahang umangkop sa mga bagong teknolohiya.

Objectives: Nilalayon ng pag-aaral na ito na suriin ang pagkabuo, gamit, at impluwensiya ng wikang Gen Z sa mga piling estudyante sa kolehiyo, gayundin ang masuri at maunawaan ang mga salitang karaniwang ginagamit ng mga GenZers.

Methodology: Ginamit sa pag-aaral ang kwalitatibong pamamaraan sa anyong deskriptibo at purposive sampling sa pagpili ng isandaang (100) kalahok na ipinanganak mula 1997 hanggang 2012. Ang datos ay nakalap sa pamamagitan ng pakikipanayam at nakatuon sa pagtukoy ng mga salitang Gen Z, pag-aaral ng estruktura ng pagkabuo ng mga salita, at pagsusuri sa paraan ng paggamit ng wikang Gen Z.

Results: Natuklasan na ang wikang Gen Z ay umusbong mula sa impluwensiya ng social media, globalisasyon, at digital na kultura. Nakalap ng limampung salitang karaniwang ginagamit ng mga GenZers, na kinabibilangan ng compounding, clipping, akronim, pagbabaligtad, revised version, at salitang hiram bilang mga estruktura ng pagkabuo. Ang kategorya ng salitang hiram ang may pinakamaraming bilang (labing-isa). Ginagamit ang wikang Gen Z para sa sosyal na ugnayan, pagpapahayag ng damdamin, at praktikal na komunikasyon.

Conclusion: Ang wikang Gen Z ay isang umuunlad na wika na binubuo ng mga bagong salita at estilo ng pagpapahayag na hinubog ng social media at makabagong kultura. Inilalarawan nito ang pagbabago sa gramatika, estruktura, at paraan ng pakikipag-ugnayan ng mga GenZers. Bilang awtput, nakabuo ng isang glosaryo ng mga karaniwang salitang Gen Z bilang sanggunian sa pag-unawa sa umuusbong na wika.

Keywords: *pagsipat; wikang Gen Z; GenZers; pagkabuo ng wika; estruktura; komunikasyon*

SDG Alignment: SDG 4 – Kalidad ng Edukasyon; SDG 10 – Pagkakapantay-pantay

PSP-1

In-Vitro Comparative Evaluation on the Antifungal Activities of Kappaphycus striatus and Caulerpa macrodisca Extracts Against Cacao Anthracnose (Colletotrichum gloeosporioides): Ecological Implications for Sustainable Cacao Agriculture

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Abstract

Background/Rationale: Anthracnose disease caused by Colletotrichum gloeosporioides is a major constraint to the productivity and quality of numerous crops, particularly Cacao plants in tropical regions. In Cebu, it is an emerging sector with limited output but growing potential for high-value, small-scale production and processing. Although chemical fungicides are commonly used for disease management, their repeated application has led to the development of resistant fungal strains, environmental contamination, and potential risks to human health. This has prompted the search for eco-friendly and sustainable alternatives.

Objectives: The study aimed to evaluate and compare the in-vitro antifungal activity of Guso (Kappaphycus striatus) and Lato (Caulerpa macrodisca) extracts against Cacao anthracnose (Colletotrichum gloeosporioides).

Methodology: Dried seaweed samples were percolated using different solvents: methanol, ethanol, chloroform, and distilled water (aqueous), concentrated, and prepared at varying concentrations (1,000, 100, 10, and 1 µg/mL). Fungal identification was based on the microscopic and macroscopic morphology of fungus. Antifungal activity was then assessed using agar well diffusion method on PDA media, where zones of inhibition were measured (mm) to quantify fungal growth suppression.

Results: Both seaweed species exhibited antifungal activity, which varied according to solvent used and concentration levels. Methanolic and ethanolic extracts generally produced larger inhibition zones, indicating the influence of solvent polarity on the extraction of bioactive compounds. Statistical analysis also showed that C. macrodisca exhibited significantly higher antifungal activity than K. striatus across most solvent types and concentration levels.

Conclusion: These findings suggest that marine seaweeds could serve as viable natural sources of antifungal agents and support their potential application as environmentally friendly alternatives to synthetic fungicides in sustainable plant disease management for Cacao.

Keywords: *agar well diffusion method; plant disease management; fungal growth inhibition; marine seaweed extracts*

SDG Alignment: SDG 12 – Responsible Consumption and Production; SDG 15 – Life on Land

PSP-2

Spatial Point Pattern Analysis Using Weighted Kernel Density Estimation for Seismic Hazard Modeling

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Abstract

Background/Rationale: The study examines the spatial distribution and clustering of 1,330 significant earthquakes (Mw ≥ 5.0) in the Philippines from January 2000 to December 2024 to enhance disaster risk reduction and seismic hazard modeling.

Objectives: This study aimed to identify high-risk seismic zones through spatial point pattern analysis and to compare standard and weighted kernel density estimation models for seismic hazard representation.

Methodology: Through Spatial Point Pattern Analysis (SPPA), the research employed distance-based methods, including Ripley's K- and L-functions and the Pair Correlation Function, which consistently rejected Complete Spatial Randomness (CSR), proving multi-scale clustering of earthquakes. The study compared the standard kernel density estimate (KDE) with weighted models that incorporated earthquake magnitude and depth. Error metrics were used to evaluate model performance. A provincial and municipal risk score map was created from the normalized values of the integrated magnitude-and-depth KDE.

Results: Error metrics show depth-weighted KDE (RMSE = 2.39) and an integrated magnitude-and-depth weighted KDE (RMSE = 2.42) were the closest to the baseline KDE, significantly outperforming the magnitude-only weighted model (RMSE = 33.78). Mindanao is the highest seismic risk island group, with all 7 provinces with a seismic risk class of 'Very High,' and 7 of the 8 provinces classed as 'High' found in Mindanao. All 100 'Very High' and 118 out of 146 'High' class localities were found in the region.

Conclusion: To improve the practicability of the weighted KDE model, the study recommends the integration of socio-economic, infrastructure, and tectonic data for a more comprehensive seismic risk assessment that accounts for other compounding factors of seismic risk.

Keywords: *Spatial Point Pattern Analysis; Kernel Density Estimation; Seismic Hazard; Earthquake Clustering; Weighted KDE*

SDG Alignment: SDG 11 – Sustainable Cities and Communities; SDG 13 – Climate Action

PSP-3

A Spatio-Temporal Markov Chain Analysis of Consumer Price Inflation in the Philippines

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Cebu Technological University – Main Campus

Abstract

Background/Rationale: Inflation remains a persistent economic concern in the Philippines, with regional disparities influenced by geographic separation, economic structure, and localized shocks. National inflation measures often mask these differences, making it necessary to examine inflation patterns across both spatial and temporal dimensions. Understanding how inflation evolves regionally can provide valuable insights for targeted economic policies and improved inflation management.

Objectives: This study aims to analyze the spatio-temporal dynamics of regional consumer price inflation in the Philippines from 1982 to 2024 and to project regional inflation state patterns from 2025 to 2030.

Methodology: The study employs Global Moran's I to measure overall spatial autocorrelation and Local Indicators of Spatial Association (LISA) to identify localized clustering of inflation across regions. A Spatial Markov Chain framework is then applied to examine spatially conditioned transition probabilities and generate projections of future regional inflation states.

Results: Findings indicate generally weak global spatial autocorrelation but reveal localized inflation clusters during specific periods. The Spatial Markov Chain analysis demonstrates strong persistence in inflation states, particularly among regions surrounded by high-inflation neighbors. Projection results for 2025–2030 suggest that most regions are likely to remain in moderate inflation states, while some interconnected regions show a higher likelihood of sustained moderate-to-high inflation levels.

Conclusion: The results highlight the presence of spatial dependence and persistence in regional inflation patterns in the Philippines. These findings emphasize the importance of spatially informed monitoring and region-specific policy interventions to better manage inflationary pressures across regions.

Keywords: *Regional Inflation Dynamics; Spatial Econometrics; Transition Probabilities*

SDG Alignment: SDG 1 – No Poverty; SDG 8 – Decent Work and Economic Growth; SDG 9 – Industry, Innovation and Infrastructure; SDG 10 – Reduced Inequalities; SDG 11 – Sustainable Cities and Communities

PSP-4

Modeling the Influence of Anthropogenic Disturbances, Territory Quality, and Biotic Factors toward Fitness of Mytella strigata (Hanley, 1843): Implications for Biocontrol of an Invasive Species

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Abstract

Background/Rationale: The introduction of invasive species is often associated with functional traits that differ markedly from those of native communities. In urban coastal lagoons, elevated nutrient inputs and persistent human activities create conditions that facilitate invasion success; however, the long-term ecological consequences in these systems remain poorly understood.

Objectives: This study investigated the combined influence of anthropogenic disturbances, territory quality, and biotic factors on the fitness of the invasive mussel Mytella strigata in a reclaimed lagoon in Cebu City, Philippines.

Methodology: Field data were collected across 150 plots, where environmental, biotic, and disturbance variables were quantified, and their relationships with fitness indicators were analyzed using principal component analysis (PCA) and path analysis. The lagoon exhibited relatively stable environmental conditions, with an average depth of 5 m, mean pH of 6.5, dissolved oxygen of 7.08 mg L^{-1}, and salinity of approximately 15 ppt.

Results: Path analysis revealed generally weak relationships between predictors and fitness, with low explanatory power ($R^2 \leq 0.151$). Only dissolved oxygen significantly affected gonadosomatic index ($\beta = -0.297$, $p = 0.035$), while proximity to encroachment showed a positive effect on reproduction ($\beta = 0.239$, $p = 0.004$). Overall, the measured factors exerted limited influence on fitness, suggesting high physiological tolerance of M. strigata in disturbed environments.

Conclusion: Management interventions should therefore prioritize integrated approaches targeting anthropogenic disturbances, complemented by mechanical or harvest-based control strategies to enhance effectiveness in urban coastal systems.

Keywords: *ecosystem management; gonadosomatic index; nutrient input; path analysis; urban coastal lagoon*

SDG Alignment: SDG 14 – Life Below Water

PSP-5

Evaluating Trade-offs in Rice Pricing Regimes under Uncertain Market Conditions

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Abstract

Background/Rationale: Rice pricing in the Philippines is a critical challenge, balancing consumer affordability against farmer profitability amidst market shocks. Traditional analyses often overlook the complex trade-offs and uncertainties inherent in agricultural policy, necessitating a framework that accounts for these variables.

Objectives: The study evaluates three historical pricing scenarios—Price Ceilings (2008–2012), Direct Subsidy (2013–2018), and Liberalized Importation (2019–2024)—to determine which regime provides the most balanced and sustainable outcomes under uncertainty.

Methodology: The research employs a hybrid multi-criteria decision-making (MCDM) framework integrating Fuzzy Analytic Hierarchy Process (FAHP), Monte Carlo Simulation (MCS), and TOPSIS. To enhance replicability and minimize panel bias, criteria weights were derived from a systematic coding of peer-reviewed rice policy literature, with the 'Market' dimension assigned the highest priority (0.553). Uncertainty was propagated through 10,000 MCS iterations using phase-specific probability distributions (triangular and normal) for nine indicators, including production costs, farmgate-to-retail price gaps, and rice expenditure burden. Performance was aggregated via TOPSIS to compute closeness coefficients relative to positive and negative ideal solutions. Global sensitivity was assessed using standardized regression coefficients and weight perturbations (±20%).

Results: esults indicate that the Price Ceilings regime achieved the highest closeness coefficient (0.8369), followed by Direct Subsidy (0.3209) and Liberalized Importation (0.1935). The ranking remained stable under ±20% weight perturbations, indicating strong robustness of the evaluation framework. Sensitivity analysis shows that social protection and market performance dimensions exert the greatest influence on overall scores, underscoring their critical role in shaping policy outcomes. These findings suggest that incorporating multi-dimensional criteria and uncertainty significantly affects the comparative performance of pricing regimes.

Conclusion: The findings suggest that no single policy regime dominates all dimensions; rather, they reveal inherent structural trade-offs between macro-efficiency and localized stability. While liberalization delivers significant gains in consumer welfare and fiscal discipline, the results indicate that without 'rules-based stabilization' and enhanced logistics to compress price gaps, it remains vulnerable to market-functioning shortfalls. Durable rice policy in shock-exposed economies should be viewed not as a binary choice between intervention and liberalization, but as a sequenced, evidence-guided bundle of instruments that reconcile affordability with producer viability. This methodological framework offers a replicable tool for policymakers to design and test such bundles under real-world uncertainty.

Keywords: *agricultural economics; policy evaluation; uncertainty modeling; food security*

SDG Alignment: SDG 1 – No Poverty; SDG 8 – Decent Work and Economic Growth; SDG 9 – Industry, Innovation, and Infrastructure

PSP-6

Artificial Intelligence (AI) Tools in Marine Protected Areas (MPAs) Management: A Scopus-based Bibliometric Analysis of Research Trends, Collaboration Networks and Thematic Evolution

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Abstract

Background/Rationale: Marine protected areas are regions of the ocean or coastline that are designated to protect its natural and cultural resources through legal or other effective management measures. However, many MPAs struggle to sustain their purpose due to limited enforcement methods and poor governance which has prompted the rise of integrating artificial intelligence (AI) tools in managing these areas. This integration has generated a rapid increase in academic papers which emphasizes the need for a bibliometric analysis to methodically evaluate current developments and pinpoint future avenues.

Objectives: This study presents a bibliometric analysis of research on AI application in MPA management over the past decade.

Methodology: Bibliometric data was retrieved from Scopus database and refined with Microsoft Excel and RStudio. The analysis was done using Bibliometrix and VOSviewer.

Results: Results reveal a steady growth in research outputs with an annual growth rate of 8.69%. The United States, Spain, and the United Kingdom emerged as central contributors while collaboration networks showed expanding partnerships between developed and emerging regions. Keyword analysis revealed three major themes: AI-based habitat mapping and biodiversity monitoring, remote sensing and GIS for ecosystem conservation, and spatial modeling and governance-oriented AI integration. A shift toward data-driven and predictive approaches highlights AI's role in improving MPA management.

Conclusion: These results emphasize the potential of AI to strengthen MPA management and suggest the need for wider implementation and international collaboration.

Keywords: *remote sensing; GIS; biodiversity monitoring; spatial modeling*

SDG Alignment: SDG 14 – Life Below Water; SDG 17 – Partnerships for the Goals; SDG 9 – Industry, Innovation and Infrastructure

PSP-7

Assessing Avifaunal Diversity, Mangrove Composition, and Anthropogenic Disturbances to Evaluate the Birdwatching Site Potential of Day-as Mangrove Propagation and Information Center in Mactan Island, Philippines

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Abstract

Background/Rationale: Mangrove ecosystems support rich avifaunal communities, especially in regions that serve as migratory pathways. This study assessed the avifaunal diversity, mangrove composition, and anthropogenic disturbances in the Day-as Mangrove Propagation and Information Center in Mactan Island, Cebu, Philippines.

Objectives: This study assessed the avifaunal diversity, mangrove composition, and anthropogenic disturbances in the Day-as Mangrove Propagation and Information Center in Mactan Island, Cebu, Philippines, and examined their relationship with birdwatching site potential.

Methodology: Bird surveys were conducted across three (3) sampling plots through a series of field visits in November 2025, using standard point count methods from 06:00 AM to 10:00 AM in the morning and resumed in the afternoon from 03:00 PM to 06:00 PM.

Results: Results document 256 individuals belonging to 26 species, including resident (n=10), migratory (n=9), and endemic (n=7) bird species. The observed species were further classified into waterbirds (n=6) and landbirds (n=20). Plot 3 recorded the highest species richness (16 species) and the greatest Shannon diversity (H = 2.201), which may be attributed to the area's diverse mangrove composition. Six true mangrove species were identified, with Rhizophora stylosa occurring in all plots. Observed anthropogenic disturbances include intrusion of marine debris, mangrove cutting, establishment of concrete structures, and presence of abandoned boats.

Conclusion: The presence of multiple migratory species highlights the site's ecological significance along the East Asian-Australian Flyway. The results reveal the ecological and ecotourism potential of the Day-as mangroves but also emphasize the need for strengthened conservation and habitat management.

Keywords: *anthropogenic disturbance; avifauna; Cebu, Philippines; ecotourism site; mangrove ecosystem; migratory birds*

SDG Alignment: SDG 15 – Life on Land; SDG 14 – Life Below Water; SDG 8 – Decent Work and Economic Growth

PSP-8

The Influence of Climate Change Risk Perceptions on Coastal Ecosystems Conservation and Acceptance of AI-based Environmental Interventions: A Structural Equation Modelling Approach

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Abstract

Background/Rationale: Climate change poses significant threats to coastal ecosystems, particularly in highly urbanized regions like Cebu Province, Philippines.

Objectives: This study modeled the influence of climate change risk perceptions on coastal ecosystem conservation and acceptance of AI-based environmental interventions among 245 coastal settlers across northern, central, and southern portions of Cebu.

Methodology: Employing a mixed-methods sequential exploratory design, the research developed and validated a conceptual framework through structural equation modeling (SEM).

Results: Results revealed that perceived climate change risks significantly and positively influenced conservation behaviors toward mangrove forests (β=0.408), coral reefs (β=0.681), and seagrass ecosystems (β=0.702). However, climate risk perceptions did not directly affect AI trust and AI literacy. Conservation efforts, particularly for coral reefs and seagrass ecosystems, significantly enhanced both AI trust and AI literacy, which subsequently facilitated acceptance of AI-based environmental interventions. AI trust (β=0.283) and AI literacy (β=0.316) serve as critical mediating factors in intervention acceptance. Coral reef conservation emerged as the strongest predictor of AI literacy (β=0.544), while seagrass conservation positively influenced both AI trust and literacy.

Conclusion: The study underscores the importance of integrating conservation experiences with AI education to foster technological acceptance. The study provides theoretical insights through Protection Motivation Theory and Environmental Identity Theory, offering practical implications for coastal resource management and policy development in urbanized island settings where ecosystem vulnerability intersects with technological innovation potential.

Keywords: *climate change; coastal ecosystems conservation; mangrove forests; seagrass ecosystems; coral reefs; AI trust; AI literacy; AI-based environmental intervention; structural equation modeling; Cebu Province*

SDG Alignment: SDG 13 – Climate Action; SDG 14 – Life Below Water; SDG 9 – Industry, Innovation, and Infrastructure

PSP-9

Spatial Patterns and Diversity of Native and Introduced Tree Species in CTU-Guba, Cebu City, Philippines Across Low, Mid, and High Elevation Zones

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Abstract

Background/Rationale: Tree communities in human-modified landscapes are shaped by both environmental gradients and anthropogenic disturbance, which influence species composition, diversity, and vegetation structure. In Cebu, where native vegetation has been reduced and fragmented, localized ecological assessments are important for documenting remaining native tree resources and determining the extent of introduced species establishment. CTU–Guba, Cebu City, represents a developing landscape where baseline information is needed to support biodiversity conservation and restoration planning.

Objectives: This study assessed the spatial patterns and diversity of native and introduced tree species in CTU–Guba across low, mid, and high elevation zones. Specifically, it identified tree species present in each zone, compared their composition and distribution, and described vegetation structure using selected ecological indicators.

Methodology: A stratified random sampling design was used, with three 30 × 30 m plots representing the low, mid, and high elevation zones. Each plot was subdivided into 10 × 10 m subplots. All living trees with a diameter at breast height greater than 10 cm were recorded, identified, and measured. Species richness, abundance, frequency, density, Shannon diversity index, and diameter at breast height were used in the analysis.

Results: The low elevation zone had the highest species richness and diversity, while the mid elevation zone had the lowest diversity despite the highest abundance, reflecting strong dominance by introduced species. The high elevation zone showed intermediate richness and diversity, although introduced species still outnumbered native species.

Conclusion: Introduced tree species dominate all elevation zones in CTU–Guba, while native species persist in limited numbers, highlighting the need for native species-focused conservation and restoration efforts.

Keywords: *tree diversity; species composition; native species; introduced species; elevation zones; Shannon diversity index*

SDG Alignment: SDG 15 – Life on Land; SDG 13 – Climate Action; SDG 11 – Sustainable Cities and Communities

PSP-10

Simulation of Biofilm–Antibiotic Dynamics Using a 2D Finite Difference Model with Data Fitting

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Abstract

Background/Rationale: Antimicrobial resistance (AMR) is driven by biofilms that tolerate high antibiotic concentrations, causing persistent infections. The MEGA-plate experiment shows spatial resistance evolution under antibiotic gradients but lacks a quantitative framework to analyze growth, diffusion, and resistance interactions. This gap motivates the development of a mathematical and computational model.

Objectives: This study developed a two-dimensional mathematical model to simulate biofilm growth under antibiotic gradients, estimate parameters using image-derived data, and evaluate the model's ability to reproduce observed spatiotemporal patterns.

Methodology: A coupled system of partial differential equations for biomass, antibiotic, and resistance was formulated and solved using the finite difference method. Spatial data from MEGA-plate video frames were converted into grayscale matrices. Parameters were estimated via two-stage data fitting using the Powell method. Simulations were implemented in Python (Jupyter Notebook).

Results: The calibrated model successfully reproduced key features of bacterial colony expansion, including spatial spread and progression across antibiotic gradients. The two-stage parameter estimation improved model accuracy, achieving lower loss values and better agreement with experimental patterns.

Conclusion: The study demonstrates that a PDE-based computational model, combined with image-derived data fitting, can effectively simulate biofilm–antibiotic dynamics. This approach provides a useful framework for analyzing spatial resistance behavior in structured environments.

Keywords: *biofilm dynamics; finite difference method; parameter estimation; antibiotic gradient; computational simulation*

SDG Alignment: SDG 3 – Good Health and Well-being

PSP-11

Vegetation Structure and Species Diversity of Overstory and Understory Layers in a Mahogany Plantation in Guba, Cebu City, Philippines

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Abstract

Background/Rationale: Mahogany (Swietenia sp.) plantations are widespread in tropical regions, yet their capacity to support vegetation structure and plant diversity remains uncertain.

Objectives: This study assessed the overstory structure and understory species diversity of a mahogany plantation in Barangay Guba, Cebu City, Philippines, and examined the effects of canopy density and disturbance on understory composition.

Methodology: A total of 30 randomly established 10 m × 10 m plots, each with five 1 m × 1 m subplots, were used for vegetation sampling. Overstory trees were measured for diameter at breast height and height, while understory species were identified and enumerated. Diversity indices, including Shannon–Wiener (H′) and Pielou's evenness (J′), were computed, and Pearson correlation analysis was used to evaluate relationships between canopy density and understory diversity.

Results: A total of 381 overstory individuals were recorded, dominated by Swietenia sp. (96.59%). The understory comprised 1,807 individuals across 99 species, with Microstegium vimineum accounting for 38.07%. Diversity was moderate (H′ = 2.252) with high evenness (J′ = 0.939). A significant negative correlation was observed between canopy density and understory diversity ($r = -0.696$, $p < 0.001$), and anthropogenic disturbances were present in most plots.

Conclusion: These findings indicate that while mahogany plantations can retain understory diversity, canopy closure, invasive species dominance, and disturbance strongly influence vegetation structure, which highlights the need for targeted management interventions.

Keywords: *mahogany plantation; vegetation structure; species diversity; canopy density; invasive species*

SDG Alignment: SDG 15 – Life on Land; SDG 13 – Climate Action

PSP-12

Anthropogenic Marine Debris (AMD) in Marine Protected Areas (MPAs): Insights from a Bibliometric and Content Analysis

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Abstract

Background/Rationale: Anthropogenic marine debris (AMD) is increasingly documented within Marine Protected Areas (MPAs), demonstrating that boundary-based protection alone is insufficient to prevent debris accumulation.

Objectives: This study presents an integrated bibliometric and systematic content-based synthesis of AMD research in MPAs, drawing on 86 Scopus-indexed publications published between 2000 and 2025.

Methodology: Bibliometric analyses were conducted to examine research output trends, thematic diversity, and methodological developments. Content analysis was performed across 129 MPAs to assess debris type, sources, and polymer composition. Statistical and bibliometric tools were applied to identify geographic and thematic gaps.

Results: Bibliometric analyses reveal a marked increase in research output since 2015, accompanied by growing thematic diversity and methodological sophistication, including wider application of polymer identification techniques such as Fourier-transform infrared (FTIR) and Raman spectroscopy. Scientific production remains geographically concentrated in Europe and North America, while many ecologically important regions in Southeast Asia, Africa, and the South Pacific remain underrepresented. Content analysis indicates that AMD is predominantly attributed to land- and sea-based inputs, with consumer- and fishing-related debris frequently reported. Plastics constitute the majority of recorded debris, with fibers, fragments, and films representing the most common forms. Polypropylene (PP) and polyethylene (PE) are the most frequently identified polymers.

Conclusion: These findings show that AMD accumulation in MPAs is shaped by processes extending beyond protected-area boundaries and highlight persistent geographic and methodological gaps. Addressing these challenges will require expanded and geographically balanced monitoring, improved methodological consistency, and stronger integration of AMD considerations into broader MPA governance frameworks.

Keywords: *anthropogenic marine debris; debris sources; marine protected areas; marine conservation; microplastics; plastic pollution*

SDG Alignment: SDG 14 – Life Below Water; SDG 12 – Responsible Consumption and Production

PSP-13

Avifaunal Diversity Assessment in a Heterogeneous Mountain Forest Landscape within Central Cebu Protected Landscape, Philippines: Implications for Birdwatching Potential

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Abstract

Background/Rationale: Avian communities serve as important biological indicators of habitat condition and ecological integrity, yet their diversity and distribution patterns remain insufficiently understood, particularly in forested areas of highly urbanized cities.

Objectives: This study assessed avian diversity across nine sampling stations in Barangay Guba, Cebu, Philippines, within the Central Cebu Protected Landscape, and examined its relationship with elevation.

Methodology: Standardized field surveys using the point-count method were conducted to visually and aurally record species presence and abundance, from which diversity indices including Shannon, Simpson, Menhinick richness, and evenness were computed. Linear regression analysis was applied to determine spatial variation and elevation-related patterns.

Results: Results revealed significant differences in avian assemblages among stations. Stations 5 and 8 showed the highest diversity, associated with greater species richness and lower dominance, whereas Station 7 showed the lowest diversity due to reduced richness and higher dominance. Shannon diversity demonstrated a statistically significant negative relationship with elevation, while Simpson dominance showed a significant positive relationship, indicating increasing species dominance at higher elevations. In contrast, Menhinick richness and evenness showed weak and non-significant relationships with elevation.

Conclusion: The findings generally indicate that avian diversity patterns are strongly site-dependent and partially influenced by elevation, particularly in terms of diversity and dominance rather than richness and evenness. These findings highlight the potential of the study area as a site for birdwatching activities, which may serve as a low-impact approach to increasing public engagement and awareness of avian communities, thereby supporting their long-term conservation.

Keywords: *avian diversity; bird assemblages; conservation; elevation*

SDG Alignment: SDG 11 – Sustainable Cities and Communities; SDG 15 – Life on Land

PSP-14

Knowledge, Attitude, Practices on Pest Control during Preparation Stage among Corn Farmers in Ipil, Carmen Cebu

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Abstract

Background/Rationale: Pest control operations which take place during the land preparation stage of corn production require execution as an essential function which farmers frequently overlook. Farmers in Barangay Ipil, Carmen, Cebu begin their pest control work after planting, which results in using more chemical pesticides, damaging both the environment and the economy.

Objectives: This study aimed to assess the levels of knowledge, attitudes, and practices of corn farmers regarding pest control during the preparation stage and to examine the relationship between selected socio-demographic variables and KAP levels.

Methodology: The research used a quantitative design to collect data from 86 corn farmers in Barangay Ipil through structured survey questionnaires. Descriptive statistics with mean and frequency and percentage values were used, and inferential statistics through Chi-square, Pearson correlation, and point-biserial correlation were applied to analyze data at a 0.05 level of significance.

Results: Most farmers showed a moderate knowledge level (65.12%) with a mean score of 6.02. A considerable proportion exhibited high knowledge (32.56%), while only a few had low knowledge (2.33%). The results show that people have different levels of pest control knowledge but most people understand basic pest control methods. The study identified advanced knowledge gaps because people lacked basic knowledge about sustainable pest management methods.

Conclusion: The study reveals that farmers understand pest control methods which protect crops during preparation but their current knowledge needs training and extension services to advance agricultural methods. Enhanced farmer education programs will lead to decreased chemical input usage which will make agricultural methods more efficient.

Keywords: *pest control; KAP; corn farmers; land preparation; sustainable agriculture*

SDG Alignment: SDG 2 – Zero Hunger; SDG 12 – Responsible Consumption and Production; SDG 13 – Climate Action

PSP-15

Spatial Patterns and Diversity of Native and Introduced Tree Species in CTU-Guba, Cebu City, Philippines Across Low, Mid, and High Elevation Zones

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Abstract

Background/Rationale: Mangrove ecosystems support diverse communities of flora and fauna, including arboreal insects that depend on their structural complexity. However, arboreal insects in these ecosystems remain poorly documented, particularly in the Philippines where research on canopy-dwelling species is still limited.

Objectives: This study assessed the post-typhoon diversity and distribution of arboreal insects in the Mangrove Propagation and Information Center in Day-as, Cordova, Cebu, and examined their relationships with mangrove stand structure, environmental parameters, and anthropogenic disturbances.

Methodology: Arboreal insect surveys were conducted across transects. Diversity and distribution data were analyzed alongside mangrove structural attributes, environmental parameters (humidity, temperature), and recorded anthropogenic disturbances. One-way ANOVA, regression, and PCA analyses were used.

Results: A total of 401 individuals representing six orders, thirteen families, and fifteen genera were recorded, with Hymenoptera comprising most of the assemblage. Although richness and diversity values differed numerically among transects, one-way ANOVA indicated no statistically significant variation ($p > .05$), suggesting relatively similar insect communities across the site. Regression and PCA analyses showed that canopy cover and average DBH were positively associated with insect abundance, whereas average height was negatively associated. Humidity, temperature, and mangrove population did not significantly influence insect diversity. Anthropogenic disturbances, including marine debris and structural developments, were recorded throughout the area.

Conclusion: The findings provide baseline information on arboreal insect communities following typhoon events and highlight the importance of mangrove structural attributes in shaping insect diversity and abundance. These insights support future biodiversity monitoring and conservation strategies in mangrove ecosystems of Mactan Island.

Keywords: *entomological recovery; coastal resilience; trophic structure; anthropogenic disturbances*

SDG Alignment: SDG 2 – Zero Hunger; SDG 14 – Life Below Water

PSP-16

Understory Plant Diversity Across Different Canopy Cover Levels in Barangay Guba, Cebu City

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Abstract

Background/Rationale: Understory plant communities are vital components of forest ecosystems, facilitating nutrient cycling and critical habitat provision for local fauna.

Objectives: This study evaluated the species richness and diversity of understory plants across three distinct canopy category levels (Open, Moderate, and Closed) in Barangay Guba, Cebu City.

Methodology: Understory vegetation was assessed using stratified random sampling with 1m×1m quadrants, whereas the canopy cover was quantified using hemispherical photography and was categorized into Open (<40%), Moderate (40–70%), and Closed (>70%) levels. Biodiversity was quantified via Species Richness (S), Shannon-Wiener (H'), Evenness (E), and Simpson's Reciprocal Index. A one-way ANOVA was used to test for significant variations between sites.

Results: A one-way ANOVA showed significant variations between sites ($F(2, 27)= 4.898$, $p=.015$). As canopy cover increases, both species richness and overall diversity indicate significant decline, implying a negative correlation between canopy cover and understory species richness and diversity. Open canopy areas exhibited the highest biodiversity ($S=26$, $H'=3.069$), supported by a high Evenness value ($E=0.942$), suggesting that greater light availability fosters a complex, uniform community. The Closed canopy maintained a specialized structure with a lower Simpson's Reciprocal Index (10.079), reflecting an ecological filtering effect where only shade-tolerant species persist.

Conclusion: These findings indicate that canopy structure is a primary driver of understory composition in Barangay Guba, providing essential baseline data for forest management and the preservation of floral diversity in Cebu's protected areas.

Keywords: *canopy cover; understory vegetation; biodiversity metrics; Barangay Guba; Cebu City; ecological filtering; species richness*

SDG Alignment: SDG 15 – Life on Land

PSP-17

Structural and Forecasting Analysis of Philippine Foreign Direct Investments and Manufacturing Subsector Gross Value Added Using VAR and ARIMAX (2004–2024)

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Abstract

Background/Rationale: Foreign direct investment (FDI) is widely viewed as a driver of industrial growth, yet its effects across Philippine manufacturing sub-sectors may vary and are often obscured by aggregate analysis.

Objectives: This study examined the dynamic relationship between FDI and gross value added (GVA) in the food, petroleum, and electronics sub-sectors using quarterly Philippine data from 2004Q1 to 2024Q4.

Methodology: Using a longitudinal time-series design, sectoral GVA was modeled in first differences while FDI was retained in levels, with seasonal adjustments, additive outliers, Bai–Perron level shifts, crisis pulses, and a post-COVID slope incorporated. A VAR(3) model and sector-specific ARIMAX models were estimated and evaluated through diagnostics, Granger causality tests, impulse response functions, forecast error variance decomposition, rolling RMSFE, and Diebold–Mariano tests.

Results: Results showed weak short-run predictive influence of FDI on sectoral GVA and negligible feedback from sectoral performance to FDI. FDI shocks produced small and uneven effects: food showed a modest persistent gain, while petroleum and electronics showed near-zero to slightly negative medium-run effects. FDI explained only a small share of sectoral volatility, with most variation driven by own-sector shocks and cross-sector spillovers. VAR generally outperformed ARIMAX in short-run forecasting.

Conclusion: Overall, the findings suggest that FDI benefits are not automatic and depend on sustained inflows, absorptive capacity, and stronger domestic linkages.

Keywords: *capital inflows; industrial output; time-series modeling; impulse responses; variance decomposition; policy simulation*

SDG Alignment: SDG 8 – Decent Work and Economic Growth; SDG 9 – Industry, Innovation and Infrastructure

PSP-18

Ecological Assessment in Fish Assemblages and Community Structure in the Urban Lagoon of Cebu City, Cebu Philippines

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Abstract

Background/Rationale: Fish assemblages and community structure are significant in determining ecological conditions in urban aquatic ecosystems. However, the rapid urbanization in nearby coastal waters has significantly altered aquatic ecosystems. Understanding these factors within urban aquatic ecosystems provides a crucial basis for assessing ecosystem health and identifying human impacts.

Objectives: This study aims to: (1) determine the fish species composition, abundance, diversity, and biomass using CPUE in the Cebu City lagoon; (2) assess the effects of water quality parameters on fish community structure; and (3) determine anthropogenic activities (e.g., pollution and fishing pressure) around the lagoon.

Methodology: Fish assemblage data were collected using CPUE methods. Water quality parameters were measured across sampling stations. PATH analysis, Kruskal-Wallis Test, and temporal analysis were applied to examine spatial and temporal patterns.

Results: The researchers recorded 20 fish species, dominated by Sarotherodon melanotheron (blackchin tilapia). PATH analysis revealed that water quality has no significant influence on diversity. However, salinity affects CPUE negatively, indicating higher salinity leads to lower CPUE. The Kruskal-Wallis Test showed no significant spatial differences in water quality and diversity among stations, but the temporal factor was significant across sampling events, revealing anthropogenic impact gradients in the lagoon.

Conclusion: The findings underscore the significance of studying fish assemblages in urban aquatic ecosystems in assessing how the interplay of environmental factors influences biodiversity and ecological health. It is important to establish a comprehensive coastal lagoon management plan that incorporates pollution control measures, habitat restoration projects, and strict regulations on waste disposal.

Keywords: *anthropogenic effects; biodiversity; bioindicators; conservation; ecosystem health; urbanization effects*

SDG Alignment: SDG 11 – Sustainable Cities and Communities; SDG 14 – Life Below Water; SDG 15 – Life on Land

PSP-19

Spatio-Temporal Analysis of Road Accidents in Cebu City

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Abstract

Background/Rationale: Road traffic accidents remain a persistent public safety concern in rapidly urbanizing cities, yet accident management in many Philippine cities relies on reactive rather than data-driven approaches. In Cebu City, accident records exist but spatial and temporal patterns remain unexamined, limiting the ability of traffic authorities to allocate resources and interventions strategically.

Objectives: This study aimed to identify road accident hotspots in Cebu City and examine temporal patterns in accident severity using police records from 2016 to 2023.

Methodology: Road accident data were obtained from the Cebu City Police Office, comprising reported incidents with variables including accident severity, time of occurrence, date, vehicle type, and geographic coordinates. Kernel Density Estimation (KDE) was applied to identify spatial concentrations of road accidents across the city.

Results: KDE revealed persistent accident hotspots along high-traffic corridors, particularly at Fuente Osmeña Circle, N. Bacalso Avenue, Archbishop Reyes Avenue, Imus Road, and J. Luna Avenue. Temporal analysis indicated that daylight hours account for the majority of injury and no-injury accidents, while nighttime conditions concentrate fatal incidents.

Conclusion: Spatial and temporal patterns in Cebu City road accidents are non-random and concentrated, suggesting that targeted infrastructure and enforcement interventions at identified hotspots, especially during nighttime, could meaningfully reduce fatality risk.

Keywords: *road accident hotspots; kernel density estimation; spatio-temporal analysis; traffic safety; Cebu City*

SDG Alignment: SDG 11 – Sustainable Cities and Communities; SDG 3 – Good Health and Well-being

PSP-20

Optimizing Integrated Control of Melon Fruit Fly (Bactrocera cucurbitae) in Ampalaya Using Attractant Traps and the Parasitoid Wasp Psyttalia fletcheri

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Abstract

Background/Rationale: Melon fruit fly (Bactrocera cucurbitae) is a destructive pest of ampalaya (Momordica charantia L.) that causes significant yield losses and threatens farm productivity in the Philippines. The continued reliance on chemical pesticides raises environmental concerns and resistance risks, highlighting the need for sustainable pest management strategies.

Objectives: This study formulated a mathematical model aimed at optimizing pest control, minimizing yield loss, and reducing production costs using attractant traps and the parasitoid wasp Psyttalia fletcheri.

Methodology: The model was based on biological assumptions and expressed as a system of ordinary differential equations with impulsive components to represent continuous population dynamics and discrete interventions, such as trap replacement and periodic parasitoid releases. Numerical simulations using the fourth-order Runge-Kutta method in JupyterLab were conducted to analyze population behavior under varying control levels.

Results: Results show that increasing control intensity significantly reduces larval and adult populations, with combined strategies exhibiting synergistic effects that suppress infestation and prevent population resurgence. Furthermore, simulation-based economic analysis indicates that the optimized integrated pest management (IPM) strategy is more cost-effective than conventional pesticide use, yielding higher net profit and profit margin under simulated conditions.

Conclusion: Overall, the model provides a useful decision-support tool for sustainable and cost-effective pest management in ampalaya production.

Keywords: *biological control; integrated pest management; mathematical modeling; numerical simulations; Runge-Kutta method*

SDG Alignment: SDG 2 – Zero Hunger

PSP-21

From Denial to Acceptance: A Journey of Hope Among Newly Diagnosed People Living with HIV in Cebu City

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Abstract

Background/Rationale: Newly diagnosed People Living with HIV (PLHIV) often experience intense emotional, psychological, and social challenges, especially within the first three years after diagnosis. Despite advancements in treatment, stigma, fear, and cultural attitudes, particularly in Cebu City, continue to hinder acceptance, disclosure, and adjustment. Understanding these lived experiences is essential to provide holistic and culturally sensitive care. This study was conducted to explore how newly diagnosed PLHIV navigate their early journey, with the goal of informing nursing practice, support systems, and interventions that promote resilience, reduce stigma, and improve overall well-being.

Objectives: This study aims to explore and understand the lived experiences of newly diagnosed PLHIV in Cebu City to ultimately contribute to the improvement of their life satisfaction and increase societal awareness.

Methodology: Using a qualitative, phenomenological design grounded in Heideggerian philosophy, the study conducted in-depth semi-structured interviews with 12 purposively selected PLHIV newly diagnosed within the last three years. Data were transcribed verbatim, translated into English, and analyzed using Braun and Clarke's thematic analysis. Rigor was ensured through member checking, peer debriefing, and data triangulation.

Results: Thematic analysis revealed experiences closely aligned with Kübler-Ross' Five Stages of Grief: denial, anger, bargaining, depression, and acceptance in a nonlinear way. These stages reflected the psychological adaptation process of participants in response to their experience. Accounts included verbal discrimination, social withdrawal, and fear of disclosure, while resilience was fostered through peer support networks, faith, and strong adherence to antiretroviral therapy.

Conclusion: Stigma remains pervasive among People Living with HIV (PLHIV) in Cebu City, affecting psychological well-being and social relationships. Interventions tailored to address stigma, combined with public education and inclusive health policies, are essential to improve health outcomes and promote social acceptance.

Keywords: *HIV stigma; Kübler-Ross model; phenomenology; newly diagnosed PLHIV; Cebu City*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 10 – Reduced Inequalities

PSP-22

Assessing Parental Perception on the Low Rate of Childhood Immunization in Barangay Tag-ube

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Abstract

Background/Rationale: Childhood immunization is among the most efficient approaches that can help prevent children from being at risk of dying from dangerous diseases. Nevertheless, low completion rates of immunization continue to prevail in Barangay Tag-ube, Compostela, Cebu.

Objectives: This study was conducted to investigate parents' opinions about childhood immunization, as well as the effect of socio-demographic background and exposure to media on parents' decisions.

Methodology: This exploratory quantitative research was conducted using a descriptive research design and the Health Belief Model. The sample included 102 respondents of children between 0–2 years of age who have not been fully vaccinated.

Results: The researchers' findings indicated that although 92.16% of children were vaccinated, none had completed the required vaccination schedule. The parents tended to have a low level of perceived susceptibility, benefits, barriers, cues to action, self-efficacy, and moderate level of perceived severity. The research also identified that educational level and other socio-demographic variables affected parents' beliefs and efficacy. Exposure to media affected their perception, whether by increasing their awareness or confirming their suspicions.

Conclusion: The problem is not merely the act of rejection; it is more of a mixture of factors such as lack of access, poverty, misinformation, and lack of confidence. On the basis of these results, the researchers suggest interventions based on the Health Belief Model to counteract parents' misconceptions about vaccination, increase health knowledge, boost vaccine confidence, and eliminate obstacles so that immunizations can be achieved on time and properly.

Keywords: *Health Belief Model; media exposure; vaccine preventable diseases; health communication*

SDG Alignment: SDG 3 – Good Health and Well-being

PSP-23

Trauma-Informed Care (TIC) Knowledge, Attitude, Practice, and Burnout of Psychology Practitioners in Cebu

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Abstract

Background/Rationale: Trauma-Informed Care (TIC) plays a vital role in enhancing the quality of mental health services by fostering safety, trust, and preventing retraumatization among clients. Despite proven global significance, its application in the Philippines context remains underexplored.

Objectives: To explore in the local context, this study examined the knowledge, attitude, and practice of TIC among psychology practitioners in Cebu, Philippines, and how these relate to their experiences of burnout. It also assessed differences in TIC knowledge, attitude, and practice by demographics.

Methodology: Using a quantitative descriptive-correlational design, data were gathered via online surveys and analyzed using descriptive and inferential statistics, including tests of differences and correlations.

Results: The study revealed the following key findings: (1) psychology practitioners exhibit high TIC knowledge and practice with moderate attitude, (2) personal burnout was regarded as the highest type of burnout experienced, (3) test of differences showed that educational exposure and years of experience mattered in the variation of knowledge and attitude, and (4) correlational analysis showed strong interrelationships between KAP yet no relationship was found between burnout and KAP components.

Conclusion: The findings suggested that TIC individual competencies do not necessarily protect against burnout. Further research is needed to integrate TIC not only into academic curricula but also into personal, organization and institutional policies, and professional development programs to strengthen trauma-informed practices and promote mental health and wellness.

Keywords: *attitude; burnout; knowledge; practice; trauma-informed care*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 8 – Decent Work and Economic Growth

PSP-24

Mediating Role of Family Dynamics and Communication Patterns on the Emotional Resilience of Glass Children

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Abstract

Background/Rationale: The Municipality Social Welfare and Development Office (MSWDO) estimates that about 2,535 people with disabilities (PWD) are registered in Liloan, Cebu, as of 2025, indicating a noteworthy number of families who depend on their healthy members to provide additional care. Glass children are often unseen or overlooked siblings of a child with complex or high demands, caused by the predominant attention directed towards the care of their sibling.

Objectives: The study seeks to ascertain the influence of family dynamics and communication patterns mediating glass children's emotional resilience.

Methodology: This study used a sequential explanatory mixed-methods design, with purposive sampling, and a quantitative survey administered to 152 well-siblings, followed by in-depth interviews with a subset of 10 participants.

Results: Quantitative results showed that the emotional resilience of these siblings is not strengthened by the absence of communication problems, but by the quality of family dynamics and the quality of their communication. Qualitative data affirm that the themes: awareness of family situation, caregiving roles for siblings with disabilities, glass child's emotional conflict and barriers, and positive perception despite adversities indicate that the emotional resilience of glass children in Liloan is heavily influenced by their Filipino roots of collectivism, allowing them to cope despite material and emotional strain.

Conclusion: These findings indicate a need for interventions to reinforce equitable attention and role recognition among parents and well-siblings. Findings collectively show that healthy family relationships and open communication channels reduce the emotional strain associated with the glass-child experience, thereby enabling these siblings to maintain stability while accommodating change.

Keywords: *communication patterns; emotional resilience; family dynamics; glass children; people with disabilities (PWD)*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 16 – Peace, Justice and Strong Institutions

PSP-25

The Electoral Preferences and Cognitive Biases in Voting Behavior Across Generation X, Y, and Z

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Abstract

Background/Rationale: In the evolving political landscape of the Philippines, voters' choices are increasingly shaped by emotional and psychological influences rather than rational evaluation.

Objectives: This study examined the electoral preferences and cognitive biases across Generations X, Y, and Z voting behavior in Cebu City, Philippines. It explores the electoral preferences and how cognitive biases influence voter decision-making across age cohorts.

Methodology: Using a quantitative causal-comparative design, data were gathered from 384 registered voters through a validated survey questionnaire. Statistical analysis using One-Way ANOVA determined the variations in cognitive biases and electoral preferences among the generations. The study focused on six electoral preference indicators—mass appeal, grassroots mobilization, regional allegiance, policy-driven choice, political affiliation, and endorsements—and three cognitive bias indicators—halo effect, heuristic, and bandwagon.

Results: The findings revealed significant differences in electoral preferences and cognitive biases among Generations X, Y, and Z. Specifically, grassroots mobilization, regional allegiance, and policy-driven choice showed significant variation. A strong correlation was also found between cognitive biases and electoral preferences, confirming that emotional and psychological influences shape voting behavior.

Conclusion: Generation X prioritized credibility and experience, Generation Y favored transparency and issue-based campaigns, while Generation Z leaned toward personality and popularity. Regarding cognitive biases, the bandwagon effect differed significantly across generations, while the halo effect and affect heuristic remained consistent. Voter education and media literacy interventions were recommended.

Keywords: *cognitive biases; electoral preferences; generations; politics; voting behavior*

SDG Alignment: SDG 16 – Peace, Justice and Strong Institutions; SDG 10 – Reduced Inequalities

PSP-26

Readiness of Takers for Psychometrician Licensure Examination

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Abstract

Background/Rationale: The growing relevance of psychology in the Philippines has increased the demand for competent psychometricians, yet many aspiring professionals continue to face challenges in preparing for the Psychometrician Licensure Examination.

Objectives: This study examined the levels and predictors of readiness among board exam takers to understand how these factors influence outcomes.

Methodology: Using a mixed-methods design, a researcher-developed survey questionnaire served as the primary instrument, combining Likert-scale items for quantitative analysis and an open-ended question for qualitative insights. The final sample consisted of 208 participants, categorized into two distinct groups: those who successfully passed the licensure examination (176 passers) and those who did not (32 non-passers), all from Cebu.

Results: Findings revealed that both passers and non-passers demonstrated high emotional readiness, specifically in self-determination, self-efficacy, and self-regulation, reflecting motivation, confidence, and emotional control during exam preparation. Results also showed high behavioral readiness, with effect, reinforcement, habit formation, and exercise rated highest. Regression analyses showed that overall emotional readiness did not significantly predict outcomes, though self-efficacy and self-determination were significant components. Behavioral readiness did not significantly predict exam performance.

Conclusion: The study concludes that emotional factors are more influential than behavioral factors. Review programs should integrate emotional and behavioral development, including motivation strategies, structured study schedules, mock exams, and peer mentoring. Future research should explore additional variables to better understand factors affecting exam performance.

Keywords: *emotional readiness; behavioral readiness; psychometrician licensure examination; convergent parallel*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 4 – Quality Education

PSP-27

Socio-Behavioral Motivations and Perceived Risk of Merchandise Collecting Habit Among Filipino Fans

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Abstract

Background/Rationale: Collecting merchandise has become widespread, driven by the global influence of the entertainment industry. Despite its growing popularity, merchandise collection is often misunderstood, labeled as 'addictive,' 'obsessive,' or 'wasteful,' with little regard for its psychological and emotional motivations. These perceptions overlook the potential risks that can arise when these needs go unmet or are invalidated.

Objectives: This study examined the socio-behavioral motivations and perceived risks of merchandise collecting among Filipino fans.

Methodology: Using a quantitative descriptive-correlational design, 380 active Filipino merchandise collectors completed an online survey assessing demographics, collecting behaviors, motivations, and perceived risks. Most respondents were young adult females aged 21–30, primarily college students or graduates, and from low- to middle-income households.

Results: Findings showed that social motivations—particularly social validation, celebrity influence, and parasocial relationships—were high, while group competition was low. Behavioral motivations were strongest in emotional fulfillment and identity expression, with escapism rated low and fear of missing out (FOMO) very low. Perceived risks varied across domains: social and emotional risks were reported at low levels, while financial risk was very low. Correlational analysis revealed significant positive relationships between social and behavioral motivations and perceived risks. In contrast, frequency, duration, and amount of purchases were not significantly related to perceived risk.

Conclusion: Overall, merchandise collecting provides Filipino fans with emotional satisfaction, social connection, and identity expression, with perceived risks influenced by fans' socio-behavioral motivations rather than collecting habits. The study recommends recognizing collecting as a valid form of enjoyment and self-expression and encourages future research with more diverse participants, longitudinal and mixed-method designs, and deeper exploration of fans' motivations and experiences.

Keywords: *behavioral motivations; Filipino fans; merchandise collecting; perceived risk; social motivations*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 12 – Responsible Consumption and Production

PSP-28

Lived Experience of the Ati Tribe in Accessing Mental Health Services in Cebu

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Abstract

Background/Rationale: The Ati Tribe in Cebu, an Indigenous community in the Philippines, faces enduring barriers to mental health care rooted in historical marginalization, limited institutional presence, and social discrimination.

Objectives: This study aims to determine the lived experiences of accessibility to mental health services among the Ati Tribe living in Cebu, and to explore the understanding of mental health and lived experiences in accessing mental health services.

Methodology: This study employed a qualitative descriptive–phenomenological design, conducting semi-structured interviews with seven Ati members to explore their lived experiences in accessing mental health services. Data were analyzed using Giorgi's method, highlighting themes related to structural challenges, coping strategies, cultural practices, and aspirations for empowerment.

Results: Findings identified three main barriers: geographic inaccessibility, limited mental health knowledge, and stigma, including experiences of discrimination from the broader society. In response, the Ati rely on cultural, social, and spiritual coping strategies, such as faith, communal support, and traditional rituals, demonstrating strong resilience despite these challenges. Participants expressed openness to professional mental health programs if these are delivered in a culturally respectful and inclusive manner.

Conclusion: The study underscores that the mental health of the Ati Tribe is shaped by both structural and cultural factors, and their resilience offers a foundation for intervention. It is recommended that government agencies, NGOs, and mental health professionals collaborate to develop community-based, culturally sensitive programs that integrate indigenous knowledge with professional services.

Keywords: *accessibility; Ati Tribe; cultural resilience; indigenous mental health; phenomenological study*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 10 – Reduced Inequalities; SDG 11 – Sustainable Cities and Communities

PSP-29

Bridging Gaps: The Lived Experiences of Persons With Physical and Visual Impairments in Seeking Healthcare in a Selected Barangay in Cebu City

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Abstract

Background/Rationale: Access to healthcare is a fundamental human right essential to the well-being of all individuals. In a selected barangay in Cebu City, poverty, inaccessible infrastructure, and limited transportation hinder healthcare access for persons with disabilities (PWDs), despite laws promoting their rights.

Objectives: This study explored the lived experiences of persons with physical and visual impairments in seeking healthcare within their community, guided by SDG 3 on Good Health and Well-being and SDG 10 on Reduced Inequalities.

Methodology: Using a qualitative phenomenological design, purposive sampling recruited participants aged 18 and above, and data were collected through semi-structured interviews. Colaizzi's method was applied in analysis, with strict observance of ethical standards such as informed consent, confidentiality, and accommodations for disability-related needs.

Results: Three clustered themes emerged: (1) From Smooth Encounters to Stumbling Blocks, highlighting both positive and challenging healthcare interactions; (2) From Daily Hurdles to Sources of Strength, reflecting resilience, coping strategies, and social support; and (3) Bridging Gaps Toward Inclusivity, emphasizing the need for accessible facilities, disability awareness among healthcare workers, and inclusive policies. Findings revealed that systemic barriers, cultural norms, and adaptability significantly shape healthcare access, with inequities persisting despite community and familial support.

Conclusion: Anchored on the Social Model of Disability, the study highlights that societal barriers rather than individual impairments create the challenges faced by persons with disabilities. The findings aim to bridge the gap between policy and practice, empowering both persons with disabilities and the healthcare system to effectively respond to their unique needs. This study advocates for an inclusive healthcare system that ensures equity and dignity for all.

Keywords: *healthcare accessibility; systemic barriers; inclusive health services; disability awareness; policy implementation*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 10 – Reduced Inequalities

PSP-30

Barriers and Breakthroughs: Exploring the Lived Experiences of Cebuano Generation Z in Seeking Psychiatric Care

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Abstract

Background/Rationale: Cebuano Generation Z face persistent barriers in seeking psychiatric care due to stigma, cultural beliefs, and limited service accessibility, yet their lived experiences remain insufficiently explored in local contexts.

Objectives: This study aimed to examine how stigma, cultural norms, and structural factors shape psychiatric help-seeking among Cebuano youth.

Methodology: Using a qualitative Heideggerian phenomenological approach, eight participants aged 21–25 with diagnosed mental health conditions were purposively selected. Data were gathered through in-depth semi-structured interviews and analyzed using van Manen's hermeneutic method, guided by an interpretively adapted Health Belief Model.

Results: Findings revealed thirteen themes clustered into four major domains: Hiding in Plain Sight, reflecting concealment influenced by stigma and family expectations; Becoming Visible, Becoming Strange, describing identity shifts and social distancing following disclosure; Carrying the Shadows, Seeking the Horizon, highlighting financial, geographic, and internalized barriers to care; and Standing Where the Light Breaks Through, illustrating resilience, support systems, and advocacy.

Conclusion: The study shows that psychiatric help-seeking is a culturally embedded process involving negotiation of identity, belonging, and access, shaped by family dynamics and socioeconomic constraints. It concludes that stigma operates across personal, social, and structural levels, requiring culturally responsive interventions, expanded access to community-based mental health services, and strengthened family and peer support systems.

Keywords: *youth mental health; help-seeking behavior; mental health stigma; Cebuano youth; Heideggerian phenomenology*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 10 – Reduced Inequalities

PSP-31

Perceived Risks and Safety Awareness of Storm Surge Among Residents in Coastal Areas of Barangay Ibo, Lapu-Lapu City

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Abstract

Background/Rationale: Risk communication, as a vital component of disaster risk management, is essential during disasters and emergencies to inform and empower the public. To control or reduce disaster impacts such as storm surges, awareness and preparedness are crucial.

Objectives: This study aimed to evaluate respondents' perceived risks and safety awareness in the coastal areas of Barangay Ibo, Lapu-Lapu City, by examining their threat and coping appraisal and how these relate to their socio-demographic profile and media use.

Methodology: A quantitative descriptive research design, using the Protection Motivation Theory, was employed, with 225 respondents surveyed from the target area. Data were analyzed using descriptive statistics, the Mann–Whitney U test, Kruskal–Wallis H test, and Spearman's Rank-Order Correlation.

Results: Findings revealed ambivalence among respondents regarding perceived risks and safety awareness, indicating limited understanding of storm-surge consequences and uncertainty about the effectiveness of protective measures. Demographic factors such as sex and media consumption showed a significant relationship with respondents' self-efficacy, while educational attainment was significantly associated with all aspects of threat and coping appraisal.

Conclusion: These findings highlight the need for more focused and strategic risk communication efforts to enhance respondents' awareness, deepen their understanding of storm surge hazards, and strengthen their confidence and capacity to respond effectively to storm surge disasters.

Keywords: *risk communication; community resilience; disaster preparedness; hazard perception; Protection Motivation Theory*

SDG Alignment: SDG 11 – Sustainable Cities and Communities

PSP-32

The Potential Antimicrobial Effects of Copper Sheets Against Staphylococcus aureus and Pseudomonas aeruginosa: An In Vitro Study

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Abstract

Background/Rationale: Healthcare-associated infections (HAIs) remain a serious problem in hospitals, especially with the rise of drug-resistant bacteria like Staphylococcus aureus and Pseudomonas aeruginosa.

Objectives: This study explored the use of solid copper sheets as a possible way to help reduce the spread of harmful microbes on surfaces commonly touched in healthcare settings.

Methodology: Using the Kirby-Bauer disk diffusion method, copper sheets of two thicknesses (0.01 mm and 0.25 mm) were tested against clinical samples of both bacteria. Lysol was used as a positive control, while plastic discs served as a negative control. The experiment was carried out at an Academic Research Institution in a Biosafety Level 2 laboratory. Two conditions were tested: copper was applied either 15 minutes after the bacteria were placed on agar plates (early contact) or after 24 hours (delayed contact).

Results: Results showed that copper had strong antibacterial effects during early contact, with the thinner 0.01 mm sheets showing larger zones of inhibition than the thicker ones, suggesting that thinner copper may release more antimicrobial ions. S. aureus was more affected than P. aeruginosa, likely due to differences in their cell walls. However, no antimicrobial activity was seen in the delayed contact group, possibly because of biofilm formation over time.

Conclusion: These results highlight copper's potential as a fast-acting antimicrobial surface. The study recommends the application of copper-based coatings in high-touch hospital areas and encourages further research on their long-term viability in real-world settings.

Keywords: *copper sheets; antimicrobial resistance; Staphylococcus aureus; Pseudomonas aeruginosa; Kirby-Bauer method; healthcare-associated infections*

SDG Alignment: SDG 3 – Good Health and Well-being; SDG 9 – Industry, Innovation and Infrastructure; SDG 12 – Responsible Consumption and Production

PSP-33

Knowledge Exchange Practices Among Vegetable Farmers in Brgy. Sayao, Sibonga, Cebu: A Narrative Study

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Abstract

Background/Rationale: Communication plays a vital role in the transmission and preservation of agricultural knowledge in rural communities. Vegetable farmers rely on informal exchanges of experiences, techniques, and indigenous practices to sustain productivity despite limited access to formal extension services.

Objectives: This study aimed to examine the nature, content, and dynamics of knowledge exchange among vegetable farmers in Brgy. Sayao, Sibonga, Cebu.

Methodology: A qualitative narrative approach was employed using purposive sampling. Eight vegetable farmers from four puroks participated in in-depth interviews. Data were analyzed through thematic analysis to identify recurring patterns in communication practices.

Results: Findings revealed four major themes: (1) fertilizer use and soil management techniques; (2) family-based and generational knowledge transfer; (3) informal and social spaces as key channels of communication; and (4) farmer-centric information processing and behavioral response. Subthemes under the fourth theme included skepticism toward external knowledge, source credibility, risk aversion based on past experiences, and mutual growth through shared learning.

Conclusion: Results indicate that inconsistencies in formal communication systems reinforce farmers' reliance on peer-based knowledge exchange. Strengthening localized communication strategies, particularly at the purok level, and implementing context-specific agricultural demonstrations can enhance knowledge dissemination and adoption among farmers.

Keywords: *informal learning; rural communication; indigenous practices; peer networks; agricultural decision-making; farmer behavior*

SDG Alignment: SDG 2 – Zero Hunger; SDG 12 – Responsible Consumption and Production

PSP-34

Predicting Math Performance and Profiling Students in Southeast Asia using Machine Learning and Gaussian Mixture Model

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Abstract

Background/Rationale: Educational interventions in Southeast Asia are predominantly designed around population averages, yet student conditions within systems vary along multiple factors, including digital access, socioeconomic status, school safety. Without identifying the combinations that drive performance differences, policy remains misaligned with the learners it targets.

Objectives: This study aims to: (1) to identify the strongest student-level predictors of mathematics performance among Southeast Asian participants in PISA 2022 using machine learning models; (2) to uncover hidden groups defined by structural and contextual conditions; and (3) to compare the distribution of these profiles and their relationship to mathematics performance across eight Southeast Asian countries.

Methodology: Six machine learning models were compared to predict mathematics performance in SEA and identify top predictors via feature importance. Second, the top predictors were used as indicators in Gaussian Mixture Modeling to uncover latent student profiles, with optimal class solutions determined by the Akaike Information Criterion, Bayesian Information Criterion, log-likelihood, and entropy.

Results: Across six machine learning models, XGBoost best predicted PISA 2022 mathematics achievement (R^2 = 0.549, MAE = 51.887), with ICT resources, home possessions, parental educational attainment, disciplinary climate in mathematics, and socioeconomic status as top predictors. Gaussian Mixture Modeling identified six latent profiles among Southeast Asian students: (1) Resource-Supported, (2) Resource and Academically Constrained, (3) Academically Resilient, (4) Moderately Resourced, (5) Status-Advantaged, and (6) Privilege-and Academically Passive.

Conclusion: Mathematics underperformance in Southeast Asia reflects structural heterogeneity rather than resource deficits alone. Resilience among disadvantaged students and passivity among privileged ones indicate that resource-focused interventions are insufficient; differentiated, profile-informed strategies addressing both motivational and disciplinary dimensions are warranted.

Keywords: *Education; Southeast Asia; mathematics performance; Machine Learning; Latent Profile Analysis*

SDG Alignment: SDG 4 - Quality Education; SDG 11 – Sustainable Cities and Communities; SDG 9 – Industry, Innovation and Infrastructure

FAC-1

Representasyon ng Piling Editoryal Karton sa Panahon ng Pandemya: Isang Eco-Critical Discourse Analysis

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Abstract

Background/Rationale: Ang editoryal karton ay isang mabisang kasangkapan ng diskursong ekolohikal, lalo na sa panahon ng pandemya kung saan nagtaas ang mga isyung pangkalikasan at panlipunan. Gayunpaman, limitado pa rin ang pananaliksik sa semyotika ng editoryal karton sa kontekstong Pilipino, partikular sa panahon ng COVID-19.

Objectives: Nilayon ng pag-aaral na suriin ang diskurso ng piling editoryal karton bilang bahagi ng diskursong ekolohikal at tukuyin ang mga tampok na semyotika nito bilang mabisang komponent sa pagpapaabot ng mga mensaheng may kaugnayan sa kapaligiran at mga panlipunang isyu sa panahon ng pandemya.

Methodology: Gumamit ang pag-aaral ng eco-critical discourse analysis sa pagsusuri ng limang piling editoryal karton ayon sa sitwasyon, wika, at semiotic strategies, lohikal na mekanismo, at script opposition, upang mailantad ang mga hayag at di-hayag na mensahe.

Results: Natuklasan na ang nangungunang diskursong ekolohikal sa mga editoryal karton ay may kaugnayan sa paglaganap ng COVID-19 at sa walang habas na pagputol ng mga puno. Inilantad din ng pandemya ang iba pang panlipunang isyu tulad ng mababang pasahod ng mga nars, hindi tiyak na pagpapatupad ng mga programa ng gobyerno, at mataas na bayarin sa kuryente.

Conclusion: Ang semyotika — kabilang ang linguistic, semiotic, at visual tools — ay epektibong nagpapalutang ng diskursong pangkapaligiran. Inirekomenda ang mas malawak na pag-aaral sa editoryal karton sa bawat rehiyon gamit ang eco-critical discourse analysis, ecolinguistics, at green studies upang mapalakas ang pangangalaga at preserbasyon ng kalikasan.

Keywords: *editoryal, ekolohikal na diskurso, karikatura, pagpapakahulugan, semiotic features, visual metaphor*

SDG Alignment: SDG 13 – Climate Action; SDG 15 – Life on Land; SDG 16 – Peace, Justice, and Strong Institutions

FAC-2

Food Safety in Rural Cebu: Street Vendors' Knowledge, Attitudes, and Practices

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Abstract

Background/Rationale: Street food vending is integral to the informal economy in rural communities, yet food safety practices among rural vendors remain understudied. Philippine research has focused predominantly on urban settings, neglecting the resource, infrastructure, and training constraints of rural vendors.

Objectives: This study assessed the socio-demographic profile of street food vendors in rural southern Cebu and examined the relationships among food safety knowledge, attitudes, and practices, and the influence of age, gender, educational attainment, food safety training, and vending experience.

Methodology: A descriptive-correlational design was used. Data were gathered from 100 vendors via convenience sampling using an adapted Likert-scale questionnaire. Descriptive statistics and Pearson correlation ($p < 0.05$) were applied.

Results: Most vendors were female, aged 26–49, with high school education. All three food safety dimensions were rated extremely knowledgeable. No significant correlations emerged between socio-demographic variables and food safety practices. However, food safety training showed a significant negative correlation with actual practices ($r = -0.240$, $p = 0.016$), indicating a disconnect between training and real-world application.

Conclusion: Socio-demographic factors do not significantly predict food safety compliance. The negative training-practice correlation highlights the inadequacy of theoretical instruction alone. Context-sensitive, hands-on training with continuous monitoring is essential, and policymakers should develop inclusive, community-based interventions to improve food safety and public health in rural informal food sectors.

Keywords: *Food Safety Knowledge, Food Safety Attitudes, Food Safety Practices, Food Hygiene, Informal Food Sector, Street Food Vendors*

SDG Alignment: SDG 2 – Zero Hunger; SDG 3 – Good Health and Well-being; SDG 8 – Decent Work and Economic Growth; SDG 11 – Sustainable Cities and Communities; and SDG 12 – Responsible Production and Consumption

FAC-3

LIVED EXPERIENCES OF PHYSICAL EDUCATION TEACHERS IN AN ONLINE AND FACE TO FACE LEARNING MODALITY

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Abstract

Background/Rationale: The COVID-19 pandemic drastically transformed teaching and learning across all disciplines. Physical education (PE), which is inherently activity-based and dependent on face-to-face interaction, was among the most affected. Yet the lived experiences of PE teachers navigating both online and in-person modalities during and after the pandemic remain underexplored.

Objectives: This study explored the lived experiences of PE teachers in higher education during the COVID-19 outbreak and the new normal educational setting (S.Y. 2020–2022), and proposed a model based on emerging themes.

Methodology: A descriptive phenomenological design was employed. Ten (10) PE teachers from higher education institutions in Region VII were selected through purposive sampling. Data were gathered via semi-structured interviews and analyzed using Colaizzi's seven-step method.

Results: Two major experiential contexts emerged. In face-to-face settings, themes included (a) Physical Education as an Academic Discipline and (b) Work-Life Balance. In the online modality, themes included (a) PE teaching as a vocation, mission, and profession; (b) challenges in teaching and learning; (c) alternative teaching practices; and (d) the essence of teaching PE in distance learning. Teachers demonstrated creativity, resilience, and student-centeredness despite connectivity barriers, technological difficulties, and quality concerns in remote delivery.

Conclusion: PE teachers adapted through innovation and dedication, but sustained support through training, infrastructure, and policy is essential. A model was proposed to guide future PE instruction in blended and distance learning contexts.

Keywords: *COVID-19 pandemic, lived experiences, Phenomenology, Physical education, Teachers.*

SDG Alignment: SDG 4 – Quality Education; SDG 3 – Good Health and Well-being; SDG 10 – Reduced Inequalities; SDG 9 – Industry Innovation and Infrastructure

FAC-4

Influence of Peer-Led Information Campaign on the Awareness of Teenage Pregnancy in a Rural Area in Cebu Province

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Abstract

Background/Rationale: Teenage pregnancy remains a pressing social issue in the Philippines, particularly in rural communities. While peer-led interventions have shown promise in adolescent health communication, evidence on their specific influence on teenage pregnancy awareness in rural Philippine settings remains limited.

Objectives: This study assessed the influence of a peer-led communication campaign on teenage pregnancy awareness among adolescents in a rural area in Cebu Province.

Methodology: A quantitative correlational design was employed using data mining from the existing POPCOM databank on teenage pregnancy. The study was anchored in the Ideation Theory of Communication and Development Communication Theory to analyze campaign effectiveness across platforms.

Results: Findings showed that adolescents preferred campaign platforms promoting active participation and interaction, particularly the Structured Learning Exercise (SLE), consistent with the Ideation Theory. Among media platforms, radio contributed the highest influence on teenage pregnancy awareness, affirming the entertainment-education strategy of Development Communication Theory.

Conclusion: Peer-led communication campaigns are effective in raising teenage pregnancy awareness among rural adolescents. Radio as an entertainment-education medium and participatory platforms like SLE are the most influential strategies. These findings contribute to the growing body of evidence on adolescent health communication and inform future peer-led campaign design in rural Philippine contexts.

Keywords: *communication strategy, information campaign, peer-led communication, teenage pregnancy, structured learning exercise*

SDG Alignment: SDG 3 – Good Health and Well-Being; SDG 4 – Quality Education; SDG 10 – Reduced Inequalities

FAC-5

Mangrove Composition, Economic Valuation, and Disturbances in Mactan Island, Cebu, Philippines

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Abstract

Background/Rationale: Mangrove forests worldwide face a critical paradox — they are among the most valuable yet most threatened coastal ecosystems. Despite their ecological and economic significance, mangroves in Mactan Island, Cebu remain poorly documented in terms of species diversity, economic contribution, and extent of human-induced disturbances.

Objectives: This study examined the species composition, quantified the economic value, and assessed the disturbance level of mangroves in Mactan Island, Cebu, Philippines, to inform conservation and management strategies.

Methodology: A mixed-methods approach combining field assessment, structured interviews, community surveys, and key informant consultations was employed across six sampling stations. The Total Economic Valuation (TEV) framework, integrating both use and non-use values, was applied using data from 613 resource users.

Results: Twenty-one true mangrove species and five associates were identified, including three under threatened conservation categories — Pemphis acidula (endangered) and Acrostichum aureum and A. speciosum (threatened) under DAO 2017–11 and IUCN 2.3. The estimated annual TEV was US$20.17 million (₱767.62 million), with direct uses contributing 63.8%, indirect uses 6.5%, and non-use or bequest values 29.7%. Despite this high economic value, the mangroves exhibited a high disturbance index (0.82), driven by road construction, urban encroachment, aquaculture conversion, and marine debris.

Conclusion: The contrast between substantial economic value and severe ecological disturbance highlights the urgency of strengthening mangrove governance. The strong community willingness to pay for conservation presents a clear opportunity to develop payment for ecosystem service (PES) schemes and targeted restoration initiatives that align economic incentives with long-term ecological resilience.

Keywords: *mangrove species composition, total economic valuation, disturbance index, Mactan Island, payment for ecosystem services*

SDG Alignment: SDG 14 – Life Below Water; SDG 15 – Life on Land; SDG 13 – Climate Action; SDG 11 – Sustainable Cities and Communities

FAC-6

The Semantic Shift: An Analysis of Polysemous Legal English in the Revised Penal Code and Civil Code of the Philippines

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Abstract

Background/Rationale: Legal English is characterized by ordinary words assigned specialized meanings, creating potential gaps in legal interpretation. Polysemous terms are especially significant in legal contexts where precision is critical. However, the semantic shift processes underlying these terms in Philippine legal codes remain underexplored.

Objectives: This study analyzed the semantic shift of polysemous legal English terms found in the Revised Penal Code and the Civil Code of the Philippines.

Methodology: A qualitative descriptive design was employed. Selected legal terms were identified and their general meanings (Merriam-Webster Dictionary) were compared with their legal meanings (Black's Law Dictionary) to determine the semantic shift processes manifested, specifically narrowing, broadening, amelioration, and pejoration.

Results: Semantic narrowing was the most frequent process, as ordinary English words became more specialized in legal contexts. The terms "action," "answer," and "issue" demonstrated narrowing; "estate" reflected broadening; "complaint" and "relief" showed amelioration; and "sentence" exhibited pejoration. Legal meanings were found to be more formal, precise, and context-dependent than ordinary usage.

Conclusion: Semantic shifts significantly affect legal interpretation. The findings underscore the importance of semantic awareness in understanding legal English and contribute to the fields of semantics, forensic linguistics, and legal education in the Philippines.

Keywords: *semantic shift, polysemy, legal English, forensic linguistics, Philippine legal codes*

SDG Alignment: SDG 16 – Peace, Justice, and Strong Institutions; SDG 4 – Quality Education

FAC-7

Of Faith, Fathers, and Phantoms: Ruination in Maria Fernanda Ampuero's Mourning

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Abstract

Background/Rationale: In the sphere of public imagination, ruins are generally understood in terms of relics, remnants, and heritage sites that provide aesthetic relief and promote preservation work. This view of ruins as privileged sites of reflection and nostalgia is problematic because it fails to account the protractions of imperial and colonial formations in postcolonial societies and the evolving global order. Ana Laura Stoler reinforces the concept of ruination as an active ongoing process that critically interrogates how imperial debris---colonial ruins in the form of legacies and histories--- persist in reappropriated and renewed terms amid the present political project of decolonization. These imperial formations continue to lay waste through environmental destruction, damaged social relations, dehumanization, and violent systems.

Objectives: This paper examines the ways ruination takes the forms of religious cultism and patriarchal violence and how these are mechanized in the short story through female objectification and grotesque abjection vis-à-vis metaphor, language, and narrative structure.

Methodology: The study uses the humanities research method of textual analysis. Ideas about ruination are based on Ana Laura Stoler's "The Rot that Remains" and used as an analytic framework in the interpretation of Maria Fernanda Ampuero's short story "Mourning".

Results: The short story "Mourning" does not only position the emotion of grief as an act of tenderness within conventional norms, but as political collective refusal to bury narratives of degraded and abjected human lives. The horrors that result in the aftermath of colonialism and imperialism persist as a contradiction: relief and sorrow, love and repudiation, care and violence can coexist, as human lives are perpetually contaminated in its symbols, structure, and language.

Conclusion: Ampuero's Mourning methodizes how ruination punctures deep into material and spiritual decay, challenging the myths and memories perpetuated by colonial legacies. Literature, when read through the analytic of ruination, engages ruins to show that inheritance is never neutral, complete, and stable. The ruins that survive after colonialism do not offer closure, melancholic gaze, and moral insight, but refusal to ongoing inequities and injustices.

Keywords: *Ruination, Maria Fernanda Ampuero, Mourning, ruins, colonial formations*

SDG Alignment: SDG 10, Reduced Inequalities; SDG 10 – Peace, Justice, and Strong Institutions

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