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INTERNATIONAL PHILIPPINE AVIATION RESEARCH CONFERENCE 2026



UNIVERSITY OF PERPETUAL HELP
Las Piñas Campus

International PHILIPPINE AVIATION RESEARCH CONFERENCE



INTERNATIONAL PHILIPPINE AVIATION RESEARCH CONFERENCE

PROCEEDINGS 2026

Theme:

"Innovating Aviation for a Safer, Smarter, and Sustainable Future"

Host Institution:
University of Perpetual Help System DALTA – School of Aviation
Las Piñas City, Philippines

December 4, 2026

University of Perpetual Help System DALTA, Las Piñas City, Philippines
Face-to-Face with Hybrid/Online Participation

Co-Organizers:

Mapua Malayan Colleges Laguna
National Aviation Academy of the Philippines
PATTS College of Aeronautics
Air Link International Aviation College

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INTERNATIONAL PHILIPPINE AVIATION RESEARCH CONFERENCE

PROCEEDINGS 2026

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Table of Contents

Title Page

Copyright Page

The Organizers

Table of Contents

Messages

- Conference Chair
- Conference Co-Chair

The Conference Mechanics and Guidelines

Abstracts



Message from the Conference Chair

JOY V. LOZANO, MEAM
Dean, School of Aviation
University of Perpetual Help System Dalta
Las Piñas City

Distinguished guests, fellow researchers, men and women of aviation, university administrators, our partners, our speakers and presenters, and participants. Welcome to the International Philippine Aviation Research Conference 2026 with our theme "Innovating Aviation for a Safer, Smarter and Sustainable Future." This conference brings together many people and institutions who believe aviation can be improved through research and innovation. Collaboration and the ability to share knowledge and ideas will also help propel aviation into the future. New technologies and obstacles are facing aviation today. Having a conference like this will open up more ideas and opportunities to further improve our aviation industry.

Aviation is one of the industries that helps connect the world. It enables travel between countries and supports economic development. To ensure we continue to make progress in aviation, we need to stay focused on safe and efficient operations. We will also develop smarter systems and sustainable methods that benefit our industry and the environment. We hope to showcase these ideas through the presentations we will give at this conference. I hope everyone will learn something new from this conference and build more relationships with their peers.

On behalf of the conference organizers, I would like to thank our committee members and institutions that helped make this possible. I would also like to thank our speakers, presenters, and participants who joined us for this occasion. I hope that you will gain knowledge and meet more people during the time we have together. Let's continue to grow and lead the aviation industry toward a safer, smarter, and brighter future.

Thank you, and have a great conference. Mabuhay!



Message from the Conference Co-Chair

Sherwin Trinidad, LPT, MEAM
Mapua Malayan Colleges

Allow me to welcome you all to the International Philippine Aviation Research Conference 2026, themed "Innovating Aviation for a Safer, Smarter, and Sustainable Future." This international conference promotes research and innovation in aviation through academics and professionals. We must provide more platforms for researchers, faculty members, and aviation industry personnel to share and present information about our field. With aviation undergoing many changes in recent years, we must ensure more research and advancement in our field.

Our industry faces many issues today. Whether it's safety improvements, innovation, or going green, we need to find ways to improve our field. By allowing more research, we can help improve our industry as a whole. We hope to promote more research and encourage collaboration between institutions worldwide. Let us all better ourselves by learning from each other and finding solutions to the problems our industry may face in the near future. May all presentations and topics deepen your knowledge of aviation and how we can work together to improve our field.

As the Conference Co-Chair, I would like to thank our conference chair, committee members, institutions, and partners who helped make this conference possible. I would also like to thank our resource speakers, researchers, and participants. Thank you for allowing us to grow and learn from one another. May this conference lead to more collaborations between institutions and help us improve the field of aviation. We can all change our industry if we put our minds to it. Welcome to IPARC 2026, and have a wonderful conference.

Congratulations to all our researchers and attendees!

The Conference Mechanics and Guidelines

INTERNATIONAL PHILIPPINE AVIATION RESEARCH CONFERENCE 2026

Theme:

"Innovating Aviation for a Safer, Smarter, and Sustainable Future"

Host Institution:
University of Perpetual Help System DALTA – School of Aviation
Las Piñas City, Philippines

Proposed Date: November 26, 2026
Venue: University of Perpetual Help System DALTA, Las Piñas City, Philippines
Mode: Face-to-Face with Hybrid/Online Participation

I. RATIONALE

The aviation industry is entering a period of significant transformation driven by technological innovation, evolving safety requirements, environmental challenges, digitalization, changing operational models, and the growing demand for highly competent aviation professionals. These developments require continuous research, collaboration, innovation, and knowledge exchange among aviation educators, researchers, regulators, industry practitioners, students, and other stakeholders.

The International Civil Aviation Organization (ICAO) Strategic Plan 2026–2050 sets out a vision of a "Safe, Secure and Sustainable International Civil Aviation System" and identifies safety, environmental sustainability, connectivity, innovation, partnerships, and human capital development as key priorities for the future of aviation. ICAO likewise recognizes the important role of academic institutions and research communities in developing and evaluating aviation innovations and supporting evidence-based policy and implementation.

In the Philippines, the continuing development of the aviation sector requires research-based solutions addressing safety, security, airport and airspace capacity, aviation education, workforce development, sustainability, technology adoption, and regulatory compliance. The Civil Aviation Authority of the Philippines (CAAP) has identified safety, efficiency, sustainability, infrastructure, operations, regulatory frameworks, and international standards as key considerations in developing the Philippine Civil Aviation Masterplan.

In response, the University of Perpetual Help System DALTA (UPHSD) – School of Aviation proposes the International Philippine Aviation Research Conference 2026 as a

venue for researchers and aviation stakeholders to present research, share innovations, build professional networks, and develop collaborative research initiatives.

The conference seeks to bring together the Philippine aviation research community with international partners to encourage research that translates into practical improvements in aviation safety, operational efficiency, sustainability, education, technology, and national development.

II. CONFERENCE THEME

"Innovating Aviation for a Safer, Smarter, and Sustainable Future"

The theme reflects the conference's commitment to research and innovation that contribute to:

- Safer Aviation – strengthening aviation safety, safety management systems, human factors, risk management, and safety culture;
- Smarter Aviation – applying artificial intelligence, digital technologies, data analytics, automation, simulation, and emerging technologies;
- Sustainable Aviation – addressing environmental sustainability, decarbonization, climate resilience, green airports, and sustainable aviation operations;
- Future-Ready Aviation Professionals – strengthening aviation education, training, competencies, research capability, and workforce development; and
- Collaborative Aviation Development – connecting academe, government, regulators, industry, and international aviation organizations.

III. GENERAL OBJECTIVE

The International Philippine Aviation Research Conference 2026 aims to establish an international platform for presenting, exchanging, and disseminating innovative aviation research and practices that advance safe, smart, sustainable, and globally competitive aviation.

IV. SPECIFIC OBJECTIVES

The conference aims to:

1. Provide an international platform for researchers, educators, students, aviation professionals, regulators, and industry practitioners to present aviation-related research;
2. Promote research and innovation addressing current and emerging challenges in aviation;
3. Strengthen collaboration among aviation schools, universities, government agencies, regulators, airports, airlines, maintenance organizations, and aviation industry partners;

4. Encourage evidence-based approaches to aviation safety, security, efficiency, sustainability, and operational resilience;
5. Showcase innovative aviation technologies, systems, processes, and educational practices;
6. Promote interdisciplinary and international aviation research collaboration;
7. Encourage student and early-career researchers to participate in aviation research;
8. Develop opportunities for joint research, publication, technology transfer, and research partnerships; and
9. Contribute to the development of a research-driven Philippine aviation sector aligned with international aviation standards and sustainable development objectives.

V. PROPOSED RESEARCH CATEGORIES FOR CALL FOR PAPERS

Theme: "Innovating Aviation for a Safer, Smarter, and Sustainable Future"

CLUSTER 1 – AVIATION SAFETY, SECURITY, RESILIENCE AND HUMAN PERFORMANCE

Sub-Categories:

1. **Aviation Safety Management Systems and Safety Culture**
    - Safety Management Systems (SMS)
    - Safety culture and safety climate
    - Safety assurance and safety promotion
    - Safety performance indicators
    - Just culture and continuous safety improvement
2. **Safety Risk Management and Accident Investigation**
    - Safety risk assessment
    - Risk-based decision-making
    - Aviation occurrence and accident investigation
    - Emergency and contingency management
    - Operational risk management
3. **Aviation Security and Cybersecurity**
    - Airport and aviation security
    - Access control and security technologies
    - Cybersecurity and cyber threats
    - Unlawful interference
    - Passenger, baggage, and critical infrastructure security
4. **Human Factors and Aviation Performance**
    - Human error and error management
    - Fatigue, stress, and workload
    - Situational awareness
    - Decision-making and communication

- Crew and maintenance resource management

5. **Organizational Resilience, Crisis and Emergency Management**
   - Aviation resilience
   - Crisis management
   - Disaster preparedness
   - Business continuity
   - Emergency response and recovery
6. **Aviation Leadership, Ethics and Organizational Behavior**
   - Safety leadership and accountability
   - Ethical leadership
   - Safety behavior
   - Organizational learning
   - Well-being and professional performance

CLUSTER 2 – AVIATION TECHNOLOGY, AIRCRAFT SYSTEMS AND FUTURE MOBILITY

Sub-Categories:

1. **Aircraft Maintenance, Engineering and Airworthiness**
   - Aircraft maintenance technology
   - Aircraft reliability and maintainability
   - Airworthiness
   - Aircraft systems and engineering
   - Maintenance organization management
2. **Predictive Maintenance and Aircraft Health Monitoring**
   - Predictive maintenance
   - Condition monitoring
   - Aircraft health monitoring
   - Maintenance analytics
   - Digital aircraft maintenance
3. **Artificial Intelligence, Data Analytics and Digital Aviation**
   - Artificial intelligence and machine learning
   - Big data and predictive analytics
   - Digital twins
   - Internet of Things (IoT)
   - Intelligent aviation systems
4. **Avionics, Automation, Robotics and Simulation**
   - Aviation electronics and avionics
   - Automation
   - Robotics
   - Flight and maintenance simulation
   - Augmented and virtual reality
5. **Unmanned Aircraft Systems and Advanced Air Mobility**

- UAS and RPAS
- Drone operations and traffic management
- Urban and Advanced Air Mobility
- Autonomous aircraft
- Future air mobility systems

6. **Emerging Aircraft and Aerospace Technologies**
   - Electric and hybrid-electric aircraft
   - Hydrogen aviation
   - Emerging propulsion systems
   - Satellite applications
   - Aerospace innovation

CLUSTER 3 – SMART, SUSTAINABLE AND EFFICIENT AVIATION OPERATIONS

Sub-Categories:

1. **Flight Operations, Air Traffic Management and Navigation**
   - Flight operations and dispatch
   - Air traffic management
   - Air traffic flow management
   - Performance-Based Navigation
   - Next-generation air navigation systems
2. **Airspace Management and Operational Efficiency**
   - Airspace management
   - Trajectory-Based Operations
   - Navigation and surveillance
   - Communication systems
   - Flight efficiency and operational optimization
3. **Airport Management and Smart Airports**
   - Airport planning and development
   - Airport operations and capacity
   - Smart airport technologies
   - Passenger experience
   - Terminal and airside operations
4. **Sustainable and Green Aviation**
   - Aviation decarbonization
   - Sustainable Aviation Fuel (SAF)
   - Aircraft emissions and carbon management
   - Renewable energy
   - Green airports and facilities
5. **Climate Resilience and Environmental Management**
   - Climate-resilient airports
   - Environmental management systems
   - Noise management
   - Waste management

- Water conservation and circular economy

6. **Smart Aviation Infrastructure and Ground Operations**
   - Intelligent aviation infrastructure
   - Ground handling
   - Airport facilities management
   - Sustainable infrastructure
   - Airport technology and digitalization

CLUSTER 4 – AVIATION EDUCATION, POLICY, ECONOMICS, INNOVATION AND DEVELOPMENT

Sub-Categories:

1. **Aviation Education, Training and Competency Development**
   - Outcomes-Based Education (OBE)
   - Competency-based aviation training
   - Curriculum development
   - Faculty development
   - Aviation professional competencies
2. **Human Capital, Workforce and Career Development**
   - Aviation workforce development
   - Student employability
   - Professional development
   - International aviation internships
   - Future-ready aviation workforce
3. **Aviation Economics, Business and Management**
   - Aviation economics
   - Airline and airport management
   - Aviation business models
   - Aviation investment
   - Aviation competitiveness
4. **Aviation Policy, Law, Regulation and Governance**
   - Aviation policy
   - Aviation law
   - Regulatory compliance
   - International aviation standards
   - Aviation governance and master planning
5. **Aviation Research, Innovation and Technology Transfer**
   - Multidisciplinary aviation research
   - Industry-academe collaboration
   - Research commercialization
   - Technology transfer
   - Aviation entrepreneurship and innovation ecosystems
6. **Inclusive, Community-Based and Sustainable Aviation Development**
   - Aviation and Sustainable Development Goals

- Community-based aviation research
- Inclusive aviation development
- Local and indigenous aviation solutions
- Aviation's contribution to national development

VI. PRIORITY RESEARCH AREAS FOR 2026

To give the conference a distinct research identity, the following areas may be identified as priority themes for 2026:

1. Artificial Intelligence and Digital Transformation in Aviation
2. Safety Management Systems and Aviation Safety Culture
3. Sustainable and Green Aviation
4. Aircraft Maintenance and Predictive Maintenance
5. Smart Airports and Intelligent Aviation Infrastructure
6. Human Factors and Aviation Performance
7. Cybersecurity and Aviation Security
8. UAS, RPAS and Advanced Air Mobility
9. Aviation Education and Future Workforce Development
10. Climate Resilience and Aviation
11. Air Traffic Management and Next-Generation Air Navigation
12. Aviation Policy, Regulation and Sustainable Economic Development

VII. CALL FOR PAPERS

The International Philippine Aviation Research Conference 2026 invites researchers, faculty members, aviation professionals, industry practitioners, government and regulatory agencies, graduate students, and undergraduate researchers to submit original research papers addressing contemporary issues, innovations, technologies, policies, and practices in aviation.

Research may be:

- Quantitative;
- Qualitative;
- Mixed-methods;
- Experimental;
- Applied research;
- Action research;
- Case studies;
- Technology development/prototype research;
- Policy research; or
- Systematic/scoping reviews.

Preference will be given to studies demonstrating practical application, innovation, measurable impact, policy relevance, and potential contribution to aviation safety, sustainability, efficiency, education, or technological development.

VIII. PROPOSED PAPER PRESENTATION CATEGORIES

The conference may have three presentation categories:

A. ORAL RESEARCH PRESENTATION

For completed empirical research with established methodology, findings, conclusions, and recommendations.

B. RESEARCH-IN-PROGRESS

For ongoing studies with substantial preliminary findings and clear research methodology.

C. INNOVATION AND RESEARCH PROTOTYPE PRESENTATION

For aviation-related technologies, systems, applications, models, prototypes, educational innovations, and industry solutions.

IX. TARGET PARTICIPANTS

The conference welcomes:

- Aviation universities and colleges
- Aviation training organizations
- Airlines
- Airports
- Aircraft maintenance organizations
- Aviation regulatory agencies
- Government agencies
- Air navigation service providers
- Aircraft manufacturers and suppliers
- Aviation technology companies
- Research institutions
- International aviation organizations
- Aviation professionals
- Faculty members
- Graduate students
- Undergraduate researchers
- International aviation researchers

X. EXPECTED OUTPUTS

The conference is expected to generate:

1. An international collection of aviation research papers;
2. Opportunities for publication in appropriate peer-reviewed journals or conference proceedings;
3. Research collaboration among participating institutions;
4. Industry-academe research partnerships;
5. Joint research proposals;
6. Aviation innovation and technology development initiatives;
7. Policy and industry recommendations;
8. Student research and innovation opportunities; and
9. A continuing international aviation research network.

XI. PROPOSED CONFERENCE COMPONENTS

The conference may include:

1. Opening Ceremony

- Welcome remarks
- Conference overview
- Keynote address

2. Plenary Sessions

International and Philippine aviation experts may address major issues in safety, sustainability, innovation, and the future of aviation.

3. Parallel Research Sessions

Research presentations organized according to the 12 research tracks.

4. Aviation Innovation Showcase

Presentation of aviation prototypes, technologies, digital applications, simulation systems, and innovative educational practices.

5. Student Research Competition

A special category for undergraduate and graduate aviation researchers.

6. Industry-Academe Forum

A dialogue among aviation schools, regulators, industry stakeholders, and researchers.

7. Research Networking Session

Development of international research partnerships and collaborative projects.

8. Awards and Recognition

Possible awards include:

- Best Research Paper
- Best Student Research
- Best Research Presentation
- Best Innovation/Prototype
- Best Applied Aviation Research
- Best Sustainability Research

XII. PROPOSED CALL FOR PAPERS FORMAT

Researchers may be required to submit:

1. Title of Research
2. Author/s

3. Institutional Affiliation

4. Email Address

5. Research Track

6. Abstract – 250–300 words

7. Keywords – 3–5 keywords

Upon acceptance, authors may be required to submit a full paper following the conference's prescribed format.

XIII. CONFERENCE SIGNIFICANCE

The International Philippine Aviation Research Conference 2026 will serve as a platform for transforming research into meaningful aviation solutions. It will promote the principle that the future of aviation must be driven not only by technological advancement but also by safety, sustainability, human capability, ethical leadership, and collaboration.

The conference will particularly support the development of a Philippine aviation research ecosystem in which higher education institutions, aviation organizations, regulators, government agencies, and industry partners collaborate in addressing real-world aviation challenges.

As host institution, the University of Perpetual Help System DALTA – School of Aviation aims to position the conference as a continuing international forum for aviation research, innovation, and knowledge exchange in the Philippines.

XIV. CONFERENCE TAGLINE

INTERNATIONAL PHILIPPINE AVIATION RESEARCH CONFERENCE 2026:
Innovating Aviation for a Safer, Smarter, and Sustainable Future
(Innovate. Integrate. Elevate)

XV. LONG-TERM VISION

The International Philippine Aviation Research Conference shall become an annual international aviation research platform that connects Philippine and global researchers, educators, regulators, industry professionals, and students in advancing evidence-based, innovative, safe, sustainable, and future-ready aviation.

The conference shall seek to establish a continuing Philippine Aviation Research Network that facilitates collaborative research, international partnerships, research publication, technology development, and knowledge exchange.

XVI. REGISTRATION FEE

Target Attendees (Professional – Non-Presenter): 100 PAX

Item	Allocation
Registration & conference materials	₱300
Research kit	₱250
Token/Souvenir	₱250
Certificates	₱100
Meals/Snacks	₱800
Secretariat/administrative expenses	₱300
Utilities	₱250
Contingency	₱250
TOTAL	**₱2,500**

Target Attendees (Student – Non-Presenter): 100 PAX

Item	Allocation
Registration & conference materials	₱250
Research kit	₱200
Token/Souvenir	₱200
Certificates	₱100
Meals/Snacks	₱500
Secretariat/administrative expenses	₱300
Utilities	₱250
Contingency	₱200
TOTAL	**₱2,000**

REGISTRATION STRUCTURE

Category	Fee
Regular Presenter	₱5,000
Regular Delegate/Non-Presenter	₱2,500
Student Presenter	₱3,500
Student Delegate/Non-Presenter	₱2,000
International Presenter	₱6,000 / 96 USD
International Delegate/Online	₱3,000 / 50 USD

IPARC 2026 Presenter Package

- Conference registration
- Official research kit
- Meals/snacks
- Token/souvenir
- Paper presentation
- Certificate of paper presentation
- Certificate of publication c/o EDUHEART
- Inclusion in IPARC 2026 Conference Proceedings (Book of Abstract), Professional Academic Book and/or Student Academic Book
- Electronic copy of the research proceedings

XVII. PUBLICATION FEE: PRESENTER (included in the registration fee)

- Professional - P2500 (minimum presenter – 50 pax)
- Student – P1500 (minimum presenter – 50 pax)

XVII. CONCLUSION

The First International Philippine Aviation Research Conference 2026 and the Fifth National Philippine Aviation Research Conference represent an opportunity to bring together the collective expertise and creativity of the aviation research community to address the challenges and opportunities shaping the future of aviation.

Through the theme "Innovating Aviation for a Safer, Smarter, and Sustainable Future," the conference will emphasize the importance of research and innovation in building an aviation sector that is safe, technologically advanced, environmentally responsible, resilient, inclusive, and globally competitive.

Hosted by the University of Perpetual Help System DALTA – School of Aviation, in collaboration with the National Aviation Academy of the Philippines, PATTS College of Aeronautics, Malayan MAPUA, Air Link International Aviation College, and EDUHEART Knowledge Network and Publishing, Inc., the conference aims to contribute to the advancement of Philippine aviation research while strengthening international cooperation and positioning the Philippines as an active contributor to the global aviation knowledge community.

THE ABSTRACTS

A Feasibility Study on the Use of Sustainable Aviation Fuel of The Helicopter Company (Saudi Arabia)

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ABSTRACT

Background & Objectives: As global aviation accelerates decarbonization, the Helicopter Company (THC)—Saudi Arabia's premier commercial helicopter operator with a fleet of over 50 rotorcraft—aims to integrate Sustainable Aviation Fuel (SAF) into its operations. This study evaluates the technical viability, economic impacts, supply chain requirements, and strategic alignment of SAF adoption for THC in support of Saudi Vision 2030, the General Authority for Civil Aviation (GACA) Civil Aviation Environmental Sustainability Program (CAESP), and THC's strategic preparation for an Initial Public Offering (IPO). Techniques Employed: A multi-dimensional research methodology was executed, combining techno-economic assessments, market demand analyses, supply chain evaluation, risk analysis (SWOT and PESTLE), and a structured Feasibility Matrix evaluating technical, economic, environmental, and social dimensions on a 1-to-5 scale.

Significant Findings: The technical evaluation confirms full engine and airframe compatibility across THC's fleet (Airbus H125, H145, H160, and Leonardo AW139) for SAF blends up to 50% without requiring aircraft modifications or capital expenditures. Although SAF prices currently remain approximately 2.5 times higher than conventional jet fuel, operational feasibility is preserved through a client-partnership model—passing fuel premiums directly to eco-conscious anchor clients (e.g., Red Sea Global, NEOM)—and leveraging existing in-plane fueling infrastructure via local suppliers like APSCO. The Feasibility Matrix rated environmental (4.1/5) and social (3.9/5) dimensions as highly feasible, while technical (3.3/5) and economic (3.2/5) aspects scored moderately feasible due to initial local supply constraints and price volatility. Conclusion: Integrating SAF offers an operationally feasible and strategically vital roadmap for THC. By establishing long-term procurement frameworks, aligning with national policy, and strengthening Environmental, Social, and Governance (ESG) credentials, THC can mitigate financial risks while positioning itself as a regional pioneer in sustainable commercial rotorcraft operations.

Keywords: Sustainable Aviation Fuel (SAF), The Helicopter Company, Decarbonization, ESG,

Simulation-Based Structural Analysis of a Graphene-Doped Recycled Carbon Fiber-Reinforced Thermoplastic (CFRTP) Aircraft Seat Frame under FAA 16G-Referenced Static-Equivalent Loading

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ABSTRACT

Aircraft seats add cabin weight and must withstand 16g forward crash loading under 14 CFR 25.562. Composite redesigns have cut seat mass by about 36–48%, but recycled, graphene-modified carbon fiber-reinforced thermoplastic (CFRTP) has not been screened for a seat frame under 16G-referenced loading. This study evaluated the structural feasibility and weight-reduction potential of a graphene-doped recycled CFRTP seat frame (30 wt% chopped carbon fiber, 1 wt% graphene nanoplatelets in polypropylene) against aluminum alloy. A simplified frame was modeled in SolidWorks and analyzed using static structural finite element analysis (FEA) with a linear elastic isotropic material whose properties were taken from published literature on comparable composites. A static-equivalent load referenced to the FAA 16G forward crash scenario was applied with the base legs fixed. The simulation predicted a maximum von Mises stress of 7.607 MPa at the seat pan-to-frame junction, a maximum displacement of 2.212 mm at the upper backrest, and a maximum equivalent strain of 4.299×10^{-4}, yielding a factor of safety of about 14.5 against the adopted 110 MPa yield strength. With a density of 1,200 kg/m³, the material gave a 55.6% density reduction, an estimated 55% seat frame mass reduction (about 3.8 kg versus 8.5 kg), and a 62% higher specific strength than aluminum alloy. Under the stated assumptions, the frame remained elastic, so the concept is not ruled out at the screening level. Because the results are simulated, rely on literature-derived properties, and exclude dynamic crash behavior, they indicate design feasibility only, not certification compliance. Coupon testing, dynamic crash simulation, and physical sled testing are recommended

Keywords: Aircraft Seat Frame; CFRTP; Graphene-Doped Composite; Finite Element Analysis; Weight Reduction

Evaluation of an Aviation Institute on Regulatory Compliance for an Approved Training Organization Certificate

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ABSTRACT
Regulatory compliance in aviation training supports institutional accountability and the preparation of competent personnel for the aviation industry. This study assessed personnel perceptions of an aviation institute's compliance with Civil Aviation Authority of the Philippines requirements for Approved Training Organization Certification and identified priorities for institutional improvement. A quantitative descriptive design was employed using an expert-validated questionnaire with a four-point Likert scale. Through purposive sampling, 25 faculty members, administrative staff, and support personnel participated. Data were analyzed using frequencies, percentages, weighted means, the Kruskal–Wallis H test, and the Mann–Whitney U test. Respondents rated all five core domains within the instrument's "Fully Compliant" category: training curriculum (M = 3.89), personnel qualifications (M = 3.85), documentation (M = 3.82), facilities (M = 3.75), and equipment (M = 3.73). No statistically significant differences were detected across the demographic groups examined ($p > .05$). The quality system received a comparatively lower rating (M = 3.57), identifying internal quality assurance as a priority for further assessment and development. Specific improvement priorities included equipment calibration and supporting records, communication of document revisions, procedure validation, preventive actions, and management reviews. The findings indicate favorable personnel assessments of institutional compliance while highlighting processes requiring further verification and improvement. A structured compliance framework integrating defined responsibilities, document control, periodic audits, corrective action monitoring, and continuing professional development is recommended. The study contributes an institutional basis for prioritizing compliance activities and strengthening aviation training governance, with practical relevance to consistent training delivery, traceable compliance evidence, and preparation for regulatory assessment.

Keywords: Aviation Education, Regulatory Compliance, Approved Training Organization, Certification Readiness, Quality Assurance

Turning Flight into Filtration: Evaluating the Effectivity of Fiberglass Composite Waste from Honeycomb-Fiberglass Composite for Aviation Oil Spill in Airport Hangars during Maintenance Operation

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ABSTRACT
The increasing use of composite materials in aircraft manufacturing has contributed to improved structural performance and operational efficiency. However, the complex composition and limited recyclability of composites present significant challenges in aviation waste management. Meanwhile, aviation oil spills during aircraft maintenance operations pose environmental and occupational safety risks, highlighting the need for effective and sustainable spill control materials. This study aimed to evaluate the potential of recycled honeycomb-fiberglass composite waste as an alternative oleophilic sorbent for aviation oil spill management in airport hangars. Using an experimental research design, the honeycomb-fiberglass composite materials were collected, cleaned, and mechanically pulverized into a fibrous, powderized sorbent without chemical treatment. Three experimental trials were conducted under controlled laboratory conditions to determine the material's oil absorption capacity, oil uptake rate, and retention ability. The results demonstrated a mean oil absorption capacity of 2 g/g, a mean oil uptake rate of 0.653 g/s, and a mean oil retention ability of 90.11%. While absorption capacity and oil uptake rate increased across successive trials, retention ability decreased as the amount of absorbed oil increased. These findings indicate that mechanically processed honeycomb-fiberglass composite waste possesses measurable oil sorption and retention capabilities, demonstrating its potential for functional reuse in aviation maintenance applications. However, further investigation involving standardized sorption testing, fluid selectivity, and comparisons with commercial sorbents is necessary to establish its operational effectiveness. Overall, the study provides preliminary experimental evidence supporting the repurposing of aviation composite waste into alternative sorbent materials, contributing to sustainable waste management and the exploration of environmentally responsible oil spill control practices within the aviation industry.

Keywords: Honeycomb-fiberglass composite, Composite waste recycling, Oleophilic sorbents, Oil spill management, Aircraft maintenance

Evaluating Passenger Flow Efficiency Through Self-Service Technologies at NAIA Terminal 3

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ABSTRACT

Airports rely on efficient passenger-processing systems to minimize delays and maintain orderly movement. At Ninoy Aquino International Airport Terminal 3, self-service technologies offer alternative ways to complete airport procedures. Their effectiveness depends on usability, accessibility, reliability, convenience, and staff assistance. This study evaluated these technologies and their relationship with perceived passenger flow efficiency at NAIA Terminal 3. The study used a quantitative descriptive-correlational design involving 100 departing passengers aged 18 and above who had used or encountered at least one self-service technology. Data were collected through a researcher-made questionnaire and analyzed using frequency counts, percentages, weighted mean, Pearson correlation, and regression analysis. Technology effectiveness was assessed in terms of ease of use, accessibility and availability, reliability, convenience, and staff assistance. Passenger flow efficiency was assessed through waiting time, queue movement, processing speed, and overall terminal efficiency. Electronic or mobile boarding passes were the most commonly used or encountered technology, reported by 92% of respondents. Self-service technologies obtained an overall weighted mean of 3.05, interpreted as Agree. Reliability ranked highest at 3.14, followed by ease of use at 3.03, accessibility and availability at 3.01, and convenience and staff assistance at 3.00. Perceived passenger flow efficiency obtained an overall weighted mean of 2.67, also interpreted as Agree. Waiting time had the highest mean (2.72), while queue movement had the lowest (2.60). Pearson correlation showed a positive relationship between technology assessment and perceived passenger flow efficiency ($r = 0.68$, $p = 0.00$). Regression analysis yielded $R^2 = 0.47$ and $F = 79.46$, indicating that technology assessment accounted for 47% of the variance in perceived passenger flow efficiency.

The findings show that favorable passenger assessments of self-service technologies are associated with higher perceived passenger flow efficiency. Reliable, accessible, and user-friendly systems, together with staff assistance, are important in supporting passenger processing at NAIA Terminal 3.

Keywords: Self-Service Technologies, Passenger Flow Efficiency, NAIA Terminal 3, Airport Operations, Passenger Processing

A Regulatory Analysis of the Implementation of Designated Pilot Examiners on Licensing Integrity and Oversight in the Philippine Approved Training Organizations

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ABSTRACT

As demand for pilot examinations increases in the Philippines, ensuring timely access to testing while protecting licensing integrity presents a regulatory challenge. This study examined the prospective use of Designated Pilot Examiners (DPEs) in Philippine Approved Training Organizations (ATOs), focusing on perceived operational benefits, regulatory risks, and safeguards necessary for effective State oversight. A descriptive-quantitative design was used, based on responses from 63 purposively selected aviation stakeholders via a structured questionnaire. Data were analyzed through frequency and percentage distributions, weighted means, independent-samples t-tests, and one-way analysis of variance, supplemented by deductive thematic analysis of identified regulatory concerns.

Respondents generally viewed DPE utilization favorably for improving examiner availability, examination accessibility, scheduling and administrative efficiency, and the timeliness of skill testing. Perceptions of operational benefits were broadly consistent across demographic groups, with no statistically significant differences. At the same time, stakeholders identified concerns involving licensing integrity, examiner impartiality and independence, conflicts of interest, consistency of competency assessments, and the effectiveness of regulatory surveillance. These findings suggest that improvements in examination capacity cannot be treated as sufficient justification for delegation without corresponding accountability measures. The study proposes defined qualification and authorization standards, safeguards for examiner independence and conflict-of-interest management, standardized testing protocols, recurrent examiner training, and risk-based monitoring by the Civil Aviation Authority of the Philippines (CAAP). A phased approach comprising regulatory preparation, controlled implementation, performance evaluation, and conditional expansion is also proposed. The study concludes that prospective DPE utilization may enhance examination service delivery, but only if enforceable safeguards preserve CAAP's control over licensing decisions and continuing oversight. The results provide an evidence-informed basis for policy development balancing operational efficiency, institutional accountability, and aviation safety.

Keywords: Designated Pilot Examiners; Licensing Integrity; Regulatory Oversight; Approved Training Organizations; Regulatory Safeguards

Recalibrating the Philippine Air Force Museum Policy Towards Operational Standardization

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ABSTRACT

The Philippine Air Force (PAF) Museum plays a vital role in preserving the history, heritage, traditions, and historical collections of the Philippine Air Force. To support its operations, the PAF Museum Management Manual (PAFM 10-01) was developed in 2023 to establish policies and guidelines for effective museum management. However, continuous evaluation is necessary to identify policy gaps, address operational challenges, and improve the consistency and efficiency of museum operations. The study aimed to assess the extent of implementation of existing PAF Museum policies and the level of operational standardization in collection management, museum administration, resource management, operational compliance, and visitor and exhibition management. The findings served as the basis for recommending policy enhancements to the existing manual to promote more efficient, consistent, and standardized museum operations. This research used a quantitative descriptive-evaluative research design. The total sample of respondents in this research was 30 people, selected using purposive sampling. Data were collected using a validated survey questionnaire and analyzed using frequency, percentage, weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient. The findings showed that current museum policies were mostly implemented in collection management, museum administration, resource management, operational compliance, and visitor and exhibition management. At the same time, museum operations reflected a relatively high degree of standardization in operational efficiency, consistency of procedures, accountability and control, preservation and security of collections, and quality of museum services. However, the study also identified areas for improvement, particularly in artifact handling and preservation, personnel allocation, administrative procedures, documentation, and visitor service. Based on the results, the paper proposed specific enhancements to the Philippine Air Force Museum Management Manual (PAFM 10-01) such as standardization of collection monitoring, digital records management, personnel accountability, administrative workflows, resource monitoring, continuing training, procedures for borrowing and lending artifacts, visitor service management, compliance monitoring, and periodic policy evaluation. The study concluded that strengthening existing policies and promoting their consistent implementation are important in improving operational efficiency, accountability, preservation practices, and service delivery while supporting long-term protection and promotion of Philippine Air Force history and heritage.

Keywords: Philippine Air Force Museum, Policy Implementation, Operational Standardization, Museum Management, and Policy Recalibration

From Husk To Hardware: Exploring Rice Husk Ash For a Sustainable PCB

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ABSTRACT

Growing concerns about electronic and environmental sustainability have encouraged the exploration of alternative materials for printed circuit board (PCB) applications. The use of certain hazardous substances in PCB manufacturing and the environmental impact of electronic waste further emphasize this need. Along with the continuous development of electronic manufacturing is the increasing quantity of electronic waste. To lessen the negative environmental impact, this study was conducted at Air Link International Aviation College to examine the potential of using Rice Husk Ash (RHA) and Cashew Nut Shell Liquid (CNSL) to develop an alternative composite board. Using an experimental method, an RHA-CNSL composite board was developed and tested. High-temperature exposure and an actual circuit connection demonstration were conducted to assess its potential for basic electronic applications. The survey findings do not independently establish superiority over conventional FR-4 boards. Rather, they encourage further investigation into the potential of agricultural by-products in electronic material development.

Keywords: ***Rice husk ash, cashew nut shell liquid, printed circuit board, agricultural by-products, sustainable materials.***

Filipino Tourism And Hospitality Graduates' Global Career Choice: A Basis For Developing Equal Career Opportunities

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ABSTRACT

This study explored the global career choices of Filipino Tourism and Hospitality graduates as a basis for developing equal career opportunities in the Philippines. The researchers employed a qualitative phenomenological research design to understand the lived experiences, motivations, and perceptions of Filipino Tourism and Hospitality graduates working overseas. Data were gathered through semi-structured interviews and analyzed using thematic analysis to examine their global career choices and migration experiences. The findings revealed that higher salaries, financial stability, and wider career advancement opportunities were the primary factors motivating graduates to seek employment abroad. Social influences, including family support, international exposure, and professional growth, also contributed to their decisions, while favorable working environments, safer living conditions, and improved quality of life served as important environmental factors. The study concluded that global employment provides significant opportunities for career development and economic advancement; however, the continued migration of skilled tourism and hospitality professionals contributes to workforce shortages and talent loss in the Philippines.

Keywords: Filipino Tourism and Hospitality Graduates, Global Career Choices, Overseas Employment, Career Opportunities, Workforce Migration

A Review of Technology Management, Academic Capability, and Industry Alignment: Future-Proofing Philippine Aeronautical Engineering Education

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ABSTRACT

This review explores the significance of strategic technology management in helping the Philippine aeronautical engineering programs to align their academic capabilities to the evolving aerospace technologies and market needs. The literature was grouped in 10 thematic groups and related literature published between 2021 and 2026 was included in a structured narrative review . This review examined the educational and institutional challenges identified in the literature, the capabilities and resources that were affected, and implications for long-term planning. The synthesis suggests a need for synergistic development of curricula, faculty expertise, laboratory and digital infrastructure, research capacity, and industry partnerships to prepare graduates for the evolving aerospace practice. Project-based learning, simulation-assisted laboratory work, and industry-mentored capstone projects give students opportunities to apply their engineering knowledge and develop teamwork, communication, and professional judgment skills. Emerging technologies include artificial intelligence, autonomous systems, advanced manufacturing, and digital twins. These are composed of several courses and laboratory activities. Faculty preparation, access to appropriate facilities and software, and clear connections to learning outcomes are all necessary for integration. The review also indicates the need for more Philippine studies on the relationship between these institutional capabilities and how their evolution affects student learning over time. Capability assessment covers the following areas: curriculum and learning outcomes, faculty development, laboratories and digital infrastructure, research and innovation, industry and regulatory linkages, governance and funding, and technology foresight and road mapping. Philippine Higher Education Institutions can use this assessment to identify gaps, consult with industry and regulatory stakeholders, set priorities, and sequence investments based on institutional readiness and educational value. Programs may periodically review implementation and learning outcomes to help revise priorities as technologies and professional requirements change. The capability assessment and strategic road mapping approach provides a basis for continuous academic development that addresses local regulatory requirements, industry needs, and institutional resources.

Keywords—technology management, aeronautical engineering education, aerospace education, curriculum alignment, Industry 4.0, Education 4.0, emerging aerospace technologies, faculty competencies, industry-academe collaboration, digital twins, experiential learning, technology road mapping, future-proofing

Electric Aircraft Engine Course In Aircraft Maintenance Technology Program

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ABSTRACT

The global aviation industry is experiencing a transformative shift toward electric and hybrid-electric propulsion systems, driven by sustainability imperatives, evolving regulatory mandates, and technological advancements. With the rapid advancement of electric propulsion technology, it is essential that Aircraft

Maintenance Technicians be prepared and trained to service and diagnose these new systems. This study examines the level of awareness and preparedness of the Philippine State College of Aeronautics (PhilSCA) in integrating an Electric Aircraft Engine course within its Aircraft Maintenance Technology (AMT) program. Anchored in the frameworks of Competency-Based Education and the Diffusion of Innovations Theory, the research employed a descriptive-quantitative design using validated survey instruments administered to 40 AMT faculty members from various PhilSCA campuses. Key findings reveal a moderate to high level of awareness among instructors regarding electric aircraft engines and propulsion systems, particularly in recognizing the importance of dedicated courses, the presence of a national skills gap, and familiarity with key components. However, a critical deficiency was found in preparedness metrics, including limited access to appropriate laboratory tools, insufficient faculty training in high-voltage and hybrid systems, and misalignment of current course content with emerging industry requirements. Funding limitations, instructor deficits, and regulatory lag were identified as major barriers, while industry partnerships and modular training models were recognized as viable enablers. In response to these findings, the study proposes curriculum enhancement recommendations, including specialized modules on battery management systems, high-voltage safety protocols, and digital diagnostics; OEM-led instructor upskilling; and laboratory modernization through public-private partnerships to align PhilSCA's AMT education with international standards and bridge critical workforce skill gaps.

Keywords: Electric aircraft engines, Aircraft Maintenance Technology, curriculum enhancement, high-voltage safety, battery management systems

DalanZest: Development and Evaluation of a Dalandan Peel Extract Formulation for Hand Tool Cleaning

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ABSTRACT

Hand tools used in aviation maintenance training must be degreased after use, and the cleaning agent affects cleaning time, drying time, and safety for users and steel tools. Discarded Dalandan (Citrus aurantium) peel contains d-limonene, a natural solvent for oily soils. This study aimed to develop DalanZest, a water-based cleaning formulation containing Dalandan peel extract, and to evaluate its pH, task completion time, and air-drying time against an extract-free base and a commercial degreaser. In a design-and-development study with a controlled laboratory experiment, four formulations containing 0%, 3%, 5%, and 10% extract (v/v) in a constant surfactant base were compared with RAC All Purpose Degreaser as the control. Each cleaner was tested in four trials, each on a set of five steel hand tools soiled with lithium grease, and its pH was measured with a calibrated digital pH meter. Data were analyzed using one-way ANOVA with Tukey's HSD test and paired-samples t tests. All formulations were near neutral (pH 7.01–7.53), while RAC was mildly alkaline (pH 9.56), and no flash rust or discoloration was observed after air drying. Mean task completion time decreased from 795.00 s without extract to 337.50 s at 10% extract, $F(3, 12) = 610.91$, $p < .001$, and mean air-drying time decreased from 6.34 to 4.32 min, $F(3, 12) = 49.67$, $p < .001$. The selected 10% formulation cleaned each set of tools 110.75 s (24.7%) faster than RAC, $t(3) = -9.29$, $p = .003$, and the tools dried 1.10 min (20.3%) sooner, $t(3) = -5.64$, $p = .011$. The extract therefore shortened cleaning and drying time under the tested conditions. Because the study used few trials, single pH readings,

and one grease type, laboratory analysis, a chemist's evaluation, and confirmatory testing are recommended before tool-room use.

Keywords: Dalandan peel extract, citrus-based degreaser, hand tool cleaning, air-drying time, aircraft maintenance training

Assessment of Preventive Maintenance Efficiency in Communication, Navigation, and Surveillance Air Traffic Management Power Plant Facility

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ABSTRACT

The Communication, Navigation, and Surveillance/Air Traffic Management (CNS/ATM) Power Plant Facility provides electrical power to equipment used to communicate with aircraft, support navigation, monitor aircraft movements, and manage air traffic. These systems depend on a steady power supply to operate properly, making regular preventive maintenance important. This study assessed the facility's preventive maintenance practices and their relationship with maintenance efficiency, based on the experiences and perceptions of Airfield Lighting and Power Technicians (ALPTs). It also described the respondents according to age, sex, and position and identified measures to improve maintenance. The study employed a quantitative, descriptive-correlational research design. All ALPTs assigned to the facility were included through total enumeration. Data were gathered using a researcher-developed questionnaire. Preventive maintenance practices were examined in terms of implementation, compliance with established procedures, availability of resources, and personnel accountability. Maintenance efficiency was assessed in terms of reliability, availability, functionality, and sustainability. The findings showed that respondents generally viewed the facility's preventive maintenance practices and maintenance efficiency favorably. Implementation received the most favorable assessment, while resources were identified as the area needing the greatest improvement. Respondents perceived that preventive maintenance helps keep the facility's power systems dependable, ready for use, and functioning properly. The analysis also revealed a significant relationship between preventive maintenance practices and perceived maintenance efficiency, indicating that better maintenance practices are associated with more favorable maintenance outcomes. The study recommends improving resource management, keeping equipment records up to date, strengthening inventory and spare parts monitoring, and maintaining effective documentation and coordination. These measures may help ensure that maintenance activities are carried out consistently and that dependable electrical power remains available for systems essential to air traffic management.

Keywords: Preventive Maintenance, Maintenance Efficiency, Maintenance Practices, Power Plant Facility, Airfield Lighting and Power Technicians

Tourism Management Graduates' Career Outcomes and Competencies: Basis for Evaluating Program Educational Objective Attainment and Industry Relevance

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Abstract

This integrative narrative review was conducted to determine the extent of congruence between the four Program Educational Objectives (PEOs) of the Tourism Management program at PATTS College of Aeronautics and published evidence on graduate career outcomes, professional competencies, and industry expectations in tourism. The review was conducted by analyzing institutional objectives and thematically synthesizing 12 journal articles selected from an inventory of 50 records published between 2021 and 2026. The synthesis was complemented by a related doctoral thesis and aviation training benchmarks. The literature showed strong correspondence with PEO 2 (especially on professional and digital competence) and partial correspondence with PEOs 1, 3, and 4. The selected sources were more direct in ethical service and industry partnership than in promoting Filipino heritage, graduates' contributions to research and community development, and demonstrated expertise in aviation service. The analysis also identified goals that link desired graduate outcomes to educational processes or institutional activities, complicating the assessment of individual graduates' achievements. The review outlines an evaluation framework that includes alumni career outcomes, employer reviews, work products, and feedback from industry and community partners within a specified time after graduation. There was no direct data on PATTS Tourism Management graduates. Thus, the available evidence did not permit the assessment of actual PEO attainment. The findings provide a basis for developing measurable indicators for each objective and for collecting data to assess attainment, evaluate relevance to industry, and guide program improvement.

Keywords: tourism management, program educational objectives, graduate outcomes, competencies, industry relevance

Assessment of Capacity-Building Initiatives of Air Navigation Service for Airfield Lighting and Power Technicians

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ABSTRACT
Training is an essential component of capacity-building in aviation, enabling organizations to develop and sustain the competencies personnel need to meet operational demands and maintain safe and reliable operations. Within the Civil Aviation Authority of the Philippines (CAAP), the Air Navigation Service (ANS) supports the development of Airfield Lighting and Power Technicians (ALPTs), whose work helps maintain the airfield lighting and power systems essential to airport operations. However, the extent to which ANS training initiatives support the continuing development of ALPT competencies requires systematic assessment. This study employed a quantitative, nonexperimental, descriptive-correlational survey research design using a structured questionnaire administered to ALPT personnel. The findings revealed that ANS training initiatives were generally assessed favorably, with training effectiveness receiving the highest assessment and availability and access receiving the lowest. Although training initiatives were considered beneficial in sustaining existing competencies, further improvement was needed to support updating, expanding, and adapting competencies to changing work requirements. A significant positive relationship was also found between the assessment of training initiatives and their contribution to continuing competency development. The study identified the need for more frequent training opportunities, increased hands-on practical activities, and training content that reflects actual ALPT duties and evolving work requirements. To address these needs, the study proposes the ALPT Competency Continuity and Training Management System (ALPT-CCTMS), an integrated framework for identifying training needs, planning and monitoring training activities, assessing competencies, and conducting follow-up evaluations. The proposed system aims to strengthen the management of ANS training initiatives and support the continuing development of ALPT competencies.

Keywords: Capacity-building, Aviation Training, Airfield Ground Lighting, Airfield Lighting and Power Technicians, Competency Development, Air Navigation Service

Design and Fabrication of a Transparent Hydraulic Landing Gear Troubleshooting Trainer for AMT Students at UPHSD

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ABSTRACT
This study focused on the Design and Fabrication of a Transparent Hydraulic Landing Gear Troubleshooting Trainer for Aircraft Maintenance Technology (AMT) students at the University of Perpetual Help System DALTA (UPHSD). The study aimed to develop a simplified and transparent training prototype that demonstrates basic hydraulic landing gear operations and simulated troubleshooting under controlled conditions. It utilized a qualitative developmental research design involving the identification of required components, prototype design, fabrication, assembly, programming, and technical verification. The prototype incorporated two hydraulic pumps, a three-way valve, a 200 cc syringe actuator, a miniature landing gear mechanism, an Arduino microcontroller, and three sensors. The water level sensor detected simulated low hydraulic fluid levels, while the infrared sensor detected simulated blockage at the filter. Meanwhile, the ultrasonic sensor monitored landing gear movement and detected its intended stopping position, triggering

the automatic shutdown of both pumps. The researchers conducted technical verification through direct observation, prototype testing, and repeated trials covering normal hydraulic operation, simulated fault detection, and automatic pump shutdown. Five trials were conducted for each designated test to assess the prototype's consistency and functionality. The results were documented using prototype observation checklists, technical verification checklists, and testing records. The study provides a simplified training model for demonstrating hydraulic landing gear operations and basic troubleshooting procedures relevant to aircraft maintenance education.

Keywords: Hydraulic Landing Gear, Troubleshooting Trainer, Hydraulic System, Arduino-Based Control, Aircraft Maintenance Education

The Applications of Digital Signal Processing to Acoustic Signals for Artificial Intelligence (AI): A Framework for Rotor Fault Detection and Analysis in Unmanned Aerial Vehicles (UAVs)

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ABSTRACT
As unmanned aerial vehicles (UAVs) expand into a plethora of sectors, including personal, commercial, agricultural, and disaster-response operations, in-flight mechanical failures from propeller damage or rotor (motor) degradation pose serious risks to the UAV's operational safety and airworthiness. That, building upon earlier fault diagnoses on artificial neural network approaches expanded by Iannace et al. (2019), for multirotor isolation systems by Bondyra et al. (2022), and acoustic UAV propulsion health monitoring by Ali & Jaber (2026), this study aims to broaden the possibilities of establishing a working three-stage conceptual framework that utilizes certain principles of digital signal processing (DSP) with large language models (LLMs) and acoustic machine learning to analyze potential UAV mechanical and stress failure. The proposed framework therefore addresses how rotor audio can be filtered and gauge failure via: digital filtering and time-frequency feature extraction (1) for incoming raw acoustic signals to remove background noise with wavelet transforms and Mel-Frequency Cepstral Coefficients (MFCCs), a lightweight artificial neural network (2) evaluating the extracted features to detect anomalies and pinpoint which specific rotor or blade is experiencing mechanical stress, and a large language model (LLM) (3) as a diagnostic assistant translating the classifier's technical alerts into a clear and actionable recommendation for mechanical maintenance aligned with repair guidelines. By combining these DSP signal principles, a rapid neural network, and an easy-to-read LLM on diagnostic reporting, as such, this paper establishes a practical and non-intrusive pathway to strengthen small-UAV reliability, airworthiness, and predictive maintenance by providing accurate blade and rotor fault analysis across real-world flight environments.

Keywords: Artificial Intelligence (AI), Digital Signal Processing (DSP), Rotor, UAV Fault Diagnosis, Unmanned Aerial Vehicles (UAVs).

THE ROLE OF DIGITAL PAYMENTS ON CUSTOMER PERCEPTIONS AT MCDONALD'S FORTUNATA, PARAÑAQUE CITY: A BASIS FOR IMPROVED SERVICE DELIVERY

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ABSTRACT
This study examined the role of digital payments in shaping customer perceptions at McDonald's Fortunata, Parañaque City. It assessed perceived usefulness and ease of use, identified differences across demographic factors, and explored customer preferences and challenges. A descriptive mixed-method design was employed involving 230 respondents and 5 informants. Quantitative data were analyzed using frequency distribution, weighted mean, standard deviation, t-test, and ANOVA, while qualitative responses were examined through thematic analysis. The findings revealed that customers generally perceived digital payments as useful, convenient, and easy to use. Significant differences in perception were observed by age and frequency of digital payment use, while no significant differences were found by sex or educational background. Customers preferred digital payments because of convenience, accessibility, and security. The study also found that customers experienced challenges such as technical issues, unstable internet connectivity, and transaction failures, which sometimes caused delays and inconvenience. To address these concerns, customers relied on alternative payment methods and staff assistance. The study recommends improving digital payment infrastructure, staff assistance, and technical support to enhance customers' digital payment experiences.

Keywords: Digital Payments, Customer Perceptions, Technology Acceptance, Customer Experience, Service Delivery



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