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RESEARCH ARTICLE

Assessment of Flight Operations among IAU Aviation Students at Mactan and Ormoc Aerodromes

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Abstract

This study assessed and compared the flight operations of Indiana Aerospace University (IAU) aviation students designated at Mactan and Ormoc aerodromes for the academic year 2023–2024. Utilizing a descriptive quantitative research design, the study evaluated three primary areas: flight training performance, performance metrics, and airport operations. A self-made questionnaire using a 5-point Likert scale was distributed to 50 respondents, composed of 44 aviation students and 6 flight instructors with flight experience at both aerodromes. Additionally, qualitative insights were gathered from five participants through structured interviews to supplement the statistical findings. Results revealed that while both aerodromes contributed positively to the flight training experience, Mactan Aerodrome was generally perceived as the more favorable training environment. Students cited Mactan's controlled airport status, real-time air traffic communication, and higher traffic density as key factors in improving situational awareness, decision-making skills, and operational proficiency. These real-world conditions mirrored actual aviation industry demands, giving students practical exposure to complex flight environments. In contrast, Ormoc Aerodrome was recognized for its contribution to foundational flying skills such as takeoff, landing, and airwork but offered limited exposure to complex scenarios due to its uncontrolled, low-traffic nature. The study concluded that aerodrome conditions significantly impact pilot training effectiveness and recommended targeted improvements. These included extending Ormoc's operational hours, introducing controlled flight scenarios, upgrading infrastructure, and enhancing simulation exercises. For Mactan, optimizing flight planning sessions, reinforcing technical skill development, and integrating fuel efficiency strategies were advised. These findings provide valuable input for enhancing IAU's training program and ensuring students are equipped with the competencies required for modern aviation practice.

Keywords: *flight training, aerodrome operations, pilot performance, aviation education, flight simulation*

Introduction

Global and regional research highlights the significant influence of aerodrome environments on pilot training and performance. In the United States and Europe, studies by Haines (2018) and Murphy (2020) have demonstrated that diverse weather conditions and aerodrome configurations are essential in shaping pilot adaptability and skill development. In the Philippine context, Dela Cruz et al. (2021) emphasized that regional variances in aerodrome infrastructure and traffic volume impact the quality of flight training. Locally, Santos (2022) examined Cebu's Mactan aerodrome, revealing that its high traffic and operational complexity present unique challenges that significantly affect student pilots' performance. This study aims to compare Mactan's busy aerodrome environment with Ormoc's smaller, less congested setup to evaluate how different operational conditions influence aviation student outcomes at Indiana Aerospace University (IAU). The findings intend to inform improvements in curriculum design and resource allocation, ultimately contributing to the enhancement of aviation safety and education quality in the region.

The theoretical foundation of this study is grounded in Competency-Based Training and Assessment (CBTA) theory, which underscores the importance of aligning aviation training with real-world tasks and skill sets (Hodge, 2016). CBTA emphasizes that competency development should be shaped by actual operational demands, making it highly relevant in comparing Mactan and Ormoc aerodromes. Each environment presents distinct conditions that challenge students differently, offering insights into how varied training sites influence competency acquisition. Additionally, the study draws from Airport Capacity and Efficiency Theory, which explores how infrastructure, layout, and traffic control systems affect operational effectiveness and performance (Cook & Goodwin, 2020). This framework helps assess how the differing physical and logistical attributes of Mactan and Ormoc contribute to or hinder flight training efficiency.

Currently, there is a lack of comprehensive data within IAU's aviation department regarding how different aerodrome environments affect student performance. This study addresses that gap by comparing flight training experiences at Mactan and Ormoc aerodromes, which are both used by IAU. By evaluating the impact of these environments on student performance, the study seeks to determine which aerodrome provides a more conducive training setting. The researchers—aviation students with firsthand knowledge of both locations—aim to assess key operational, environmental, and logistical factors that may significantly influence pilot competence and training outcomes. The ultimate goal is to support the continuous improvement of IAU's flight training program by ensuring students are trained in environments that optimize both learning and safety.

Research Question/ Objectives

This study sought to assess the flight operations in Mactan and Ormoc aerodromes of Indiana Aerospace University for the Academic year 2023-2024 and to propose an action plan. Specifically, this study sought to answer the following sub-problems:

1. Assess the flight operations among IAU students designated in Mactan and Ormoc aerodrome in terms of flight training, performance metrics, and airport operations.

Methodology

The study employed a descriptive research design to measure and compare flight performance, performance metrics, and airport operations among aviation students at Indiana Aerospace University (IAU). This quantitative approach enabled the researchers to systematically evaluate how different aerodrome environments—specifically Mactan and Ormoc—impacted student pilot outcomes. A self-made survey instrument was utilized, incorporating a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree" to assess perceptions regarding flight training, operational challenges, and environmental suitability. In addition to quantitative analysis, the study included a qualitative component consisting of structured interviews to provide deeper insight into individual experiences and contextual factors that influence flight training outcomes.

The research was conducted across two primary environments: IAU's Mactan Aerodrome, located at Mactan General Aviation in Lapu-Lapu City, Cebu, and IAU's Ormoc Aerodrome, situated in Barangay Airport Libertad, Ormoc City, Leyte. Both aerodromes served as training grounds for student pilots and were equipped with briefing rooms and a fleet of aircraft including ten Cessna 150s, two Cessna 172s, and one Piper Aztec multiengine aircraft. These locations represented contrasting operational settings—Mactan being a high-traffic environment and Ormoc offering less congested conditions—allowing the researchers to assess the varying effects of traffic density, airspace complexity, and airport resources on pilot performance. The study benefitted from the university's modern aviation facilities and its status as the largest aerospace institution in Asia, which provided a robust platform for evaluating real-world training conditions.

The research respondents consisted of 50 individuals, including 44 aviation students and 6 flight instructors who had completed flight operations at both aerodromes. A stratified random sampling method was used to ensure representative data. Printed survey questionnaires were distributed face-to-face on campus, with researchers present to assist and ensure the accuracy of responses. Additionally, five participants—three students and two instructors—were selected for qualitative interviews to gather more detailed perspectives. Ethical considerations were strictly observed, with informed consent obtained, confidentiality assured, and participation made voluntary. The research adhered to IAU's ethical guidelines, prioritizing data integrity and participant welfare throughout the study. The statistical treatment of data involved computing the weighted mean and descriptive interpretation to evaluate performance differences and identify operational challenges across the two aerodromes.

Results

Flight Performance

Table 1 presents the Flight performance of IAU aviation students designated in Mactan and Ormoc aerodrome.

Table 1. *Flight Performance*

Indicators	*Weighted Mean*	*Description*
1. The topographical layout of Ormoc aerodrome provides a better environment for teaching approach and landing techniques than Mactan aerodrome.	4.12	Agree
2. The higher air traffic levels at Mactan aerodrome lead to better preparation and flight performance for students than at Ormoc.	3.9	Agree
3. The weather patterns at Mactan create more challenging but beneficial conditions for flight training compared to Ormoc.	3.88	Agree
4. The environmental and geographical factors of Mactan are more conducive to improving students' flight	3.76	Agree
5. Aviation students perform better at Mactan aerodrome than at Ormoc aerodrome due to more favorable flying conditions.	3.28	Uncertain
Average Weighted Mean	3.79	Agree

Legend: 4.21–5.00, Very Strongly Agree; 3.41–4.20, Strongly Agree; 2.60–3.40, Neutral; 1.81–2.59, Disagree; 1.00–1.80, Strongly Disagree

Flight performance measures an aircraft's efficiency and effectiveness during takeoff, cruise, and landing, considering handling, fuel consumption, speed, altitude, and pilot management in varying conditions. Key metrics include situational awareness, maneuverability, and control responsiveness. In this study at Indiana Aerospace University, flight performance is used to gauge student proficiency at Mactan and Ormoc aerodromes. Researchers assess which aerodrome offers a better training environment based on student perceptions of factors like weather, air traffic, and training challenges, which influence their situational awareness and confidence. This understanding is vital for evaluating training effectiveness and preparing students for real-world flying.

Performance Metrics

Performance metrics are quantifiable indicators that evaluate the overall performance of an aircraft and its pilots during flight operations. These metrics encompass various aspects such as fuel consumption, flight duration, handling characteristics, situational awareness, and adherence to flight plans. They play a crucial role in pinpointing areas for improvement and optimizing training outcomes, as they provide valuable insights into the operational capabilities of both the aircraft and pilots.

In our study of flight operations at Indiana Aerospace University, we emphasize the significance of performance metrics in assessing how well aviation students are acquiring the skills necessary for safe and efficient flying. By comparing fuel efficiency, situational awareness, and aircraft handling between Mactan and Ormoc aerodromes, we aim to determine which environment yields better learning results. Ultimately, understanding these performance measures is vital for enhancing the training process and ensuring students are equipped with the skills needed for successful careers in aviation.

Table 2 presents the Performance Metrics of IAU aviation students designated in Mactan and Ormoc Aerodrome.

Table 2. *Performance Metrics*

Indicators	*Weighted Mean*	*Description*
1. Students achieve better takeoff and landing performance metrics at Ormoc compared to Mactan aerodrome.	4.42	Strongly Agree
2. The topographical layout of Ormoc aerodrome provides a better environment for teaching approach and landing techniques than Mactan aerodrome.	4.30	Strongly Agree
3. Aircraft handling and situational awareness metrics show that students perform better at Mactan than at Ormoc.	3.88	Agree
4. The performance metrics of students at Mactan are generally higher than those of students training at Ormoc aerodrome.	3.66	Agree
5. Students achieve better takeoff and landing performance metrics at Mactan compared to Ormoc aerodrome.	3.16	Uncertain
Average Weighted Mean	3.88	Agree

Legend: 4.21–5.00, Very Strongly Agree; 3.41–4.20, Strongly Agree; 2.60–3.40, Neutral; 1.81–2.59, Disagree; 1.00–1.80, Strongly Disagree

Airport Operations

The various tasks and procedures carried out at an airport to enable the safe and effective flow of planes, people, and cargo are together referred to as airport operations. This covers baggage processing, air traffic control, ground handling, fueling, maintenance, and security. Maintaining safety standards, reducing delays, and maximizing the flow of aviation traffic all depend on efficient airport operations.

Airport operations are an important consideration when evaluating the training environment at the Mactan and Ormoc aerodromes, according to our study on flight operations among Indiana Aerospace University aviation students. Students' flight experiences and their capacity to acquire critical skills are impacted by variations in airport operations, including aviation traffic volumes, ground support services, and operating procedures. Knowing how these operational factors impact training can assist in determining which aerodrome offers a better learning environment.

The study aims to put insight on how these variables affect student pilots' performance and readiness for upcoming aviation difficulties by examining airport operations.

Table 3 presents the Airport Operations of Mactan and Ormoc Aerodrome

Table 3. *Airport Operations*

Indicators	*Weighted Mean*	*Description*
1. The airport operations at Mactan provide better realworld flying experience than those at Ormoc aerodrome.	4.54	Strongly Agree
2. Air traffic control procedures at Mactan aerodrome are more effective in improving students' flight performance compared to Ormoc.	4.24	Strongly Agree
3. The emergency handling procedures and airport services at Mactan offer better support for flight training than those at Ormoc aerodrome.	3.52	Agree
4. Mactan's operational hours and flexibility contribute more positively to student performance compared to Ormoc.	3.78	Agree
5. The runway length, surface quality, and taxiing procedures at Ormoc aerodrome are superior to those at Mactan in terms of training outcomes.	3.98	Agree
Average Weighted Mean	4.01	Agree

Legend: 4.21–5.00, Very Strongly Agree; 3.41–4.20, Strongly Agree; 2.60–3.40, Neutral; 1.81–2.59, Disagree; 1.00–1.80, Strongly Disagree

Conclusion

The study concluded that there is a significant difference in flight training outcomes, performance metrics, and airport operations experienced by aviation students of Indiana Aerospace University (IAU) when comparing Mactan and Ormoc aerodromes. A majority of students favored Mactan Aerodrome due to its status as a controlled airport with real-time communication, higher traffic density, and operational complexity—conditions that closely simulate real-world aviation environments. These features foster enhanced situational awareness, decision-making skills, and communication proficiency. While Ormoc Aerodrome contributed positively to foundational skills such as basic maneuvers, takeoffs, and landings, its relatively simple and uncontrolled airspace offered limited exposure to more advanced operational scenarios.

In light of these findings, the study recommends targeted improvements for both aerodrome environments to optimize the flight training experience. For Ormoc Aerodrome, extending operational hours and scheduling flexibility would allow students to train under a broader range of conditions, building adaptability and confidence. Collaborating with aviation authorities to introduce complex training scenarios, including simulated air traffic and ATC communications, would better prepare students for the challenges of the aviation industry. Infrastructure upgrades, such as improving runway surface quality and taxiway procedures, are also recommended to provide a safer and more standardized training environment.

For Mactan Aerodrome, the focus should be on optimizing resources and maximizing training value. Structured exercises on flight planning, fuel efficiency, and time management should be integrated into the curriculum to develop students' operational foresight. Additionally, enhanced training on takeoff and landing techniques, coupled with real-time feedback and assessments, will ensure continuous skill development. Exposure to variable weather conditions and traffic density should also be prioritized to strengthen pilot adaptability. By implementing these recommendations, IAU can further refine its flight training program, ensuring that its graduates are well-prepared, confident, and aligned with professional aviation standards.

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