LAKBAY-DIWA Publishing

e-ISSN 3082-4400
p-ISSN 3082-5733

VOLUME I ISSUE VI

# ACADEMIC FRONTIERS

*A Multidisciplinary E-Publication*

OCTOBER 2025
MONTHLY ISSUE
INTERNATIONAL

NATIONAL BOOK PUBLISHER IN THE PHILIPPINES
DTI Business Reg. No. 6488937
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# ACADEMIC FRONTIERS

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**ISSN (Online) 3082-4400**
**ISSN (Print) 3082-5733**

Printed by: LDP
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# FOREWORD

It is with great enthusiasm that I welcome you to this issue of ACADEMIC FRONTIERS. As a peer-reviewed, multidisciplinary journal, we aim to provide a dynamic platform for scholars, educators, and researchers to share their latest academic insights and discoveries. Our mission is to foster a global community of intellectuals who are dedicated to advancing knowledge and sparking meaningful conversations across various fields of study.

In the pages that follow, you will find a collection of peer-reviewed articles, research papers, and abstracts, each selected to reflect the most recent trends and developments in academia. These works represent the collective efforts of scholars and researchers from around the world, each offering unique perspectives that challenge, inspire, and provoke thought.

At ACADEMIC FRONTIERS, intellectual growth is a shared journey that transcends disciplines. Our commitment to publishing a wide range of topics—from innovative research methodologies and theoretical explorations to practical applications and interdisciplinary studies—reflects our dedication to supporting scholars at all stages of their academic endeavors.

As we navigate a rapidly evolving global landscape, the importance of research and knowledge-sharing has never been more profound. In this issue, you will find work that not only contributes to the advancement of knowledge but also highlights the crucial role that academia plays in shaping our world. These contributions serve as a reminder of the power of research to foster change, inspire progress, and create a better future for all.

I extend my deepest gratitude to our contributors, whose expertise and dedication have made this journal possible. I also express sincere thanks to our readers for their continued support and engagement. It is through your involvement that ACADEMIC FRONTIERS continues to grow into a vibrant and inclusive space for intellectual exchange and discovery.

As you immerse yourself in this issue, I invite you to reflect on the diverse range of ideas presented and consider how they might contribute to your own work and academic journey. Together, let us explore the frontiers of knowledge and celebrate the vital role of research in advancing human understanding.

Thank you for being a part of ACADEMIC FRONTIERS.

With warm regards,

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# The Role of Entrepreneurship Simulation Rooms in Enhancing Experimental Learning for Future Entrepreneurs

**Jhon Ven Saint L. Pasahol, CEMP, LPT, DBA[1]***

[1]Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST), Manila – Main Campus, Philippines
[1]Corresponding Email: jlpasahol@earist.edu.ph

**Date received**: September 27, 2025
**Date revised**: September 29, 2025
**Date accepted**: October 4, 2025

**Originality**: 96%
**Grammarly Score**: 100%
**Similarity**: 5%

**Recommended citation:**

**Pasahol, J. V. S. L.** (2025). The role of entrepreneurship simulation rooms in enhancing experimental learning for future entrepreneurs. *ACADEMIC FRONTIERS Multidisciplinary e-Publication, 1*(6), 1-11. https://doi.org/10.5281/zenodo.17260178

**Abstract.**
Entrepreneurship education has tended to prioritize theory over practice, limiting students' hands-on skill formation. This study investigates the impact of entrepreneurship simulation rooms on enhancing experimental learning among Bachelor of Science in Entrepreneurship students at EARIST Manila. Guided by Kolb's experiential learning cycle, the Theory of Planned Behavior, and Social Learning Theory, we assessed perceptions of simulation realism, engagement, facilitation, resource sufficiency, and curriculum integration, as well as the perceived development of decision-making, problem-solving, teamwork, innovation, and confidence. Using a descriptive-comparative design, purposive sampling yielded 153 students and seven faculty members who completed structured questionnaires. Descriptive statistics summarized responses; independent-samples t-tests compared groups. Results indicate generally positive perceptions, with Realism of business scenarios (students: WM=3.46) and Student engagement and participation (WM=3.35) receiving the highest evaluations. The availability of tools and resources was lowest, particularly among faculty (WM = 2.42). All five indicators showed significant student–faculty differences ($p < .05$), signaling misalignment in expectations and the visibility of learning evidence. The findings suggest that simulation rooms can bridge the theory–practice divide and foster entrepreneurial confidence and creativity. Still, impact is constrained by resource adequacy, facilitation quality, and partial curricular alignment. We recommend targeted investments in technology and maintenance, as well as facilitation standards and faculty training, to ensure constructive alignment of simulations with learning outcomes and assessments, thereby strengthening pedagogical effectiveness and supporting SDG-aligned goals in entrepreneurship education.

**Keywords:** Entrepreneurial competencies, Experiential learning, Simulation-based learning, Student engagement, Theory of Planned Behavior

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## 1.0 Introduction

Entrepreneurship has become one of the most critical engines of economic growth, job creation, and social innovation in the 21st century. As economies become increasingly globalized and digitized, the demand for entrepreneurial graduates who can navigate uncertainty, leverage innovation, and create sustainable ventures continues to rise. In the Philippine context, entrepreneurship education is recognized by the Commission on Higher Education (CHED) as a core strategy in cultivating future business leaders who are adaptive, creative, and resilient. However, despite institutional emphasis, many entrepreneurship programs remain heavily weighted toward theoretical instruction, often limiting students' opportunities for applied, risk-managed practice. This imbalance raises an enduring pedagogical challenge: how can institutions provide authentic, practice-oriented learning experiences within the safety of the academic environment?

The emergence of entrepreneurship simulation rooms offers a partial solution to this challenge. Simulation rooms are structured, resource-equipped spaces that mimic the conditions of real business environments, enabling students to practice decision-making, negotiation, problem-solving, and collaboration without the high stakes of financial loss. By replicating entrepreneurial processes from ideation and planning to operations and customer interaction, simulation rooms bridge the gap between classroom theories and the dynamic realities of the marketplace. In essence, they represent an educational innovation that embodies the principles of experimental learning: allowing learners to "learn by doing" in an environment where failure becomes a formative, rather than punitive, experience.

From a theoretical standpoint, simulation rooms reflect Kolb's (1984) Experiential Learning Theory, which posits that knowledge creation arises from the transformation of experience through cycles of concrete engagement, reflective observation, abstract conceptualization, and active experimentation. Beyond Kolb, Ajzen's (1991) Theory of Planned Behavior provides insight into how simulated entrepreneurial experiences can shape attitudes, subjective norms, and perceived behavioral control, thereby strengthening entrepreneurial intentions. Likewise, Bandura's (1977) Social Learning Theory emphasizes the roles of modeling, observation, and self-efficacy in developing entrepreneurial competencies. Collectively, these frameworks reinforce the assertion that learning environments designed with authenticity, interactivity, and reflection can significantly elevate entrepreneurial preparedness.

Globally, research demonstrates that simulation-based learning enhances student engagement, critical thinking, and problem-solving (Lackéus, 2015; Pittaway & Cope, 2007). In entrepreneurship education specifically, studies show that simulations foster entrepreneurial mindset, risk tolerance, and creativity by exposing students to decision-making under uncertainty (Bellotti et al., 2014). In Southeast Asia, however, literature on simulation-based entrepreneurship learning remains limited, with much of the research focusing on case-based teaching, internships, or business plan competitions. Within the Philippine setting, evidence on the pedagogical value of entrepreneurship simulation rooms is especially sparse. The scarcity of empirical inquiry justifies the present study, which aims to contribute a systematic analysis of simulation room effectiveness, particularly within the context of a state university.

Equally important are the practical and policy implications. The United Nations' Sustainable Development Goals (SDG 4: Quality Education and SDG 8: Decent Work and Economic Growth) emphasize the importance of equipping young people with relevant skills for employment and entrepreneurship. Embedding simulation rooms into higher education curricula directly supports these goals by fostering applied competencies that extend beyond the classroom into communities and industries. Moreover, in the Philippine government's thrust to promote micro, small, and medium enterprises (MSMEs) as the backbone of the economy, universities play a pivotal role in preparing graduates who can become competent business founders, managers, and innovators. Simulation-based learning can thus strengthen the human capital necessary to sustain national economic growth and resilience.

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Despite these opportunities, the actual effectiveness of entrepreneurship simulation rooms remains under-investigated. Stakeholders, students, and faculty may differ in their perceptions of how well these facilities deliver learning outcomes, provide adequate resources, and align with curricular goals. Understanding these perceptions is crucial for continuous improvement and institutional decision-making, as gaps between student experience and faculty expectations can undermine the pedagogical impact. Furthermore, assessing simulation-enabled competencies such as decision-making, teamwork, innovation, and entrepreneurial confidence provides empirical grounding for claims that such facilities truly enhance graduate employability and entrepreneurial readiness.

This study, therefore, explores the role of entrepreneurship simulation rooms in enhancing experimental learning for future entrepreneurs at the Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST), Manila. Specifically, it examines perceptions of both students and faculty regarding the realism, facilitation, engagement, resource sufficiency, and curricular integration of simulation rooms. It evaluates their perceived contribution to the development of entrepreneurial competencies. By comparing these perceptions and testing for significant differences, the study generates insights into the strengths and limitations of current practice. It proposes strategies, such as faculty workshops and resource upgrades, to improve the impact of simulation-based entrepreneurship education. In doing so, it not only enriches the literature on simulation-enabled learning in the Philippine context but also advances a model for aligning entrepreneurship education with national development goals and international standards.

## 2.0 Methodology

This study employed a descriptive-comparative research design to examine how entrepreneurship simulation rooms contribute to experimental learning among BS Entrepreneurship students and faculty members of EARIST Manila. By gathering perceptions from both groups through structured questionnaires and subjecting the data to statistical analysis, the study aimed to identify patterns, evaluate competency outcomes, and determine significant differences in perceptions. The methodological choices were grounded in the study's objectives, ensuring the validity, reliability, and relevance of findings.

### 2.1 Research Design

This study employed a descriptive–comparative research design to investigate the role of entrepreneurship simulation rooms in enhancing experimental learning for future entrepreneurs. The design was deemed most appropriate because it allowed the researcher to capture and compare the perceptions of two groups of respondents, students and faculty, regarding the effectiveness of simulation-based learning. Rather than manipulating variables, the study sought to describe existing conditions, analyze patterns, and identify significant differences in perspectives. The comparative element was essential, as it highlighted whether faculty and students consistently viewed the value of simulation rooms, or whether gaps existed that required pedagogical or administrative intervention.

### 2.2 Participants and Sampling Technique

The participants of the study were drawn from the Bachelor of Science in Entrepreneurship program of the Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST), Manila – Main Campus. A total of 160 respondents were included, comprising 153 students and seven faculty members. Students were purposively selected based on the criterion that they had already experienced entrepreneurship courses conducted in the simulation rooms, ensuring that their responses reflected first-hand engagement. Faculty members, on the other hand, were chosen because they handled

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subjects utilizing the simulation facility. Purposive sampling was appropriate because not all students and faculty in the department were exposed to the intervention; only those with direct participation in simulation-based courses could provide informed evaluations. The sample size, while modest in the case of faculty, was sufficient for descriptive comparison and statistical testing, given the focus on a specific institutional program.

**2.3 Research Locale**

The research was conducted at EARIST Manila, a state university known for its applied and technical programs. Within its BS Entrepreneurship curriculum, the institution has invested in establishing entrepreneurship simulation rooms to create authentic, practice-oriented experiences for learners. These rooms were equipped with facilities designed to replicate business environments, including point-of-sale systems, merchandising spaces, and operational workstations. The research locale was thus significant, as it provided a concrete setting where the effectiveness of simulation-based pedagogy could be assessed.

**2.4 Research Instrument**

To capture data systematically, the researcher employed a structured, researcher-made questionnaire. The instrument was developed to measure perceptions along five indicators: (1) realism of business scenarios, (2) availability of tools and resources, (3) quality of facilitation and instruction, (4) student engagement and participation, and (5) integration into the curriculum. In addition, a second section of the instrument measured the perceived enhancement of entrepreneurial competencies, including decision-making, problem-solving, teamwork, innovation, and confidence in an entrepreneurial mindset. The questionnaire underwent content validation by experts in entrepreneurship education and pedagogy, ensuring that the items were aligned with both the study's objectives and relevant theoretical frameworks. Pilot testing was conducted to assess the clarity and reliability of the items, and adjustments were made based on expert feedback. The Likert-type scale used in the instrument allowed respondents to express degrees of agreement or disagreement, which were later quantified for analysis.

**2.5 Data Gathering Procedure**

The data gathering procedure followed ethical and systematic steps. Prior to distribution, informed consent was obtained from participants, who were assured that their involvement was voluntary and that their responses would be kept confidential. For the student respondents, questionnaires were distributed during scheduled class hours, after receiving permission from course instructors. For faculty members, questionnaires were placed in their departmental mailboxes to allow flexible completion at their convenience. Completed instruments were collected personally by the researcher to ensure data integrity and minimize the risk of loss. Respondents were given adequate time to reflect on their experiences in the simulation rooms, thereby enhancing the quality of their responses.

**2.6 Statistical Treatment of Data**

Once retrieved, the data were coded and subjected to both descriptive and inferential statistical treatments. Descriptive statistics, including means, weighted means, standard deviations, and rankings, were used to summarize the respondents' perceptions and to identify areas of strength and

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weakness in the implementation of simulation-based learning. A standard interpretation scale was employed to categorize mean values into descriptive equivalents such as "Strongly Agree," "Agree," or "Disagree." To examine differences in perceptions between students and faculty, the study employed the independent-samples t-test, an inferential statistical tool appropriate for comparing the means of two unrelated groups. The level of significance was set at 0.05, and any p-value below this threshold was interpreted as statistically significant, leading to the rejection of the null hypothesis of no difference.

### 2.7 Scope and Delimitations

The scope of the study was deliberately confined to the BS Entrepreneurship program of EARIST Manila and to respondents who had actual exposure to the simulation rooms. This ensured the specificity and validity of the findings, but also limited the generalizability of the results. Students who had not participated in simulation-based courses and faculty who did not handle subjects utilizing the facility were excluded from the sample. Likewise, the study focused solely on perceptions and self-reported competencies, rather than on objective performance measures or longitudinal outcomes, such as business success after graduation. These delimitations were acknowledged to maintain the integrity of the research design and to avoid overgeneralization of findings beyond the intended context.

## 3.0 Results and Discussion

This section presents the perceptions of students and faculty members regarding the effectiveness of entrepreneurship simulation rooms in enhancing experimental learning. Results are arranged thematically based on the study's objectives: (a) perceptions of simulation rooms across five dimensions; (b) perceived enhancement of entrepreneurial competencies; and (c) significance of differences between student and faculty responses. Each table is accompanied by an interpretation and discussion that situates the findings within the theoretical and empirical literature.

### 3.1 Perceptions of Entrepreneurship Simulation Rooms

Table 1 shows the respondents' perceptions of the entrepreneurship simulation rooms across five indicators: realism, tools and resources, facilitation, engagement, and curriculum integration.

**Table 1.** *Respondents' Perception of Entrepreneurship Simulation Rooms*

| Indicator | Students WM (VI) SD | Faculty WM (VI) SD | Composite WM (VI) SD | Rank |
|---|---|---|---|---|
| Realism of Business Scenarios | 3.46 (SA) 0.59 | 3.07 (A) 0.75 | 3.27 (A) 0.67 | 1 |
| Student Engagement and Participation | 3.35 (SA) 0.64 | 3.07 (A) 0.84 | 3.21 (A) 0.74 | 2 |
| Quality of Facilitation and Instruction | 3.04 (A) 0.67 | 2.67 (A) 0.74 | 2.86 (A) 0.71 | 3 |
| Integration into the Curriculum | 3.13 (A) 0.65 | 2.58 (A) 0.83 | 2.86 (A) 0.74 | 4 |
| Availability of Tools and Resources | 3.11 (A) 0.66 | 2.42 (A) 0.93 | 2.77 (A) 0.80 | 5 |

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Both students and faculty agreed that simulation rooms provide realistic business scenarios (composite WM = 3.27), which supports the claim that such environments mirror real-world entrepreneurial contexts. This aligns with Kolb's experiential learning cycle, where realism fuels meaningful engagement in concrete experiences. High ratings for student engagement (composite WM = 3.21) indicate that simulations motivate participation, echoing studies by Lackéus (2015) that emphasize simulation-based learning as a catalyst for motivation and deeper involvement.

However, the lowest indicator was the availability of tools and resources (composite WM = 2.77), which was particularly low among faculty (WM = 2.42). This reveals a resource gap that may limit the full potential of simulations. According to Bellotti et al. (2014), the absence of sufficient tools constrains authenticity and learning transfer, suggesting that institutional investment in hardware and software upgrades is critical. Faculty also rated the quality of curriculum integration and facilitation lower than students, indicating a need for more structured pedagogical frameworks and faculty training.

In short, while realism and engagement validate the potential of simulation rooms as authentic learning spaces, the weak ratings on resources, facilitation, and integration highlight systemic barriers that must be addressed for consistent and scalable impact.

### 3.2 Enhancement of Entrepreneurial Competencies

Table 2 presents how students and faculty perceived the contribution of simulation rooms to the development of entrepreneurial competencies.

**Table 2.** *Respondents' Assessment of Simulation-Enabled Competencies*

| Competency | Students WM (VI) SD | Faculty WM (VI) SD | Composite WM (VI) SD | Rank |
|---|---|---|---|---|
| Confidence and Entrepreneurial Mindset | 3.35 (A) 0.64 | 2.86 (A) 0.73 | 3.11 (A) 0.69 | 1 |
| Innovation and Creativity | 3.26 (SA) 0.64 | 2.70 (A) 0.65 | 2.98 (A) 0.64 | 2 |
| Problem-Solving Ability | 3.22 (A) 0.64 | 2.49 (D) 0.87 | 2.86 (A) 0.77 | 3 |
| Teamwork and Collaboration | 3.19 (A) 0.64 | 2.53 (D) 0.79 | 2.86 (A) 0.71 | 4 |
| Decision-Making Skills | 3.08 (A) 0.64 | 2.54 (A) 0.87 | 2.81 (A) 0.75 | 5 |

Respondents ranked confidence and entrepreneurial mindset highest (composite WM = 3.11), indicating that simulation rooms cultivate self-efficacy and resilience, central elements in Bandura's Social Learning Theory, which emphasizes the role of mastery experiences in building confidence. Similarly, innovation and creativity (WM=2.98) were rated positively, reflecting the simulation rooms' ability to encourage experimentation and idea generation.

However, decision-making (WM=2.81) and teamwork (WM=2.86) ranked lowest, particularly from the perspective of faculty, who even rated problem-solving and teamwork as "Disagree." This suggests that while students feel confident and creative, faculty observe limited evidence of structured problem-solving and high-quality team-based decision-making. The discrepancy may arise from the absence of rubrics or assessment tools that capture higher-order competencies beyond surface participation.

This finding resonates with Ajzen's Theory of Planned Behavior: without observable and measurable evidence of behavioral control (decision-making skills), the translation of entrepreneurial

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intentions into practice may remain weak. Thus, while simulation rooms build confidence, more rigorous structuring, such as decision checkpoints, role-based tasks, and peer evaluations, is needed to strengthen cognitive and collaborative outcomes.

### 3.3 Significance of Student–Faculty Differences

Table 3 summarizes the results of independent-samples t-tests comparing student and faculty perceptions across the five simulation indicators.

**Table 3.** *Independent-Samples t-Tests: Students vs Faculty*

| Indicator | Students M SD | Faculty M SD | p-value | Decision |
|---|---|---|---|---|
| Realism of Business Scenarios | 3.46 0.59 | 3.01 0.74 | 0.00109 | Significant |
| Availability of Tools and Resources | 3.11 0.66 | 2.42 0.93 | 0.02750 | Significant |
| Quality of Facilitation and Instruction | 3.04 0.67 | 2.67 0.74 | 0.02343 | Significant |
| Student Engagement and Participation | 3.35 0.64 | 3.07 0.84 | 0.00136 | Significant |
| Integration into the Curriculum | 3.13 0.65 | 2.58 0.83 | 0.00162 | Significant |

Across all five indicators, the differences between student and faculty perceptions were statistically significant ($p < .05$). Students consistently rated the simulation rooms more favorably, particularly in terms of realism and engagement. In contrast, faculty expressed stronger reservations regarding resource sufficiency and curricular integration.

The significance of these perception gaps has two key implications. First, it underscores a misalignment of expectations: students perceive learning value through immersion and confidence gains, while faculty emphasize resource adequacy and observable competencies. Second, it highlights the need for institutional interventions, including faculty development workshops, more precise alignment between learning outcomes and simulation activities, and investments in simulation resources.

These findings reinforce Kolb's assertion that effective experiential learning requires not only authentic experience but also guided reflection and structured integration into the curriculum. Without this alignment, the full pedagogical potential of simulation rooms may remain underutilized, despite their ability to engage students meaningfully.

The foregoing results and discussions underscore both the promise and the limitations of entrepreneurship simulation rooms as pedagogical innovations. On one hand, students and faculty alike recognize the realism and engagement value of these facilities, with students particularly affirming their role in boosting confidence and creativity. On the other hand, faculty members remain cautious, citing deficiencies in resources, curriculum alignment, and the observability of higher-order competencies, such as decision-making, teamwork, and problem-solving. The statistically significant differences across all indicators further highlight a misalignment in perceptions that carries important implications for instructional practice and institutional policy. Taken together, the findings demonstrate that simulation rooms are effective in cultivating motivation and an entrepreneurial mindset; however, they require systemic enhancements in resources, facilitation quality, and assessment integration to realize their potential fully.

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## 4.0 Conclusion and Recommendations

This study aimed to investigate the role of entrepreneurship simulation rooms in enhancing experiential learning among Bachelor of Science in Entrepreneurship students at EARIST Manila. The findings revealed that while simulation rooms are generally perceived as authentic and engaging learning environments, their effectiveness varies across dimensions and between stakeholder groups. Students consistently affirmed the realism of the scenarios and reported significant gains in confidence and creativity, suggesting that simulation-based pedagogy is effective in fostering motivation and an entrepreneurial mindset. Faculty members, however, raised concerns about the sufficiency of tools and resources, the integration of simulations into the curriculum, and the extent to which higher-order competencies such as decision-making, teamwork, and problem-solving were truly being developed.

The statistically significant differences between student and faculty perceptions underscore a misalignment that has both pedagogical and institutional implications. These gaps underscore the need for systematic investment in resources, faculty development, and the constructive alignment of simulation activities with learning outcomes and assessments. From a theoretical perspective, the results affirm the validity of Kolb's experiential learning cycle and Bandura's social learning principles in explaining the gains in engagement and confidence, while also highlighting the partial application of the Theory of Planned Behavior in cultivating observable entrepreneurial behaviors.

In conclusion, entrepreneurship simulation rooms hold substantial promise as catalysts of experimental learning and entrepreneurial preparedness; however, their transformative potential will remain underutilized unless resource adequacy, facilitation quality, and curricular integration are fully addressed. By strengthening these areas, institutions like EARIST can ensure that simulation-based entrepreneurship education not only bridges the theory–practice divide but also contributes meaningfully to the country's human capital development and to the broader goals of sustainable economic growth.

### 4.1 Recommendations

Based on the results and conclusions of the study, the following recommendations are proposed:

1. Resource Enhancement. Upgrade the tools, technologies, and facilities in the simulation rooms to ensure realism, reliability, and scalability of entrepreneurial scenarios. Establish a sustainable maintenance plan to guarantee continuous availability.
2. Faculty Training and Development. Conduct structured workshops and professional development programs focused on simulation facilitation, assessment design, and curriculum integration. These should emphasize the use of debriefing frameworks, role clarity, and performance rubrics to capture higher-order competencies.
3. Curriculum Alignment. Integrate simulation activities more explicitly into entrepreneurship course syllabi, linking them to specific learning outcomes and assessments. Constructive alignment will ensure that simulations are not treated as standalone activities, but rather as central components of pedagogy.
4. Assessment Innovations. Develop multi-source assessment tools such as decision logs, peer evaluations, and reflective journals to make problem-solving, decision-making, and teamwork more visible and measurable within simulation activities.
5. Continuous Feedback Mechanisms. Institutionalize periodic feedback sessions where both students and faculty can review the effectiveness of simulations, providing input for continuous improvement of the facility, curriculum, and facilitation strategies.
6. Policy Support. Encourage institutional leadership to formally recognize simulation rooms as integral to entrepreneurship education, aligning them with strategic development plans and the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 8 (Decent Work and Economic Growth).

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## 5.0 Contributions of the Author

The author conceptualized the study, developed the research instrument, and supervised the validation process with subject-matter experts. He facilitated data collection among student and faculty respondents, ensured adherence to ethical standards, and carried out statistical analysis and interpretation of findings.

## 6.0 Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## 7.0 Conflict of Interests

The author declares no conflict of interest in the conduct and reporting of this research.

## 8.0 Acknowledgment

The author wishes to acknowledge the Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST), Manila – Main Campus, for providing the institutional support necessary to undertake this study. Deep gratitude is extended to the faculty members and students of the BS Entrepreneurship program who willingly participated and provided valuable insights. The author also thanks colleagues and research mentors whose constructive feedback refined the methodological and theoretical framing of this work.

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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
***A Multidisciplinary e-Publication***
Volume I, Issue VI (October 2025), International Circulation
**ISSN (Online) 3082-4400 ISSN (Print) 3082-5733**
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**Publisher: Lakbay-Diwa Publishing**
DTI Business Reg. No. 6488937 / TIN 492-741-614
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ACADEMIC FRONTIERS
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ACADEMIC FRONTIERS
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# Mathematics of Piña Weaving: An Ethnomathematics Study

**Angelica B. Lachica, PhD[1]*, Roberto G. Sagge Jr., PhD[2]**

[1]Department of Education, Division of Aklan, Aguinaldo T. Repiedad Sr. Integrated School
[2]West Visayas State University, Iloilo, Region VI, Philippines

[1]Corresponding Email: ms.angelicalachica@gmail.com

**Date received**: October 4, 2025
**Date revised**: October 4, 2025
**Date accepted**: October 5, 2025

**Originality**: 91%
**Grammarly Score**: 100%
**Similarity**: 9%

**Recommended citation:**

Lachica, A. B., & Sagge, R. G. (2025). Mathematics of Piña Weaving: An Ethnomathematics Study. *ACADEMIC FRONTIERS Multidisciplinary e-Publication, 1*(6), 12-22. https://doi.org/10.5281/zenodo.17270941

**Abstract.**
Piña weaving is a long-standing tradition that depicts the rich history of the Philippines, the resiliency of Filipinos, the art and culture of Akeanons, and the underlying mathematical concepts that inform it. This paper identifies the various mathematical concepts embedded in Piña weaving, how Piña weavers learned, developed, and applied these concepts in their craft, and the perceptions of Piña weavers regarding the importance of mathematics in producing standard outputs. This ethnographic study highlights the lived experiences of Piña weavers in a mathematical context. This paper employed a qualitative research methodology to investigate the mathematical concepts applied in Piña weaving in Aklan. The data obtained from ethnographic interviews, participant observation, field notes, audio recording, pictures, and videos underwent extensive thematic analysis. The Piña weavers in Aklan, who were selected purposively based on the criteria, were interviewed and observed for days to identify the various mathematical concepts they applied in Piña weaving, hear their stories on how they learned, developed, and used the idea of mathematics in Piña weaving, and understand their perceptions on the importance of mathematics in producing standard outputs.

**Keywords:** Piña weaving, ethnomathematics, geometry, measurement, traditional Filipino crafts, Aklan, cultural heritage

## 2.0 Introduction

Mathematics, as an exact science, plays a critical role in shaping the world, influencing everything from the natural sciences to economics, and even the cultural practices of various communities. In recent years, the study of Ethnomathematics has emerged as a distinct field that highlights how different cultures use and understand mathematical concepts. This study examines how Piña weavers in Aklan, a province renowned for its rich tradition of weaving Piña cloth, incorporate mathematical concepts into their craft, highlighting the intersection of culture, tradition, and mathematics.

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ACADEMIC FRONTIERS
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Piña weaving, an age-old tradition, is not only an artistic endeavor but also a reflection of the cultural identity of the Aklanon people. Piña cloth, made from the fibers of the Red Spanish Pineapple (Ananas comosus), has long been regarded as a luxurious fabric in the Philippines.

Historically, it has been used for formal garments, including the Barong Tagalog and Baro't Saya, which symbolize the national identity of the Philippines (Montgomery, 2017). The weaving process is intricate, requiring precision and skill, which makes Piña weaving an art form steeped in tradition. However, Piña weaving also involves the application of various mathematical principles, many of which are intuitive to the weavers but not often recognized within the formal education system.

This study is positioned within the Ethnomathematics framework, which examines the mathematical ideas and practices embedded in everyday cultural activities. Specifically, this research examines the mathematical concepts employed by Piña weavers in Aklan, with a focus on areas such as geometry, measurement, counting, and pattern formation. Despite the absence of formal mathematical education in many cases, Piña weavers apply a rich array of mathematical principles in the execution of their craft. These practices are deeply embedded in their cultural and economic lives, affecting not only the physical process of weaving but also the social and economic dynamics of the community.

The primary aim of this study is to investigate the mathematical concepts employed by Piña weavers in their craft, to understand how these concepts are learned and developed, and to explore the weavers' perceptions regarding the role of mathematics in producing standard outputs. Through an ethnographic approach, this study aims to illuminate the lived experiences of weavers, thereby providing new insights into how mathematics can be contextualized within cultural traditions. The findings of this research aim to contribute to the body of knowledge on Ethnomathematics by examining how mathematical concepts are inherently woven into artistic practices and can be incorporated into educational settings to bridge the gap between formal mathematics and cultural knowledge.

This study also aims to provide a practical contribution to the Piña weaving industry by highlighting the mathematical skills required for high-quality production. Understanding these skills is crucial in preserving the tradition of Piña weaving, particularly in the face of challenges such as the aging population of weavers and the lack of interest among the younger generation. The integration of mathematical concepts into the education system, particularly in relation to traditional crafts such as Piña weaving, could be a means of revitalizing the industry and ensuring its sustainability for future generations.

Moreover, the implications of this study extend beyond Piña weaving itself. The integration of cultural knowledge into formal education through the lens of Ethnomathematics has the potential to enhance student engagement in mathematics, making it more relevant to their lived experiences. By exploring the mathematical practices of Piña weavers, this research contributes to the broader conversation about how to make mathematics education more culturally inclusive and contextually grounded.

The remainder of this introduction provides the background to the study, discusses the theoretical and epistemological perspectives guiding the research, and outlines the research questions and assumptions that underpin the investigation.

## 2.0 Methodology

This research adopted a qualitative approach, specifically ethnography, to explore the mathematical concepts and practices embedded in the tradition of Piña weaving in Aklan. Ethnography is a research methodology that emphasizes the study of cultures and communities through immersion, observation, and interaction. Given the nature of the study, which aims to uncover the lived experiences and practices of the Piña weavers, ethnography provided a suitable framework for gathering in-depth,

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culturally rich data. The research employed various data collection techniques, including participant observation, ethnographic interviews, and field notes, allowing the researcher to engage directly with the Piña weaver community, understand their practices, and identify the mathematical principles they apply in their craft.

**2.1 Research Design**

This study utilized a descriptive-qualitative research design, which is well-suited for investigating phenomena in their natural settings. The aim was not to test a hypothesis but to understand and describe the mathematical practices used by Piña weavers. Through extensive interaction with the community, the researcher sought to capture the nuances of Piña weaving as a cultural and mathematical practice. The descriptive nature of the design enabled a detailed account of the processes, skills, and perceptions of the weavers, providing insight into how mathematics is integrated into their daily activities.

**2.2 Research Locale**

The study was conducted in the province of Aklan, specifically in the municipalities of Kalibo, Balete, and Banga, all of which are well-known for their Piña weaving industries. Aklan is situated in the Western Visayas region of the Philippines and is often referred to as the Piña Fiber Capital due to its long-standing tradition of producing Piña cloth. The choice of these municipalities was based on their prominence in the Piña weaving industry, the accessibility of the weaving communities, and the researcher's interest in understanding the diverse practices and challenges faced by the weavers in these areas.

The fieldwork took place in three Piña weaving industries, one from each of the selected municipalities. The researcher immersed herself in these environments, spending time with the weavers to observe their practices, learn about their experiences, and engage in meaningful interactions.

**2.3 Research Participants**

The participants were selected through purposive sampling, a method commonly used in qualitative research when a specific group of individuals with relevant experiences is required. In this study, the participants were Piña weavers from the three selected municipalities. The criteria for selection included the following:

1. Willingness to participate: Participants were required to agree to participate in the study and provide informed consent.
2. Experience: Participants were required to have at least 10 years of experience in Piña weaving to ensure they possessed sufficient practical knowledge and expertise.
3. Active involvement in Piña weaving: Only those who were actively involved in the Piña weaving process at the time of the study were selected.

A total of six Piña weavers were selected as participants, with two weavers from each of the participating municipalities. These participants provided valuable insights into the mathematical concepts embedded in their work, their learning processes, and their perceptions of the role of mathematics in Piña weaving.

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ACADEMIC FRONTIERS
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**2.4 Research Instruments**

The primary data collection instruments for this study were:

- Ethnographic Interviews: Semi-structured interviews were conducted with the Piña weavers to gather information about their experiences, knowledge, and perceptions regarding the mathematical aspects of Piña weaving. The interviews were designed to elicit detailed responses that would provide a deeper understanding of the participants' practices and their use of mathematics.
- Participant Observation: The researcher participated in the Piña weaving process to observe firsthand how mathematics is applied in the craft. The researcher spent several hours each day with the weavers, assisting with tasks and observing their techniques. This method allowed the researcher to gain insights into the tacit knowledge and skills used by the weavers.
- Field Notes: Throughout the study, the researcher maintained detailed field notes to record observations, reflections, and emerging themes. These notes were analyzed in conjunction with the interview data to ensure a comprehensive understanding of the mathematical concepts in Piña weaving.

**2.5 Data Gathering Procedure**

Data collection took place over a period of 21 days. The researcher spent 7 days in each of the three Piña weaving industries. The data gathering process was organized into several stages:

Initial Interviews: Upon arrival at each weaving industry, the researcher conducted initial interviews with the weavers to establish rapport and gather background information. The interviews were semi-structured, allowing for flexibility while ensuring that key topics were covered.

Participant Observation: Following the interviews, the researcher engaged in participant observation, where she observed the weavers in action. The researcher also participated in various aspects of the weaving process to gain a deeper understanding of the methods and techniques employed by the weavers.

Ongoing Data Collection: Throughout the data collection period, the researcher continued to observe the weavers and conduct informal interviews. The researcher took field notes after each session to document her observations and reflections.

Member Checking: After data transcription, the researcher returned to the participants to verify the accuracy of the collected information. This step, known as member checking, ensured that the data was accurate and reflected the participants' views.

**2.6 Ethical Considerations**

This study adhered to ethical standards in research to protect the participants' rights and ensure the integrity of the survey. The following ethical considerations were observed:

Informed Consent: Before participating in the study, each participant was provided with an informed consent form that explained the purpose of the research, the procedures involved, and the voluntary nature of their participation. Participants were assured that their involvement would not cause harm and that they could withdraw at any time without consequence.

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Confidentiality: The confidentiality of participants was maintained by using pseudonyms and ensuring that no personal information was shared outside the study. All data were stored securely and accessible only to the researcher.

Credibility and Dependability: To enhance the trustworthiness of the study, the researcher employed strategies such as data triangulation (using multiple sources of data), prolonged engagement in the field, and member checking to verify the accuracy of the data.

Respect for Participants: The researcher ensured that the participants' cultural practices were respected and that they were not exploited for the research. The researcher also acknowledged the contributions of the participants by acknowledging their insights and experiences in the study.

## 3.0 Results and Discussion

This section presents the study's findings, focusing on the mathematical concepts applied by Piña weavers in Aklan, how these concepts are learned, developed, and used in their craft, and the weavers' perceptions regarding the importance of mathematics in producing standard outputs. The results are presented through the thematic analysis of interviews, participant observation, and field notes. Each subsection explores a specific aspect of the research questions, integrating the mathematical concepts identified through the study with the cultural practices of the weavers.

The discussion that follows each result provides an analysis of how the findings align with the existing literature on Ethnomathematics, and highlights the implications of these findings for both the Piña weaving industry and the teaching of mathematics in educational settings.

### 3.1 Mathematical Concepts Applied in Piña Weaving

The Piña weavers in Aklan apply several mathematical concepts throughout the weaving process. These concepts range from basic arithmetic and measurement to complex geometry. The findings of this study revealed that Piña weaving is not just an artistic craft but also a highly mathematical activity, where mathematical principles such as counting, measurement, proportions, geometry, and fractions play a crucial role in producing high-quality Piña cloth.

**Table 1:** *Selection Criteria for Choosing the Informants*

| Criteria | Description |
|---|---|
| Willingness | Participants were selected based on their willingness to participate in the study. |
| Experience | Only weavers with at least 10 years of experience in Piña weaving were included to ensure sufficient practical knowledge. |
| Active Participation | The participants had to be actively involved in the Piña weaving process during the study. |

Table 1 outlines the criteria used to select the Piña weavers for the study. The criteria focused on ensuring that the chosen participants were highly experienced and actively engaged in the weaving process, making them suitable informants for understanding the mathematical concepts applied in Piña weaving.

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**Table 2:** *Summary of Data Sources*

| Research Question | Data Sources |
|---|---|
| What are the mathematical concepts applied by the Piña weavers in Piña weaving? | Ethnographic interviews, participant observation, field notes, audio-recording, pictures/videos |
| How do Piña weavers learn, develop, and apply formal mathematics in Piña weaving? | Ethnographic interviews, participant observation, field notes, audio-recording, pictures/videos |
| What are the perceptions of Piña weavers on the importance of mathematics in producing standard outputs? | Ethnographic interviews, participant observation, field notes, audio-recording, pictures/videos |

Table 2 shows the data sources used to answer each research question. The study utilized multiple data collection methods, including interviews, participant observation, and audio-visual recordings, to gather rich, multi-dimensional data on the mathematical practices of Piña weavers.

**Table 3:** *Procedure in Data Gathering and Analysis*

| Step | Description |
|---|---|
| Identification of the Locale | Selection of Piña weaving industries in Kalibo, Balete, and Banga, Aklan. |
| Selection of Participants | Purposive sampling based on specific criteria such as experience (at least 10 years) and willingness to participate. |
| Ethnographic Interview | Semi-structured interviews with Piña weavers to gather qualitative data on their experiences and mathematical practices. |
| Participant Observation | Immersion in the weaving process to observe how mathematical concepts are applied in practice. |
| Field Notes | Detailed notes taken during the fieldwork to document observations and reflections. |
| Data Analysis | Thematic analysis to identify patterns in the data and develop themes related to the research questions. |

Table 3 summarizes the steps followed in the data gathering and analysis process. This procedure was designed to ensure comprehensive data collection and analysis, allowing for the exploration of both the weavers' mathematical practices and their cultural experiences.

### 3.2 Learning, Developing, and Applying Formal Mathematics in Piña Weaving

Piña weavers acquire mathematical skills in various ways. Some weavers learned basic mathematical concepts such as counting, measurement, and proportion from their parents, while others developed their skills through formal education or training programs. Over time, these skills are refined through continuous practice, as the weavers apply them in the production of Piña cloth. Formal mathematics, including concepts like decimals, fractions, and geometry, is not explicitly taught to the weavers, but they naturally apply these concepts in their craft.

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**Table 4:** *Old Coins and their Sikapats*

| Old Coin | Sikapat Equivalent |
|---|---|
| 1-Peso Coin (1972) | 4.5 sikapat |
| 50-Centavo Coin (1958) | 3 sikapats |
| 25-Centavo Coin (1962) | 1.5 sikapat |
| 10-Centavo Coin (1962) | 0.5 sikapat |
| 5-Centavo Coin (1995) | 0.5 sikapat |

Table 4 presents the different old coins used by the Piña weavers to measure the weight of Piña fibers, which are sold in the market. The sikapat is a unit of measurement for weight, and its value is based on the weight of various old coins. The weavers use these coins to determine the price of the fibers based on their weight.

**Table 5:** *Perceptions of Piña Weavers on the Importance of Mathematics in Producing Standard Outputs*

| Perception | Description |
|---|---|
| Mathematics as Essential | Weavers believe that mathematics is essential for ensuring the accuracy and quality of the woven cloth. |
| Impact of Errors | Small errors in measurement or counting can lead to defective products, which may be rejected in the market. |
| Need for Precision | The weavers emphasize the importance of precision in counting, measurement, and design to produce high-quality Piña cloth. |

Table 5 summarizes the perceptions of the Piña weavers regarding the role of mathematics in their work. The weavers recognize that mathematics is critical in maintaining the quality of their products, and they are acutely aware that any mistakes in the mathematical aspects of the weaving process can result in substandard outputs.

### 3.3 Discussion of Results

The results of this study highlight the critical role of mathematics in Piña weaving, a craft often perceived as purely artistic but, in fact, deeply rooted in mathematics. The weavers' ability to apply concepts such as counting, measurement, fractions, and geometry reflects an intuitive understanding of these areas, even though they may not have formal training in these subjects. This aligns with the Ethnomathematics framework, which asserts that mathematical practices are shaped by cultural context and do not always align with formal educational standards (D'Ambrosio, 2001).

For instance, the sikapat, a traditional unit of weight measurement, is used by weavers to quantify the fibers they purchase and sell. This system reflects the cultural adaptation of mathematics, a key component of Ethnomathematics, demonstrating how indigenous communities develop mathematical tools that suit their specific needs (Gerdes, 2001).

The perceptions of the Piña weavers about the importance of mathematics further reinforce the role of mathematics in quality control. As highlighted in Table 5, weavers recognize that accurate measurement and counting are crucial for producing Piña cloth that meets market standards. This aligns with the constructionist epistemology of this study, which posits that knowledge is constructed through social interaction and practical engagement with the world (Crotty, 1998).

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Moreover, the study's findings suggest that integrating Ethnomathematics into the curriculum could help students better appreciate the relevance of mathematics in their daily lives and cultural practices. By incorporating culturally significant activities, such as Piña weaving, into the educational framework, mathematics can be taught in a more engaging and contextually relevant way, thus bridging the gap between formal mathematical knowledge and real-world applications.

## 4.0 Conclusion and Recommendations

This section presents the key findings of the study, synthesizing how Piña weavers in Aklan apply mathematical concepts in their craft, and highlighting the implications for education, cultural preservation, and industry practices. It also provides actionable recommendations for educators, policymakers, practitioners, and future researchers to enhance the understanding and application of ethnomathematics in both cultural and academic contexts.

### 4.1 Conclusion

This study explored the mathematical concepts embedded in Piña weaving in Aklan, employing an ethnographic approach to uncover the lived experiences of Piña weavers. The findings revealed that Piña weaving is inherently a mathematical practice, wherein concepts such as counting, measurement, proportions, fractions, decimals, geometry, and direct variations are applied in the creation of standard outputs. These mathematical practices are not formally taught; instead, they are learned and developed through intergenerational knowledge transfer, formal education, practical experience, and continuous engagement in the weaving process.

Piña weavers demonstrate a sophisticated application of mathematics in both technical and artistic aspects of weaving. The study highlighted that precise counting of fibers, measurement of cloth dimensions, computation of payment, and adherence to standard lengths and widths are crucial for maintaining the quality and market value of woven products. Additionally, concepts of geometry, including parallel and perpendicular lines, intersecting lines, angles, and two-dimensional figures, are evident in the design and arrangement of patterns, reflecting a complex and culturally grounded mathematical reasoning.

The research also revealed that the perceptions of Piña weavers underscore the critical importance of mathematics in everyday life and in professional practice. Mathematics facilitates the production of high-quality outputs, ensures accuracy in labor compensation, and helps mitigate errors that could compromise product quality. Furthermore, the weavers recognized the value of passing on these skills to the next generation to preserve the tradition and ensure the sustainability of Piña weaving.

From an academic perspective, this study validates the principles of ethnomathematics, illustrating how cultural practices serve as vehicles for applied mathematics and how mathematics can be contextualized within cultural and vocational activities. The findings underscore the potential of integrating cultural knowledge into formal educational curricula, particularly in subjects such as mathematics, STEM, and technical-vocational education, to enhance contextualized learning, student engagement, and cultural appreciation.

### 4.2 Recommendations

Based on the findings and implications of this study, the following recommendations are proposed for various stakeholders:

For Teachers and Educators

- Integrate Piña weaving and similar cultural practices into mathematics and STEM curricula to provide contextualized learning experiences that enhance understanding.

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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
***A Multidisciplinary e-Publication***
Volume I, Issue VI (October 2025), International Circulation
**ISSN (Online) 3082-4400 ISSN (Print) 3082-5733**
Published Online at *www. lakbaydiwapublishing.com*
**Publisher: Lakbay-Diwa Publishing**
DTI Business Reg. No. 6488937 / TIN 492-741-614
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- Emphasize hands-on activities that allow students to explore mathematical concepts such as measurement, geometry, and ratios through real-life applications.
- Foster cultural sensitivity in teaching by highlighting the historical and socio-economic significance of traditional crafts.

For Curriculum Developers

- Develop ethnomathematical-enriched learning materials that incorporate the mathematical practices of Piña weaving, making mathematics more accessible and relevant to students.
- Include Piña weaving as a module or case study within Senior High School STEM and TVL tracks, bridging vocational skills and mathematical learning.
- Ensure curriculum alignment with local culture and traditions, preserving indigenous knowledge while meeting academic standards.

For Policymakers and Government Agencies

- Support the sustainability of Piña weaving by providing funding, training centers, and technical assistance to Piña weaving communities.
- Promote national certification programs to formalize the skills of Piña weavers and ensure standardized production quality.
- Implement initiatives to engage younger generations, preventing the loss of traditional skills and knowledge.

For Piña Weavers and Industry Practitioners

- Continue practicing Piña weaving with a focus on mathematical precision and standardization to ensure the production of high-quality textiles.
- Document traditional practices and mathematical techniques for archival purposes and future training programs.
- Share knowledge with apprentices and the next generation to maintain the tradition and strengthen the local weaving industry.

For Future Researchers

- Conduct studies that explore the integration of ethnomathematics in other indigenous crafts and cultural practices.
- Investigate innovative methods for combining traditional weaving techniques with modern technology, thereby enhancing productivity while preserving cultural integrity.
- Investigate the effects of ethnomathematics-based teaching on student learning outcomes and their appreciation of cultural heritage.

In sum, this study demonstrates that Piña weaving in Aklan is both a cultural and mathematical practice, highlighting the rich interplay between tradition, skill, and applied mathematics. Recognizing and integrating these practices into education and policy can contribute to the preservation of indigenous knowledge, enhance mathematical learning, and sustain a culturally significant industry. Piña weaving is not only a source of livelihood but also a testament to the ingenuity and resilience of Filipino craftsmanship, where mathematics is intrinsically woven into every thread.

## 5.0 Contributions of the Author

The research presented in this study was a collaborative effort between the lead author, Dr. Angelica B. Lachica, and the co-author and adviser, Dr. Roberto G. Sagge Jr. Dr. Lachica conceptualized the study, developed the research framework, and conducted the fieldwork, which included ethnographic interviews, participant observation, and extensive data collection. She also performed

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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
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data transcription, coding, and thematic analysis, and drafted the manuscript, including the Introduction, Methodology, Results, Discussion, Conclusion, and Recommendations. Throughout the research process, she ensured adherence to rigorous ethnographic and qualitative research standards, as well as ethical guidelines, while coordinating with participants and other stakeholders.

Dr. Sagge provided academic guidance and supervision throughout the study, reviewing and refining the research design and methodology to ensure the validity and reliability of the findings. He provided expert feedback on data analysis, result interpretation, and integration with ethnomathematical theory, while reviewing and editing the manuscript for clarity, coherence, and alignment with scholarly standards. Both authors contributed collaboratively to the conceptual development of the study.

## 6.0 Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## 7.0 Conflict of Interests

The authors declare no conflict of interest in the conduct and reporting of this research.

## 8.0 Acknowledgment

The authors would like to express their deepest gratitude to the Piña weavers of Aklan, whose generosity in sharing their knowledge, experiences, and skills made this study possible. Their patience, openness, and dedication to their craft provided invaluable insights into the mathematical concepts embedded in Piña weaving.

The lead author also extends sincere appreciation to Dr. Roberto G. Sagge Jr., whose guidance, mentorship, and critical feedback were instrumental in shaping the research design, methodology, and interpretation of findings. Special thanks are also due to the administrators and staff of the Piña weaving industries in Kalibo, Balete, and Banga for facilitating access and supporting the data-gathering process.

Finally, the authors acknowledge the encouragement and support of their colleagues, friends, and family, whose understanding and assistance allowed for the successful completion of this study. The collaborative efforts and contributions of all these individuals greatly enriched the quality and depth of the research.

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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
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# Unraveling the Complexity of the Administrative Experiences of Academic Middle Managers

**Analyn Loy-Ang Lumaban**[1]*

[1]Benguet State University, La Trinidad, Benguet, Philippines

[1]Corresponding Email: hasinlumaban@gmail.com

**Date received**: October 9, 2025
**Date revised**: October 10, 2025
**Date accepted**: October 11, 2025

**Originality**: 91%
**Grammarly Score**: 100%
**Similarity**: 8%

**Recommended citation:**

Lumaban, A. L. (2025). Unraveling the complexity of the administrative experiences of academic middle managers. *ACADEMIC FRONTIERS Multidisciplinary e-Publication, 1*(6), 23-35. https://doi.org/10.5281/zenodo.17323617

**Abstract.**
This qualitative ethnomethodological study explores the lived experiences of academic middle managers in higher education institutions. Six participants were purposefully selected, with roles ranging from two to five years of experience, offering diverse insights into their leadership challenges. Framed by role theory and organizational culture, the research investigates how these managers balance academic leadership with administrative duties amidst institutional dynamics. The study employs unstructured interviews and thematic analysis, revealing key themes such as strategic leadership, ethical decision-making, policy development, and the critical need for professional development programs. Findings underscore the importance of leadership in fostering institutional growth, improving student outcomes, and enhancing faculty well-being. Addressing role-related stress and providing leadership development opportunities are vital for sustaining resilience and long-term institutional success. The study offers practical recommendations for creating supportive frameworks for academic middle managers, emphasizing tailored professional development initiatives that enhance their leadership capacities and align with institutional goals. These insights are crucial for fostering effective management in educational environments, contributing to both managerial and institutional development.

**Keywords:** Academic Leadership, Academic Middle Manager, Job Satisfaction, Leadership Development, Middle Management, Organizational Culture

## 3.0 Introduction

Higher education institutions have long been viewed as essential pillars for intellectual development and social progress. A critical aspect of their functioning lies in the role of academic middle managers, who occupy a pivotal position between senior leadership and faculty members. These middle managers, such as college deans, department heads, and principals, are responsible for translating the institution's strategic goals into actionable plans. They must balance the demands of academic leadership with administrative duties, all while managing interpersonal relationships with staff and students. The complexity of their roles has become even more pronounced as higher education

VOLUME I ISSUE VI
ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
***A Multidisciplinary e-Publication***
Volume I, Issue VI (October 2025), International Circulation
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evolves, particularly amid changing educational standards, resource limitations, and heightened expectations for institutional performance.

Academic middle managers are often caught between the strategic goals set by upper management and the practical realities faced by faculty and students. Their dual role of leading academic development while managing administrative processes often leads to role conflict, stress, and burnout. Despite their crucial position, little research has explored the lived experiences of these managers, particularly in the context of Filipino higher education institutions. This study aims to fill this gap by investigating the administrative experiences of academic middle managers in a private higher education institution in La Trinidad, Benguet. By exploring their roles, challenges, and coping mechanisms, this research provides valuable insights into the complexities of middle management in academic settings.

The conceptual framework for this study is based on the premise that academic middle managers perform multiple, interrelated functions within their institutions. These include leadership, resource management, faculty development, and communication with stakeholders. The framework visualizes these functions as concentric layers, with core responsibilities like leadership and policy execution at the center, surrounded by strategies, challenges, and external factors that influence decision-making. These middle managers' roles are shaped not only by institutional objectives but also by external factors such as budget constraints, faculty dynamics, and student needs. This framework helps explore how these managers navigate their multifaceted roles while balancing strategic goals and operational realities.

This study is primarily guided by two theoretical perspectives: Role Theory and Organizational Culture Theory.

Role Theory, as developed by sociologists such as Talcott Parsons and Robert Merton, posits that individuals occupy various social roles within organizations, each with its own set of expectations, behaviors, and responsibilities. In the context of academic middle managers, role theory helps explain the pressures and conflicts that arise when managers are expected to fulfill multiple roles simultaneously: academic leader, administrator, mediator, and mentor. These competing expectations can create role strain and affect managerial effectiveness.

Organizational Culture Theory, notably advanced by Edgar Schein, emphasizes the shared values, beliefs, and norms within an institution that guide behavior and decision-making. In educational settings, the organizational culture shapes the management practices of academic middle managers. By understanding how organizational culture influences these managers, we can better comprehend how they navigate institutional challenges and adapt their leadership style to fit the culture of their respective institutions.

The primary objective of this study is to investigate the administrative experiences of academic middle managers within higher education institutions. Specifically, it seeks to answer the following questions:

1. What are the core functions and responsibilities of academic middle managers as prescribed in institutional policies?

2. What strategies do academic middle managers employ to perform their functions effectively?

3. What challenges, boosts, and setbacks do academic middle managers experience in their roles?

4. How do institutional culture and external factors influence their decision-making and leadership practices?

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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

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By addressing these questions, this research will contribute to a deeper understanding of the dynamics faced by academic middle managers, ultimately offering recommendations to support their professional growth and enhance institutional effectiveness.

## 2.0 Methodology

This study employed a qualitative research design, utilizing an ethnomethodological approach to explore the lived experiences of academic middle managers in higher education institutions. The ethnomethodological approach was chosen to gain a deep understanding of the daily realities, practices, and challenges these managers face within the complex structures of academic organizations. Through unstructured interviews and thematic analysis, this study investigates the core functions, strategies, and experiences that shape the roles of academic middle managers. The following subtopics outline the detailed research design, participants, instruments, data collection procedures, and data treatment.

### 2.1 Research Design

This study adopted a qualitative research design to explore the complexities of the administrative experiences of academic middle managers in higher education. Qualitative research is particularly effective for understanding the nuanced, context-specific aspects of human behavior, especially when the aim is to capture individuals' lived experiences and perceptions.

The study used an ethnomethodological approach, which focuses on understanding the everyday practices and interactions that people use to make sense of their social worlds. Ethnomethodology, as developed by Harold Garfinkel (1967), investigates the methods individuals employ in daily interactions to construct social realities. In this research, this approach enabled an in-depth exploration of the personal and professional experiences of academic middle managers, particularly how they navigate their roles and responsibilities across the academic and administrative spheres. By utilizing this approach, the study seeks to uncover the implicit knowledge and strategies these managers employ to perform their functions amidst institutional pressures and dynamics.

The research was framed by role theory and organizational culture theory, which provided a theoretical lens for understanding the complex roles of academic middle managers and their operation within institutional cultures.

### 2.2 Population and Locale of the Study

The study focused on academic middle managers from a private higher education institution in La Trinidad, Benguet, Philippines. This locale was selected for its distinct educational context and the institution's reputation for academic excellence and continuous improvement. The study specifically targeted academic middle managers, including college deans, department heads, and the principal of the basic education division.

The study population consisted of six academic middle managers, selected through purposive sampling. This non-probability sampling technique was chosen to ensure that participants had relevant experience and insights into the topic under investigation. The inclusion criteria for participants were based on their current roles as academic middle managers and on their experience ranging from 2 to 5 years in these positions. This range allowed for capturing diverse perspectives on the complexities of the role, from those who were relatively new to those with more seasoned experience.

VOLUME I ISSUE VI
ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
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The choice of this private higher education institution was driven by its comprehensive structure and reliance on academic middle managers to bridge the gap between senior leadership and faculty members, making it an ideal setting for the study. The institution's ongoing educational and administrative reforms provided a rich context for examining how middle managers adapt to organizational changes and how these changes influence institutional success.

**2.3 Data Collection Instruments**

For this study, unstructured interviews were used as the primary data collection instrument. Unstructured interviews are a key method in qualitative research because they allow for in-depth exploration of participants' experiences, feelings, and perspectives in their own words. This approach provides flexibility, allowing the interviewer to probe deeper into responses and follow up on interesting or unexpected insights that emerge during the interview process.

The interview guide used in this study was semi-flexible, meaning it included open-ended questions designed to prompt rich discussion while leaving participants free to share their experiences in a free-flowing manner. The interview questions were organized into four main sections:

1. Functions of Academic Middle Managers: This section aims to understand the key roles and responsibilities academic middle managers perform in their institutions.
2. Strategies Employed by Academic Middle Managers: This section explored the approaches and techniques middle managers use to navigate their roles and meet institutional goals.
3. Factors Considered by Academic Middle Managers in Decision-Making: This part sought to capture the various internal and external factors that influence how middle managers make decisions.
4. Boosts and Setbacks Experienced by Academic Middle Managers: This section focused on understanding the challenges and advantages that influence their work, including institutional support, leadership development, and resource constraints.

The interview guide was validated through a trial run with academic middle managers who did not meet the study's participation criteria. This helped refine question wording, adjust interview lengths, and ensure clarity and effectiveness in eliciting the required information. Feedback from the trial run revealed the need to simplify some questions to avoid ambiguity and ensure that the responses were directly related to the study's aims.

**2.4 Data Collection Procedure**

The data collection procedure for this study followed a series of methodical steps to ensure transparency, rigor, and ethical standards throughout the research process. Below is a detailed outline of each stage involved in the data collection process:

Institutional Approval and Consent: Before data collection, approval was obtained from the institution's President and the Research and Development Quality Assurance Office. This ensured the study complied with institutional policies and ethical guidelines. Informed consent was obtained from all participants, ensuring they understood the study's purpose, their voluntary participation, and the confidentiality of their responses. Participants were assured they could withdraw from the study at any time without negative consequences.

Participant Selection: Purposeful sampling was employed to select participants who had the necessary experience and were in positions that aligned with the research questions. Participants were selected based on their current roles as academic middle managers and their experience ranging from

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ACADEMIC FRONTIERS
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two to five years. A total of six academic middle managers participated in the study, including college deans, department heads, and the principal of the basic education division.

Conducting the Interviews: Interviews were scheduled at the participants' convenience to ensure they could participate without disrupting their work commitments. Most interviews were conducted face-to-face, though video conferencing was used when necessary due to geographical constraints. The interviews lasted between 45 minutes and an hour and were audio-recorded with participants' permission to ensure accurate data capture.

Data Recording and Transcription: Audio recordings of the interviews were transcribed verbatim to capture participants' complete and nuanced responses. The transcription was performed by the researcher to ensure familiarity with the content and to maintain confidentiality. Participants were allowed to review the transcriptions, a process known as member checking, to ensure that their responses were accurately captured and to provide them an opportunity for feedback or clarification.

Ethical Considerations: Throughout the data collection process, ethical guidelines were followed to ensure the confidentiality and anonymity of all participants. No identifying information was included in the transcripts, and all data was stored securely. Acknowledging the researcher's positionality, it was important to note that the researcher lacks direct experience as an academic middle manager. However, the researcher remained reflexive throughout the process, continuously questioning assumptions and ensuring participants' voices remained central to the study.

### 2.6 Treatment of Data

The data collected through unstructured interviews were analyzed using thematic analysis, a widely used qualitative research method for identifying and interpreting patterns and themes within the data. Thematic analysis provides a rich, detailed, and nuanced understanding of participants' experiences, making it well-suited to exploring the complexities of academic middle management roles. The data analysis followed the six-phase model proposed by Braun and Clarke (2006), which provides a systematic and flexible framework for qualitative data analysis. The phases involved were:

Familiarization with the Data: The first phase involved reading and re-reading the interview transcriptions to become deeply familiar with the content. This initial immersion helped the researcher to gain an understanding of the participants' responses and begin identifying potential patterns or themes.

Generating Initial Codes: In this phase, the researcher highlighted significant sections of the text and assigned initial codes to the data. Codes are brief labels that describe the essence of the information or experiences captured in the transcripts. These codes were applied across the entire dataset to capture recurring elements related to the research questions.

Searching for Themes: After generating initial codes, the researcher grouped them into broader patterns or themes. This phase involved examining relationships among different codes and identifying recurring ideas or concepts across the data.

Reviewing Themes: The identified themes were then reviewed to ensure they were coherent and relevant to the research questions. This phase involved re-examining the data to ensure that the themes accurately reflected the participants' experiences and were supported by sufficient interview data.

Defining and Naming Themes: Each theme was clearly defined, and the researcher provided an in-depth description of each, explaining its significance and how it relates to the study's objectives. This phase also involved naming the themes in a way that encapsulated their essence.

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ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

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Writing Up the Analysis: The final phase involved synthesizing the findings into a coherent narrative. The researcher wrote up the analysis, presenting each theme with supporting quotes from the participants. The study was contextualized within the broader literature, offering insights into the administrative experiences of academic middle managers and providing recommendations based on the findings.

To ensure the rigor and trustworthiness of the analysis, the following strategies were employed:

Member Checking: As previously mentioned, participants were allowed to review their transcribed interviews. This helped ensure data accuracy and gave participants the chance to correct any misunderstandings or provide further clarification.

Triangulation: Although only one data collection method (unstructured interviews) was used, triangulation was incorporated by drawing on diverse perspectives from participants with varying experiences (i.e., college deans, department heads, and principals).

Reflexivity: The researcher continuously reflected on their role in the research process and how their background, assumptions, and perspective might influence the data collection and analysis. This ongoing self-awareness helped to minimize bias and maintain objectivity throughout the study.

## 3.0 Results and Discussion

This section presents the key functions of academic middle managers, based on data gathered from the study, specifically the employee manual. The functions have been categorized into three primary themes: Leadership and Management, Academic Excellence and Development, and Stakeholder Engagement and Communication. Each of these themes encapsulates the roles that academic middle managers play in ensuring the smooth functioning of educational institutions.

### 3.1 Functions of Academic Middle Managers

Academic middle managers are key players in the educational ecosystem, bridging the gap between institutional leadership and faculty members. They carry out essential functions that not only support the academic framework but also ensure operational efficiency within their institutions. These functions span leadership, academic excellence, and stakeholder engagement, all of which are critical in fostering an environment conducive to learning and growth. Table 1 presents the core functions of academic middle managers, as outlined in the institution's employee manual, and categorizes them into three main themes: Leadership and Management, Academic Excellence and Development, and Stakeholder Engagement and Communication.

**Table 1:** *Functions of Academic Middle Managers Based on the Employee's Manual*

| Themes | Functions |
|---|---|
| Leadership and Management | - Active involvement in leadership, decision-making, and policy implementation<br>- Maintaining professional relationships and fostering collaboration<br>- Overseeing financial management and ensuring policy adherence |

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ACADEMIC FRONTIERS
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**Table 1:** *Functions of Academic Middle Managers Based on the Employee's Manual (Continued)*

| Themes | Functions |
|---|---|
| Academic Excellence & Development | - Supporting faculty development, curriculum development, and performance evaluations |
| | - Promoting academic excellence and fostering growth within the department |
| Stakeholder Engagement | - Maintaining open communication with stakeholders (faculty, students, external partners) |
| | - Managing student support services and ensuring alignment with institutional goals |

The functions of academic middle managers, as presented in Table 1, reveal the complexity and diversity of their roles. These middle managers are responsible not only for overseeing the educational standards of their institutions but also for managing day-to-day administrative functions.

Leadership and Management: This theme emphasizes the strategic role of middle managers in shaping institutional policy, managing finances, and ensuring the effective execution of academic programs. Their leadership extends beyond faculty supervision to include financial oversight and the development of institutional policies that guide the educational environment.

Academic Excellence and Development: Middle managers play a vital role in maintaining academic quality. They are directly involved in curriculum development, faculty development, and performance evaluations, all of which are crucial to maintaining high educational standards and promoting continuous professional growth among faculty members.

Stakeholder Engagement and Communication: The importance of communication and collaboration with various stakeholders is also highlighted. By fostering strong relationships with faculty, students, and the broader community, academic middle managers contribute to the institution's culture of transparency and collaboration, ensuring alignment with educational goals and stakeholder expectations.

The functions outlined in Table 1 illustrate the multifaceted role of academic middle managers, who are essential to the smooth operation and academic success of educational institutions. Their leadership and management capabilities ensure that strategic goals are effectively translated into actionable tasks. At the same time, their focus on academic excellence and stakeholder engagement fosters a collaborative, high-performance academic environment. These roles are integral not only to the institution's operational success but also to its academic integrity and long-term growth.

### 3.2 Strategies Employed by Academic Middle Managers

Effective academic middle managers must navigate a range of challenges in order to fulfill their responsibilities. Their success relies not only on their ability to manage tasks but also on their ability to employ strategic approaches that enhance their effectiveness and ensure the smooth functioning of the institution. Table 2 outlines the key strategies employed by academic middle managers, categorizing them into several themes: Leadership Strategies, Professional Development Initiatives, and Communication and Collaboration.

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**Table 2:** *Strategies Employed by Academic Middle Managers*

| Themes | Strategies |
|---|---|
| Effective Institutional Leadership & Policy Execution | - Active involvement in leadership roles and policy implementation |
| | - Democratic decision-making to foster collaboration and buy-in |
| | - Regular follow-up meetings and policy dissemination |
| Fostering Faculty Growth and Well-being | - Providing faculty development opportunities, mentoring, and support services |
| | - Managing workload equitably and supporting faculty through training |
| Enhancing Communication | - Creating open communication channels for faculty, students, and administration |
| | - Leveraging regular meetings for updates, feedback, and community building |

The strategies outlined in Table 2 reveal academic middle managers' proactive approach to navigating their roles. By employing leadership strategies, engaging in professional development initiatives, and fostering open communication, these managers enhance both their own effectiveness and that of their faculty and staff.

Leadership Strategies: The democratic decision-making strategy emphasizes collaboration and shared responsibility. By involving faculty and staff in decision-making, middle managers foster a sense of ownership and accountability. Conflict resolution is also a key strategy, helping to maintain harmony and a positive working environment, which is crucial for productivity and morale.

Professional Development Initiatives: Faculty development programs are essential to academic growth, ensuring that faculty members remain up to date with current trends in pedagogy and research. Leadership training, for both middle managers and faculty, helps build a stronger, more cohesive leadership team that ultimately benefits the institution as a whole.

Communication and Collaboration: Effective communication is the backbone of a well-functioning academic institution. Regular meetings facilitate clear communication of goals, expectations, and challenges, while stakeholder engagement ensures the institution remains aligned with the needs of its community and educational authorities. Through these strategies, academic middle managers can enhance cooperation and foster an environment of mutual respect and collaboration.

The strategies employed by academic middle managers, as detailed in Table 2, demonstrate the thoughtful and deliberate approaches these professionals take to ensure the success of their institutions. Their leadership strategies, focus on professional development, and commitment to effective communication are vital in navigating the complexities of their roles. These strategies not only support the institution's academic success but also foster an environment of collaboration, growth, and continuous improvement.

VOLUME I ISSUE VI
ACADEMIC FRONTIERS
A Multidisciplinary E-Publication

**Academic Frontiers**
***A Multidisciplinary e-Publication***
Volume I, Issue VI (October 2025), International Circulation
**ISSN (Online) 3082-4400 ISSN (Print) 3082-5733**
Published Online at *www. lakbaydiwapublishing.com*
**Publisher: Lakbay-Diwa Publishing**
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+639543906965

### 3.3 Factors Considered by Academic Middle Managers in Performing Their Functions

The effectiveness of academic middle managers is influenced by several factors that shape their decision-making and day-to-day operations. These factors include institutional priorities, ethical considerations, and the needs of various stakeholders. Table 3 summarizes the key factors that academic middle managers consider when performing their functions. These factors are categorized under the themes: Institutional Priorities, Ethical Considerations, and Stakeholder Needs.

**Table 3:** *Factors Considered by Academic Middle Managers in Performing Their Functions*

| Themes | Factors |
|---|---|
| Fairness and Integrity | - Ensuring equal treatment for faculty regardless of seniority |
| | - Upholding honesty and fairness in workload assignments and faculty treatment |
| Ethical Decision-Making & Compliance | - Adhering to ethical standards and compliance with institutional policies |
| | - Ensuring transparency and accountability in decision-making |
| Stakeholder Management | - Balancing the needs and expectations of students, faculty, and administration |
| | - Prioritizing student welfare while managing faculty and institutional interests |
| Institutional Priorities & Constraints | - Aligning decisions with institutional goals, considering resource constraints and organizational priorities |

Table 3 highlights the diverse set of factors that academic middle managers must consider when performing their roles. These factors influence both short-term decision-making and long-term institutional planning.

Institutional Priorities: Managers must constantly align their decisions with the institution's mission and strategic goals, while navigating budgetary constraints. Resource allocation is a particularly critical factor, as it determines which academic programs or administrative initiatives can be prioritized.

Ethical Considerations: Middle managers are expected to make decisions that uphold fairness, equity, and transparency. Their role in ensuring that policies and decisions are ethical helps to maintain trust and credibility within the institution.

Stakeholder Needs: Balancing the needs and expectations of multiple stakeholders, including faculty, students, and external partners, is essential for effective leadership. Academic middle managers must ensure that the academic environment is responsive to the needs of both faculty members and students while maintaining alignment with institutional goals.

The factors outlined in Table 3 provide a comprehensive understanding of the decision-making processes employed by academic middle managers. By balancing institutional priorities, ethical considerations, and stakeholder needs, these managers navigate complex challenges and ensure that their decisions align with both academic excellence and institutional success.

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### 3.4 Boosts and Setbacks Experienced by Academic Middle Managers

Academic middle managers often encounter both boosts and setbacks that impact their effectiveness and satisfaction with their roles. These experiences shape their overall performance and the way they approach their responsibilities. Table 4 presents the key boosts and setbacks that academic middle managers face in their daily work. These are categorized under the themes: Boosts and Setbacks.

**Table 4:** *Boosts and Setbacks Experienced by Academic Middle Managers*

| Themes | Boosts |
|---|---|
| Boosts | Factors that enhance job satisfaction and improve managerial effectiveness |
| | 1. Professional Development |
| | • Access to leadership training, academic workshops, and peer mentorship |
| | 2. Autonomy in Decision-Making |
| | • Empowerment to make important decisions without constant oversight |
| Setbacks | Challenges that hinder performance and impact job satisfaction negatively |
| | 1. Role-Related Stress |
| | • Pressure from balancing administrative responsibilities with academic leadership roles |
| | 2. Financial Constraints |
| | • Limited budget and resources hindering the ability to fully implement desired initiatives or support faculty development |

Table 4 illustrates the challenges and opportunities that academic middle managers encounter in their roles. These factors directly impact their ability to perform effectively and maintain job satisfaction.

Boosts: Professional development opportunities allow academic middle managers to expand their leadership skills and stay current with educational trends. Autonomy in decision-making is another significant factor that contributes to job satisfaction, as it enables managers to address departmental needs promptly and effectively.

Setbacks: On the other hand, role-related stress arising from the pressure to juggle multiple responsibilities is a common challenge for middle managers. Additionally, financial constraints often prevent them from fully implementing academic programs or professional development initiatives, limiting their ability to achieve institutional goals.

The boosts and setbacks highlighted in Table 4 underscore the dynamic nature of the academic middle manager's role. While certain factors, such as professional development opportunities and decision-making autonomy, enhance their performance, challenges like role-related stress and financial limitations pose obstacles that must be carefully navigated.

## 4.0 Conclusion and Recommendations

This section synthesizes the study's findings and presents key conclusions from the analysis of the roles, strategies, factors, and experiences of academic middle managers. Based on these findings, actionable recommendations are provided to enhance their effectiveness, job satisfaction, and overall contribution to institutional success. These recommendations aim to address the challenges faced by academic middle managers while supporting their continued growth and impact within their institutions.

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### 4.1 Conclusion

The role of academic middle managers is critical to the success and effectiveness of educational institutions. This study explored the functions, strategies, factors, and experiences of academic middle managers, providing valuable insights into their multifaceted roles. The findings underscore the complexity of their responsibilities, which span leadership, educational excellence, and stakeholder engagement.

- Functions of Academic Middle Managers: Academic middle managers are tasked with ensuring the smooth operation of both administrative and academic functions. They play a key role in overseeing faculty and staff, managing budgets, developing policies, and providing academic excellence through curriculum and faculty development programs. Their leadership directly affects the quality of education and the institution's overall success.
- Strategies Employed: Effective leadership strategies, such as democratic decision-making and conflict resolution, allow academic middle managers to foster collaboration and ensure that all stakeholders are engaged in the decision-making process. Additionally, professional development initiatives are critical to their success, both for their personal growth and for the growth of their faculty.
- Factors Influencing Decision-Making: Academic middle managers must navigate various internal and external factors when making decisions. Institutional priorities, ethical considerations, and stakeholder needs are central to their decision-making processes. These factors require middle managers to balance academic goals with resource constraints, ensuring fairness and transparency in their actions.
- Boosts and Setbacks: While middle managers enjoy specific boosts, such as professional development opportunities and autonomy in decision-making, they also face setbacks, including role-related stress and financial constraints. These challenges can impact their job satisfaction and effectiveness, highlighting the need for ongoing support and resources.

In conclusion, academic middle managers are instrumental in shaping the academic and administrative environment of their institutions. Their ability to balance competing priorities, manage resources, and lead through challenges is essential to the institution's long-term success.

### 4.2 Recommendations

Based on the findings of this study, the following recommendations are made to enhance the effectiveness and well-being of academic middle managers:

1. Provide Adequate Professional Development Opportunities:
    - Institutions should invest in continuous leadership training and professional development programs for academic middle managers. This would not only improve their skills but also empower them to take on more responsibilities and drive institutional growth.
2. Enhance Support Systems for Middle Managers:
    - To mitigate role-related stress and burnout, institutions should provide stronger support systems for middle managers, including mentorship programs, peer networks, and regular opportunities for feedback and reflection.
3. Allocate Resources for Faculty Development:
    - Given that faculty development is a critical aspect of academic excellence, institutions must allocate sufficient resources for training, workshops, and other professional development activities for faculty members. This will enable academic middle managers to better support faculty in enhancing their teaching and research capabilities.

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4. Increase Autonomy and Decision-Making Power:
    - Academic middle managers should be given greater autonomy in decision-making, particularly regarding curriculum development and faculty management. This autonomy will not only improve their job satisfaction but also allow them to be more responsive to the needs of their departments and students.
5. Ensure Financial and Resource Support:
    - Financial constraints were identified as a significant barrier to the full implementation of academic programs and faculty development initiatives. Institutions should explore additional funding sources or reallocate budgets to support middle managers and ensure the success of academic and administrative functions.
6. Foster a Collaborative and Inclusive Work Environment:
    - Academic middle managers should be encouraged to foster collaboration and inclusion within their teams. Creating an environment where faculty, staff, and students feel heard and valued will lead to improved communication and greater institutional success.
7. Promote Work-Life Balance:
    - Institutions should recognize the pressures academic middle managers face and promote a healthy work-life balance by offering flexible work arrangements and wellness programs. This will help reduce stress and increase job satisfaction.

Academic middle managers are essential to the functioning of educational institutions. By providing them with the necessary resources, support, and development opportunities, institutions can enhance the effectiveness of their leadership, improve faculty and student outcomes, and ensure long-term institutional success. These recommendations are intended to help academic middle managers thrive in their roles, thereby fostering a more productive, inclusive, and innovative educational environment.

## 5.0 Contribution of the Author

The author's contribution to this study lies in offering a comprehensive analysis of the role and experiences of academic middle managers in higher education institutions. By exploring their functions, strategies, and challenges, the research provides valuable insights into the complexities of middle management in academic settings. This study contributes to a deeper understanding of how these managers navigate their dual roles of educational leadership and administrative responsibilities.

The author's unique approach examines factors such as institutional priorities, ethical decision-making, and stakeholder needs, which are often overlooked in the existing literature. Through qualitative research methods, including unstructured interviews, the author effectively captures the lived experiences of academic middle managers, presenting a nuanced perspective that adds to the body of knowledge on educational leadership.

Furthermore, the author's recommendations offer actionable solutions that can guide educational institutions in supporting academic middle managers, enhancing their effectiveness, and fostering a more collaborative and productive academic environment.

## 6.0 Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## 7.0 Conflict of Interests

The author declares no conflict of interest in the conduct and reporting of this research.

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## 8.0 Acknowledgment

The author would like to express sincere gratitude to all those who contributed to the completion of this study. First and foremost, heartfelt thanks are extended to the academic middle managers who participated in this research, sharing their valuable time, experiences, and insights. Without their cooperation, this study would not have been possible.

The author also wishes to acknowledge the support and guidance provided by academic advisors and colleagues throughout the research process. Their constructive feedback and encouragement played an essential role in shaping the direction and quality of this study.

Special thanks are given to the administrative staff and leadership of the participating institution for granting access to the necessary resources and supporting the research in various ways. Additionally, the author expresses deep appreciation for family and friends for their unwavering support, patience, and motivation throughout this research project.

Lastly, gratitude is extended to the institution's research and development office for providing the necessary infrastructure and resources to carry out this study.

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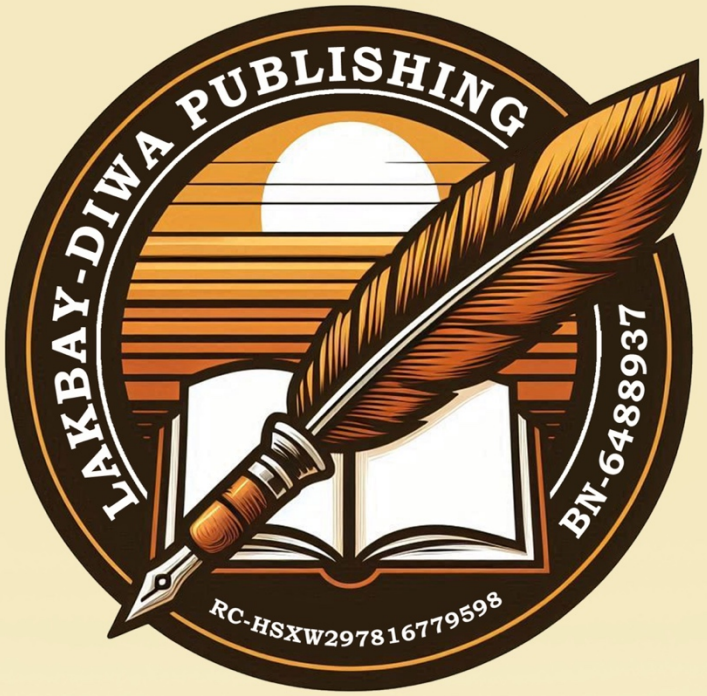


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