

The Internal and External Environment of Maritime Competitiveness in Nueva Ecija (SWOT Analysis)

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-The Researchers

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ABSTRACT

The maritime industry is a significant sector that plays a crucial role in the economic development of many countries worldwide. In the Philippines, the maritime industry is a major contributor to the economy, particularly in terms of providing employment and generating income. However, the Maritime Institution in Nueva Ecija, faces unique challenges in developing its maritime industry. The research study adapted a quantitative research design, including data collection, survey, and documentary analysis. The researchers performed a SWOT analysis to identify the strengths, weaknesses, opportunities, and threats that impact the competitiveness of the maritime industry in Nueva Ecija. Additionally, the study reviewed existing literature related to the maritime industry and competitiveness. The study's findings will contribute to the body of knowledge on the maritime industry, particularly in the province, and provide insights for policymakers, industry stakeholders, and relevant entities to enhance the industry's competitiveness in Nueva Ecija. Ultimately, the study's results served as a foundation for future research on the topic to inform policy and decision-makers related to the development of the maritime industry in the region.

Keywords:- Industry, Infrastructure, Maritime, Port, Seafarer, Ship.

CHAPTER ONE INTRODUCTION

➤ *The Problem and its Background*

Maritime industry is a multi-billion peso industry that has contributed a total of P720 billion to the national Gross Domestic Product (GDP) in 2022. This figure is expected to increase to P1.44 trillion in 2028 in line with the target accomplishment of the 10-year Maritime Development Plan (MIDP). Maritime industry has a direct link with the country's economic drivers as it facilitates inter island and inter continental movement of cargoes to foster economic activities.

While transportation of goods and services is considered as a significant part of the value chain, there are only few researches in this field. The sector is also facing challenges such as the disruptions in link between the supplier, manufacturer, and consumers, port congestion, poor safety, inefficient production systems, and lack of personnel. These events created an impact on the competitiveness of the maritime industry. Therefore, it is necessary to study and identify the trends, internal, and external forces that can help the industry thrive amidst the disruptions.

The roadmap of the DOTr aims to increase the production of the industry, be adept with technology, while continuously developing maritime education. Maritime education prepares students for careers such as merchant marine officers. Professional programs such as BS in Marine Transportation deal with the study of navigation, cargo handling and storage, safety protocols, and protection of people onboard the ship at the operational level. The course consists of a three-year academic study and a one-year cadetship onboard a vessel. This is the foundation in creating a future for the industry.

Meanwhile, the Maritime Industry Authority (MARINA) is tasked to monitor the progress of the development plan. Within the Philippines industry, maritime is one of the most critical sectors of the economy. It employs thousands of seafarers, it accounts the majority of the country's exports and contributes significantly to GDP (Romulo, 2020). According to the Philippine News Agency, the country constitutes 25% of the global seafarers. With the government's ambition to make the Philippines the “Crew Change Capital in the World”, it is vital to invest in human capital to maintain the reputation of the country in producing quality seafarers. Hence, the researchers intended to study the internal and external environment of maritime competitiveness in Nueva Ecija, being one of the major sources of seafarers in the Philippines.

➤ *Review of Related Literature and Studies*

Maritime competitiveness is a crucial factor in the global economy, as shipping plays a vital role in the movement of goods and services. To understand the internal and external environment of maritime competitiveness, the following literature review summarizes relevant studies and research findings:

• *Internal Factors:*

- ✓ **Human Resources:** According to a study by Carvalho et al. (2018), the quality of the maritime workforce is critical for the competitiveness of the industry. Skilled workers and specialized training programs are necessary to maintain competitiveness.
- ✓ **Technology:** Technology plays a significant role in improving efficiency and reducing costs. A study by Lee et al. (2019) highlights the importance of digitalization in the maritime industry, with a focus on implementing smart port systems and automation.
- ✓ **Infrastructure:** Infrastructure such as ports, shipping lanes, and inland transportation networks are crucial for maritime competitiveness. A study by Song et al. (2020) examines the impact of port infrastructure on the competitiveness of the maritime industry in China.

• *External Factors:*

- ✓ **Economic Environment:** The economic environment, including global trade patterns and economic growth, has a significant impact on maritime competitiveness. A study by Ng et al. (2017) examines the impact of economic factors on the maritime industry in Southeast Asia.
- ✓ **Regulatory Environment:** Regulations and policies, such as environmental regulations and trade agreements, also impact maritime competitiveness. A study by Tovar et al. (2020) examines the impact of the International Maritime Organization's sulfur cap regulation on the competitiveness of the maritime industry.
- ✓ **Geopolitical Environment:** The geopolitical environment, including security risks and political instability, can affect the competitiveness of the maritime industry. A study by Yang et al. (2019) examines the impact of political tensions on the competitiveness of the maritime industry in the South China Sea.

In conclusion, the internal and external factors affecting maritime competitiveness are diverse and interconnected. The quality of human resources, technology, and infrastructure are critical internal factors, while the economic, regulatory, and geopolitical environment are external factors. Understanding these factors is necessary for policymakers, industry stakeholders, and researchers to develop strategies for enhancing maritime competitiveness.

➤ *Conceptual Framework*

Input	Process	Output
<p>Respondent’s Demographic Profile Sex Occupation Program/Course</p> <p>SWOT Analysis</p> <p>Maritime Challenges Manpower competencies Infrastructure/facilities Compliance Industry Linkage</p> <p>Sources of competitiveness of the maritime institution in Nueva Ecija</p>	<p>Internal and External Environment Assessment Documentary Analysis Gathering of Primary Data through Survey Questionnaire Statistical Treatment of Data Presentation of Results using frequency tables, graphs, and charts.</p>	<p>Strategic Basis for an Improvement Action Plan for the Maritime Institution in Nueva Ecija</p>

Fig 1 Conceptual Framework of the Study

The Input Process Output (IPO) model was adapted by the researchers in the study. The IPO model consists of three stages and it describes the system followed to translate data into a strategic basis for an action plan for maritime institutions.

➤ *Statement of the Problem*

This study dealt with the assessment of maritime competitiveness in Nueva Ecija. It explores the internal and external environment that may impact the quality of maritime institutions in the province. The study specifically sought answers for the following:

- *How may the Profile of the Respondents be Described in Terms of*
 - ✓ Sex
 - ✓ Occupation
 - ✓ Program/Course

- *How may the Current Challenges of Maritime Institution in Nueva Ecija be Described in Terms of*
 - ✓ Manpower Competencies,
 - ✓ Infrastructure/Facilities,
 - ✓ Compliance,
 - ✓ Industry Linkage?

- *What is the State of Internal and External Environment of Maritime Institution Through SWOT Analysis:*
 - ✓ Strengths;
 - ✓ Weaknesses;
 - ✓ Opportunities;
 - ✓ Threats?
 - ✓ How may the potential competitiveness of the maritime institution in Nueva Ecija be classified?
 - ✓ How to provide a strategic basis for an improvement action plan for the maritime institution in Nueva Ecija?

➤ *Scope and Delimitation*

The scope of this study does not cover other geographic locations such as the area in North and South Luzon. This is due to the limited time of the researchers to expand the study. The research scrutinized the area of Central Luzon where the center of competitiveness is transportation and cargo. It doesn’t also cover a comparative analysis of private institutions and government-owned institutions.

Meanwhile, the total duration of the study is one semester, which is equivalent to 4 months. The researchers maximized the allocated time to better establish the framework of the study. The method that will be applied is convenience sampling, as the researchers need to consider the accessibility of information as well as its capacity to do field work.

➤ *Significance of the Study*

The study that focuses on specific market and area of coverage will be beneficial for the management of private maritime institutions in Nueva Ecija as a basis for strategic decision making. Assessing the external and environment is an important tool and business activity to keep abreast of the current trends, practices, and technology. In addition, the study was conducted with prime consideration to the ease of implementation for the maritime institutions.

The study will also contribute to the maritime industry as a whole as it provides a comprehensive environmental scanning. There are few researches related in this field; hence, the maritime industry can utilize the study to have an in-depth overview about the internal and external environment in Nueva Ecija. The researchers will likewise benefit from the study. Aside from the valuable information from doing the research, it can open new opportunities. Moreover, future researchers may also utilize the coverage of this study as a foundation to create a wider environmental scanning.

CHAPTER TWO METHODOLOGY

This chapter presents the methodology applied including the detailed process in gathering and analyzing of data to achieve the objectives and purpose of the study. The internal assessment of the business and industry was done by identifying the strengths and weaknesses of the industry. Since the scope of the research covers the industry, opportunities and threats analysis were also utilized. This enables the researchers to determine the macro environment. The following summarizes how the study was conducted including the research approach, data collection methods, data analysis methods, procedures, tools, and techniques applied in presentation. This allows the researcher to signify the validity of the research.

A. Research Design

Descriptive research design was applied in this study to assess the potential of the maritime industry in Nueva Ecija. It is the most fitted type of research design for the topic as it analyzes the internal and external environment including the market profile, potential competitiveness, and as well as the current challenges that the industry is facing. The primary objective of the research is to provide an analysis and translate the data into a useful basis for decision making. Research design is defined as the overall approach that determines how to collect and analyze data. A well-planned research design helps ensure that the methodology is aligned with the research objectives.

B. Locale of the Study

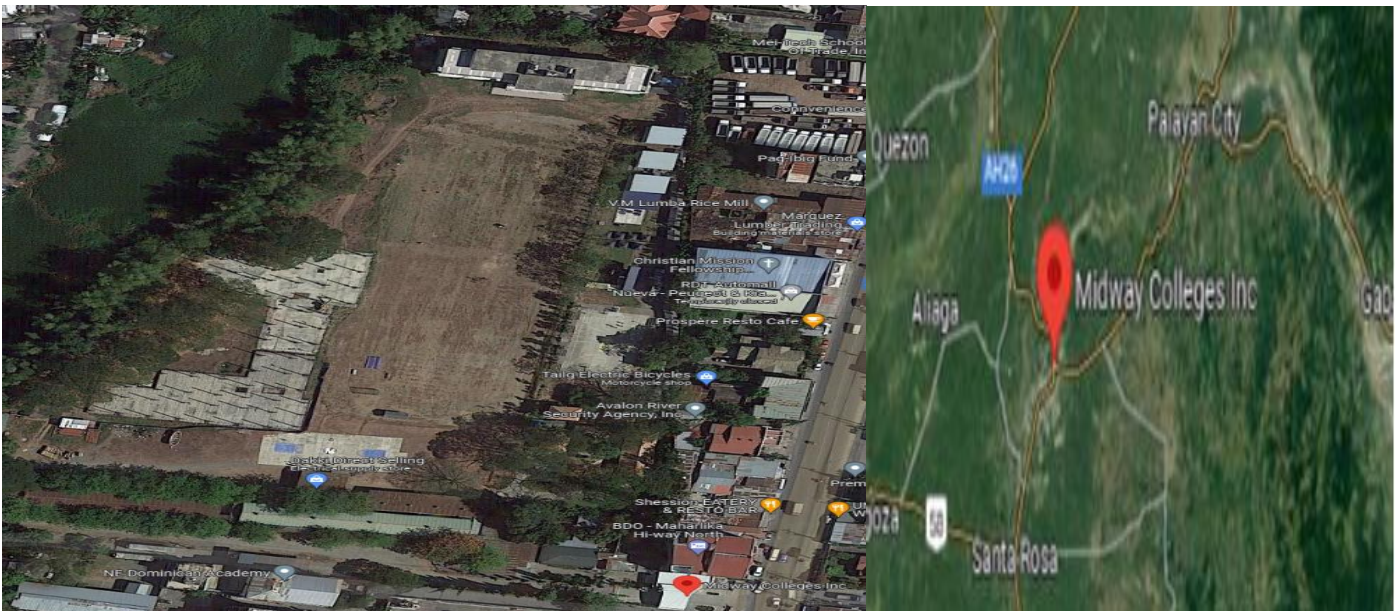


Fig 2 Locale of the Study
Source: Google Maps

The study was conducted at Midway Colleges, Inc., located in Cabanatuan City, Nueva Ecija. The province of Nueva Ecija, with a land area of 5,689.69 square kilometers and a population of 2,310,134 (PSA, 2020 Census), comprises 27 municipalities and five cities, including Cabanatuan City. Midway Colleges, Inc. accommodates senior high school and college students. Specifically, this maritime institution offers, Bachelor of Science in Marine Transportation and Bachelor of Science in Marine Engineering which are both fundamental courses in maritime. On the other hand, the researchers conducted the study during the second semester of Academic Year 2022-2023. Accessibility to information is the primary consideration of the researchers in selecting the locale of the study given the limited period and resources.

C. Participants

Students, alumni, and employed individuals are the participants of the study. The researchers included a diverse group of respondents to provide a comprehensive understanding of the maritime competitiveness in Nueva Ecija.

In this study, the researchers selected the prior subject which is 150 maritime students of Midway Maritime Foundation Inc. of Cabanatuan City, Nueva Ecija. The focus of the assessment from the participants is to determine the maritime students' SWOT analysis of both internal and external environment competitiveness. The high credibility of findings and conclusions extensively depends on the participants criteria.

Having respondents with diverse views can provide in-depth and relevant information for the study. Meanwhile, the researchers chose the respondents using the purposive sampling technique in quantitative data. All respondents were given a detailed explanation of the study and its purpose, and their consent was obtained before they participated in the research.

D. Research Instruments

A combination of documentary analysis, library search, and survey questionnaires were the data gathering tools of the researchers in this study. The researchers employed Slovin's formula ($n = N / (1+Ne^2)$) to come up with a total number of participants equivalent to 143 and with a margin of error of 8%. The researchers develop a set of survey questionnaires intended for the target respondent. The data collection was done through Google form where appropriate sets of questions are placed. With the use of this online platform, real-time data gathering of respondent's answers are easily accessible. The distribution was done personally by the researchers to assist the target respondent if they have queries with regard to the questionnaire. All information gathered are handled with confidentiality.

The survey questionnaire was divided into two parts. The first part is intended for the profile of the respondents while the second part is intended for the assessment of internal and external environment of the maritime industry. The questionnaire is consist of close-ended and open-ended questions that allows the researchers to gather in-depth information from the participants. As supplementary data, the researchers also gathered primary data from maritime institution in Cabanatuan City, Nueva Ecija. Table 1 shows the table of equivalence utilized in the study.

Table 1 Table of Equivalence (5 being the highest and 1 as the lowest)

Weighted Mean	Verbal Interpretation
4.21 – 5.00	Strongly Agree
3.41 – 4.20	Agree
2.61 – 3.40	Neither Agree or Disagree
1.81 – 2.60	Disagree
1.00 – 1.80	Strongly Disagree

E. Research Procedures

To provide a comprehensive analysis of the factors affecting maritime competitiveness in Nueva Ecija, the researchers employed the descriptive research design. The study targeted students, employees, and alumni who have experience in the maritime industry in Nueva Ecija. Through the survey, the researchers collected data on both internal and external factors that contribute to or hinder the competitiveness of the industry. The internal factors included strengths and weaknesses within the industry, such as workforce capacity, financial resources, and infrastructure, while the external factors encompassed opportunities and threats outside of the industry, such as interested parties, compliance, and competition from other regions.

After the data gathering process, the researchers compiled and summarized the survey results to facilitate further analysis and interpretation. The summary was presented using tables, graphs, and charts to aid in data visualization. The findings of the study provide insights into the internal and external environment of maritime competitiveness in Nueva Ecija and can serve as a useful resource for policymakers, industry stakeholders, and other interested parties seeking to enhance the competitiveness of the maritime sector in the region.

F. Data Analysis Techniques

The gathering of the data for this study utilized a self-administered descriptive questionnaire in a platform of Google form design as it economizes the researchers' time and effort. The respondents were given survey questionnaires to provide the necessary data needed in the study. After gathering the data, the researchers grouped the responses according to the sub-problems of the study. The researchers' then created a clear interpretative research framework in data analysis.

The collected information was summarized, tallied, and analyzed then input into tables for interpretation of the answers. The data was analyzed statistically in order to come up with the findings.

Descriptive statistics (frequency and percentage in a table) was utilized to present the demographic profile of the respondents.

- Frequency count was used to summarize the responses of the respondents.
- Percentage distribution was used to determine the proportion of the responses of all respondents.

Weighted Mean was used to present the extent or level of significance of the data. It was used to determine the overall average responses of the respondents.

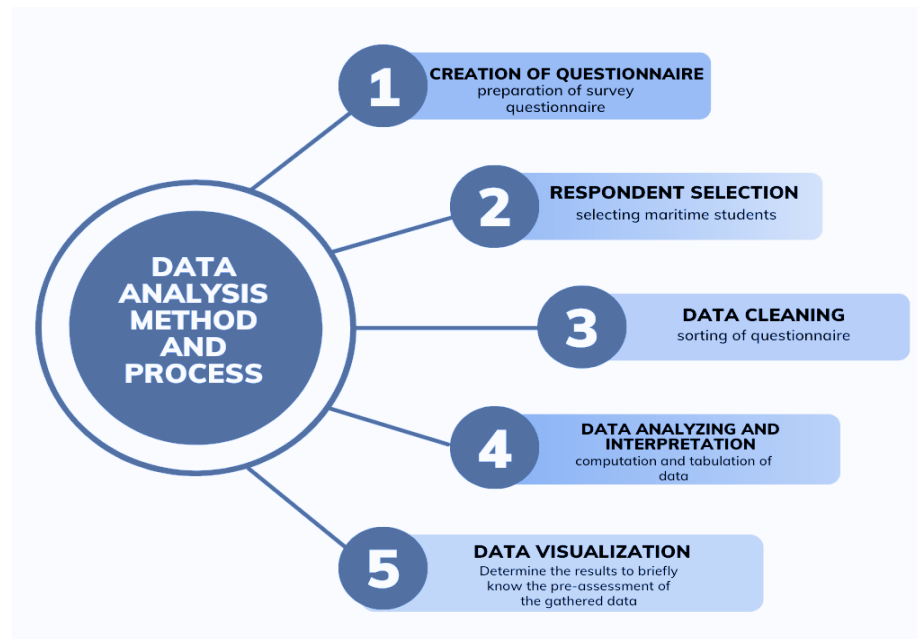


Fig 3 Graphical Presentation of Data Analysis Method

Source: Reddit

G. Role of Researcher

The primary role of the researcher is to conduct the study without bias. Research direction came out in the process without the influence of the researcher's opinion or point-of-view. As an internal researcher, the context in the study was analyzed based on the actual situation and phenomena. The researcher assures the data privacy and confidentiality of the information provided by the respondents. Respondent's participation is voluntary and their identity is protected by the researcher.

H. Ethical Concerns

➤ Ethical Considerations

Ethical considerations in research are a set of principles that guide research designs and practices. Researchers must always adhere to a certain code of conduct when collecting data from people. Another ethical consideration of the researchers is to conduct the study without bias. Research direction should come out in the process without the influence of the researcher's opinion or point-of-view.

➤ Informed Consent

Researchers explained to the participants the purpose, benefits, risks, and funding behind this study before they agreed to answer the survey.

➤ Data Privacy

The researchers in this study abide by the Republic Act No. 10173 also known as the Data Privacy Act of 2012 which aims "to protect the fundamental human right of privacy, of communication while ensuring free flow of information to promote innovation and growth." Respondents' identity and responses will be kept confidential and the results shall be used for academic and company purposes only.

➤ Confidentiality

Information collected from these research participants is well maintained by the researchers. Only the researchers have access to the responses of specific individuals.

CHAPTER THREE RESULTS AND DISCUSSION

A. *Presentation, Analysis, & Interpretation of Data*

➤ *Respondent’s Profile*

- *Sex*

Table 2 *Sex of the Respondents*

Sex	Frequency	Percentage
Male	134	85.9%
Female	22	14.1%
Total	156	100%

The table 2, showed the primary sex of students surveyed were males (n=134, %=85.9). Dominated by males, which is expected as study has more participants that took maritime programs, which are still widely viewed towards a more masculine career. On the other hand, this calls for the need for program enhancement to encourage female students to pursue maritime courses like marine transportation and cruising services.

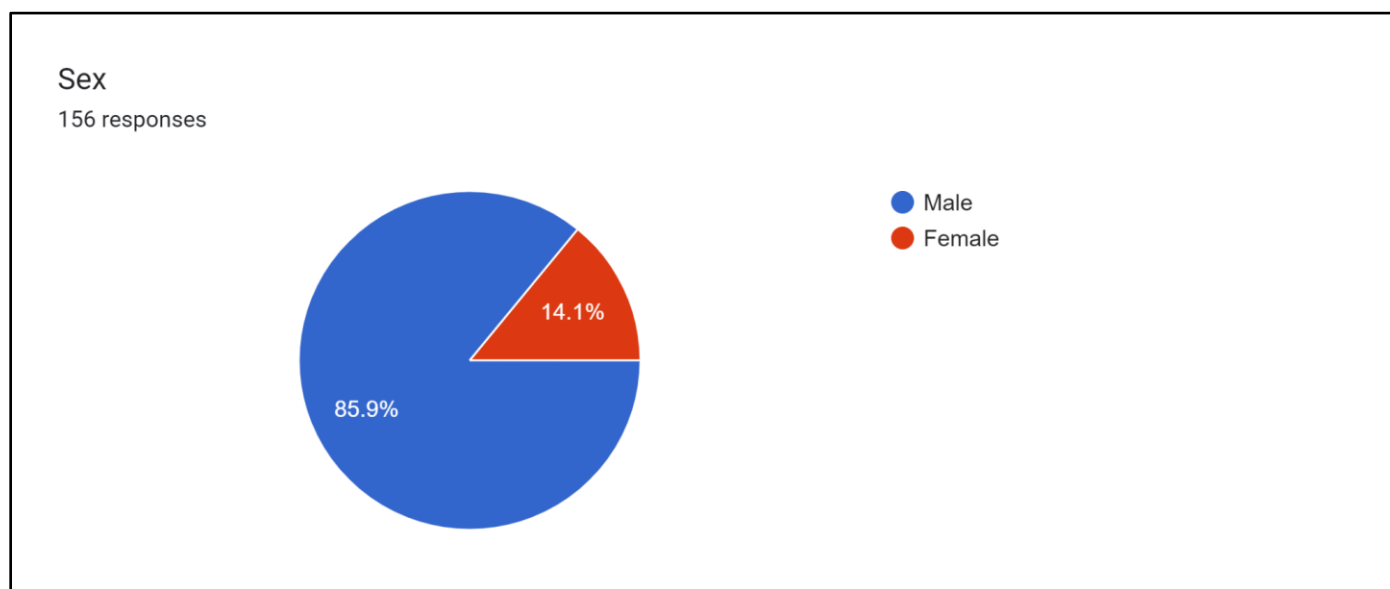


Fig 4 Graphical Presentation of Sex of the Respondents

- *Occupation*

Table 3 *Occupation of the Respondents*

Occupation	Frequency	Percentage
Employee (Teaching and Non-teaching)	23	14.7%
Student	114	73.1%
Alumni	19	12.2%
Total	156	100%

With regard to the occupation, the participants of the research were dominated by students (n=114, %=73.1). Students are the future workforce and decision-makers of the maritime industry. Hence, the voice of students are crucial in improving the quality of education.

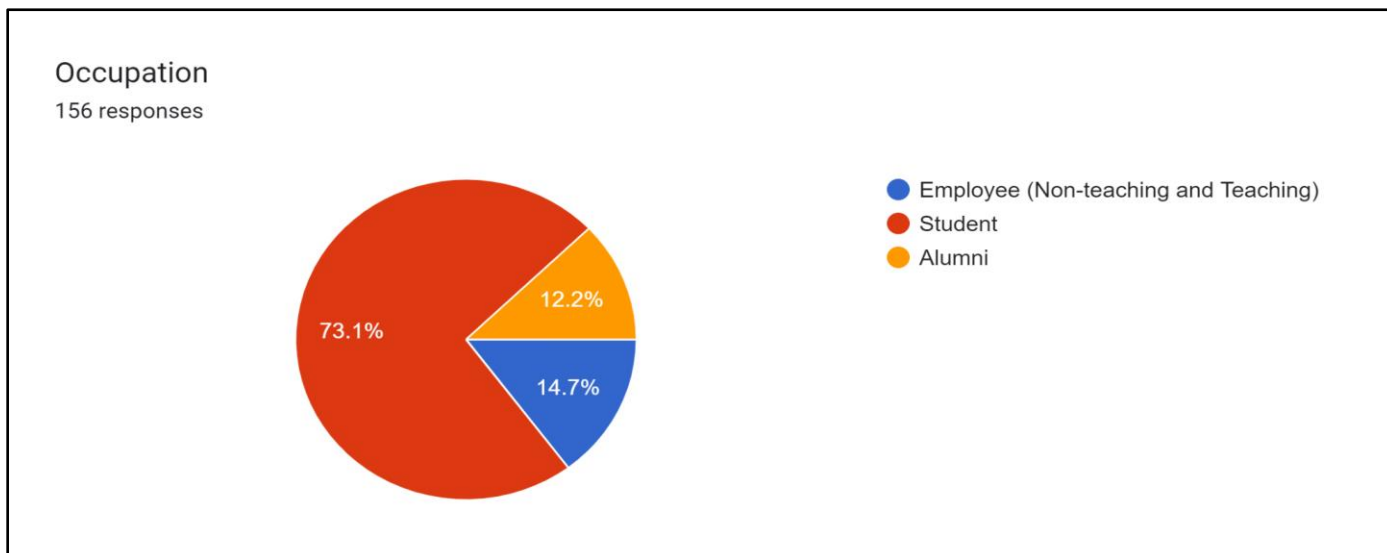


Fig 5 Graphical Presentation of Occupation of the Respondents

- *Program/Course of the Respondents*

Table 4 Program/Course of the Respondents

Program/Course	Frequency	Percentage
Bachelor of Science in Marine Transportation	68	43.6%
Bachelor of Science in Marine Engineering	60	38.5%
Bachelor of Science in Customs Administration	9	5.8%
Cruise Ship Hotel and Restaurant Service	9	5.8%
Non-Maritime Related	10	6.4%
Total	156	100%

In terms of degree programs, the participants were mostly taking maritime courses. Marine transportation students were the most of number (n=68, %=43.6) followed by marine engineering (n=60, %=38.5). This justifies the domination of male participants and students at the above tables discussed. Customs administration and cruise ship hotel and restaurant service programs on the other hand requires improvement.

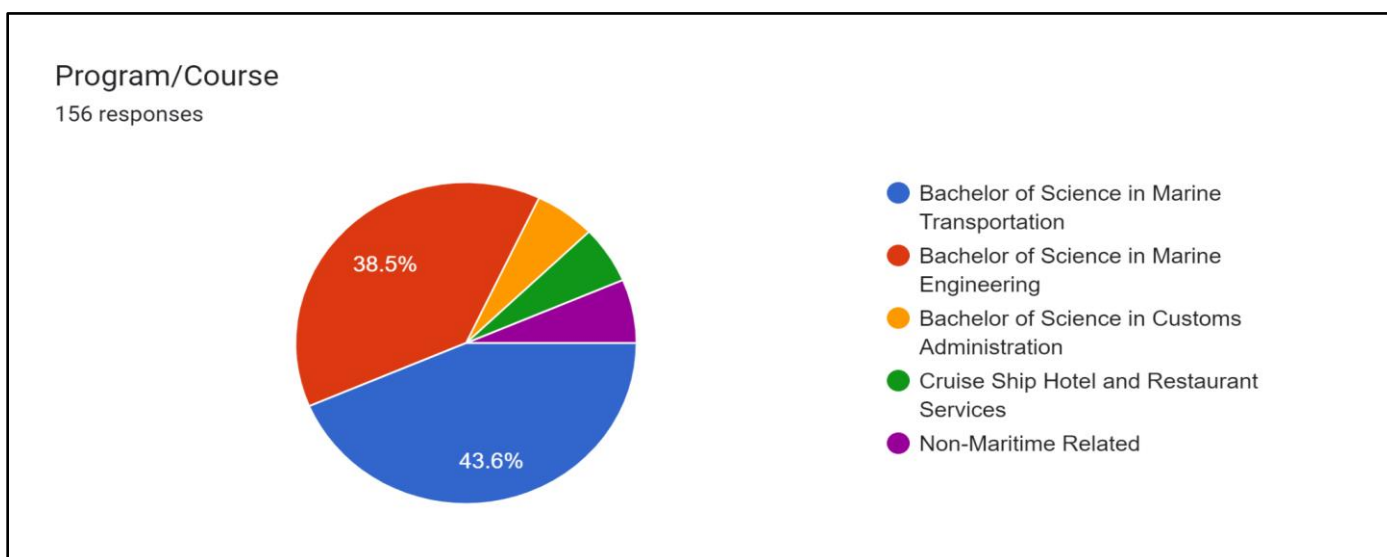


Fig 6 Graphical Presentation of Program/Course of the Respondents

➤ *Current Challenges Of Maritime Institution In Nueva Ecija*

The current challenges that the maritime institution is facing were also assessed using the following indicators: manpower competency, infrastructure/facilities, compliance, and industry linkage.

Table 5 Manpower Competency

Variable	Weighted Mean	Standard Deviation	Verbal Interpretation
Job Placement	3.711538	0.908807	Agree
On-site Training	4	0.936707	Agree
Technical Competency	3.762821	0.858447	Agree
Physical Factors/ Mental Factors	3.775641	0.905707	Agree

In terms of perceived competence of the maritime institution in which the study was conducted, it can be seen by the result that students, in general, agree that it provides adequate competency training among students. Highest of the categories were on-site training ($\mu=4$, $\sigma=0.936$), this implies that students perceived manpower upskilling to be adequate enough during physical and actual training, providing extensive guides that are relevant to student future careers. This was followed by competency for physical and mental training ($\mu=3.77$, $\sigma=.905$) which implies that students perceived competence during training physically and mentally, which coincides that most students were maritime and training like are top priority.

Table 6 Infrastructure/ Facilities

Variable	Weighted Mean	Standard Deviation	Verbal Interpretation
Lack of Access to New Technology	3.544872	1.109158	Agree
Lack of Access to Training Facilities	3.557692	1.108561	Agree

In terms of facilities, respondents state a general agreement that the maritime institution has inadequacy in relation to new technology ($\mu=3.54$, $\sigma=1.11$) and training facilities ($\mu=3.55$, $\sigma=1.11$). Technology is often costly yet it is vital in helping students to be adept in latest trends, equipment, and machineries. This also implies crucial development for the training environment within the maritime institution as this resource augments student's learning.

Table 7 Compliance

Variable	Weighted Mean	Standard Deviation	Verbal Interpretation
Policies	3.839744	0.94696	Agree

In terms of standard policies, the students perceived the adequacy of maritime institution in Nueva Ecija ($\mu=3.84$, $\sigma=.947$).

Table 8 Industry Linkage

Variable	Weighted Mean	Standard Deviation	Verbal Interpretation
Waiting Time	3.557692	1.011166	Agree
High Boarding Cost	3.666667	0.932104	Agree

In terms of industry linkage, there is a challenge in financial matters because of high boarding costs ($\mu=3.67$, $\sigma=0.93$).

➤ *The State of Internal and External Environment of Maritime Institution in Nueva Ecija*

<p style="text-align: center;">STRENGTHS</p> <p>Extended participation of the faculty on the improvement of syllabus, learning pack and other non-teaching tasks Duly accredited and Acknowledged Licensed Institution by the regulating body Innovative and advance utilization of technological platforms Timely updated Policy Standard Guidelines from CHED-MARINA Strong collaboration and Partnership with the Maritime Higher Institutions Favorable access to updates issues, trends, and other relevant information in the maritime industry Strong partnership among recognized cadetship program and training centers, and accredited testing company for student assessment exams Accessibility and User-Friendly teaching materials and resources Established online platform for educational materials</p>	<p style="text-align: center;">WEAKNESSES</p> <p>Abrupt and continuous update which requires demanding requirements to equipment and manpower needs Challenges and Difficulties in plotting practical assessment due to pre-existing adversities and guidelines from regulatory body Lack of willingness to adapt and participate in the fast-changing landscape of instructional plan and delivery Implementation of abrupt changes and alterations may entail some opposing forces from minority High expectations from stakeholders which leaves little room for mistakes and shortcomings Limited up to date resource materials for MarE, MT, and other programs DDifficulty in hiring qualified instructors that resulted in hiring personnel that lacks minimum qualification</p>
<p style="text-align: center;">OPPORTUNITIES</p> <p>Acquisition of subscriptions and licenses for expansion and future endeavor Partnership with Review Centers to aid alumni in their examinations for higher positions Assigning or gathering resources to create collaborative reports Revisit and update the Policy by benchmarking with neighboring institution with their best practices Conduct suitable upskilling and capacity building training for instructors Opportunity to offer various Curriculum Modality for Delivery of instructions which suites the learners’ requirements Provide bridging and optional career opportunities for those who have changed interest in sea base jobs Benchmarking and Revisiting of the existing policy with the student’s consultation procedures and process Explore and provide new sets of Assessment tools to upgrade the quality and process of the theoretical and competency-based Assessment To explore other available technological platforms that will cater all kinds of learners with their specific requirements To participate on the upcoming CHED initiated capacity building for MHEI's Provide upskilling and relevant soft skills training to enhance competence of employees and each department Open opportunity for linkages of grants and privileges from the maritime industry and private sectors as sponsorship in professional development among the faculty Availability and utilization of the results of the exams for curriculum improvement Open Source of Benchmarking with other institution and or shipping manning agencies Expansion of partnership and engagement principal and shipping company Revisit and update the Policy by benchmarking with neighboring institution with their best practices Improvement of facilities and laboratories that will attract parents and visitors for possible child enrollment Availability of new and latest items or equipment from supplier abroad Acquire new and up-to-date simulators and equipment with the</p>	<p style="text-align: center;">THREATS</p> <p>Competitive Salary Offer and Benefits from Competitors and Neighboring MHEI's Continuous Adaptation and retrofitting of existing requirements entail additional expansion and occurrences of expenses to the institution. Much Innovative and advance technology platform offered by other MHEI's. Students tend to get bored with less engaging group activity and involvement. Higher compensation and competitive benefits offered by other companies/institutions Better Career growth Opportunity, reward system, educational scholarship subsidy and retirement plan given by competitors Diversion, alteration, and modification of standard PSG which constitute in defying the Regulatory Bodies will all end up in Show Cause Order or Closure of Programs Negative feedback on the students and school reputation as the result of low passing percentage Exclusion from the list of the recommended MHEIs Missed out opportunity for expansion and Partnership Cyber bullying and bashing which damaged the reputation of the institution and stakeholders Non-compliance with the requirements will result in termination of the program Procurement of more expensive items but with equal capability in demonstration or lesser quality No supply of replacement parts of equipment due to advancement of technology</p>

terms and conditions offered by the accredited supplier Provide information such as other webinars and free trainings needed by the employees Connection to this government agency aids in job posting and other recruitment networks and activities.	
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Fig 6 SWOT Analysis

SWOT analysis can be used to evaluate the internal and external factors that affect the competitiveness of the maritime industry in Nueva Ecija.

Strengths includes the existing infrastructure and facilities, the availability of partnership, and any competitive advantages that the industry in Nueva Ecija might have over other regions.

Weaknesses includes a lack of investment in training and development, limited access to technology and equipment, and a shortage of skilled workers.

Opportunities include potential partnerships with other industries and organizations, the development of new technologies and techniques.

Threats include competition from other MHEI's, changes in policies or regulations, and negative feedback that could impact the industry.

By conducting a SWOT analysis of the maritime industry in Nueva Ecija, the researchers gained a better understanding of the current situation and identify areas where improvements can be made to increase competitiveness and support the growth of the industry.

Table 9 Impact of Internal and External Factors to Maritime Institution

Variable	Weighted Mean	Standard Deviation	Verbal Interpretation
Facilities and Infrastructures	3.589744	1.064814	Agree
Technological Advancements	3.679487	0.950295	Agree
Job Placement	3.621795	0.939066	Agree
Institution Connection	3.762821	0.971279	Agree
Reputation	3.794872	0.941639	Agree
Local Government Support	3.576923	1.028864	Agree
Competition	3.583333	0.950099	Agree
<u>Quality of Education</u>	<u>3.980769</u>	<u>0.986824</u>	<u>Agree</u>
Programs	3.858974	0.999669	Agree
Local Regulatory	3.698718	0.946436	Agree
Public Awareness	3.852564	0.962554	Agree
Marketing	3.730769	0.979441	Agree
Policies	3.846154	0.958183	Agree

In terms of factors that affect maritime institution in all areas of its operations and services, the study revealed that per perception, maritime institution is widely affected by quality of education. Quality of education has the highest degree of impact to the internal and external environment of maritime institution according to the majority of respondents ($\mu=3.98$, $\sigma=0.98$). This implies that they are also viewed in relation to its quality of service that usually affects enrollment rate, accreditation by government, and quality assuring agencies.

This was then followed by programs offered, this wide factor includes, difficulty of maintaining and implementing the programs its costs and resources needed, this includes potential number of students that are usually set towards a particular program offering. The same spans across maintenance of partnership that is required by the program. It is tied with public awareness that affects enrollment. Finally, it is followed by the reputation of the school that includes maintenance of its accreditation, people's trust, partnership's trust, and general popularity and prestige brought by excellence across its services.

➤ *Potential Source Of Competitiveness Of The Maritime Institution In Nueva Ecija*

Table 10 Maritime Institution Competencies

Variable	Weighted Mean	Standard Deviation	Verbal Interpretation
Facilities and Infrastructures	3.429487	1.047961	Agree
Technological Advancements	3.576923	0.957406	Agree
Reputation	3.653846	0.83205	Agree
Institution Connection	3.589744	0.942692	Agree
Salary	3.519231	1.062384	Agree
<u>Skilled Labor</u>	<u>3.75641</u>	<u>0.852865</u>	<u>Agree</u>
Public Awareness	3.75	0.847197	Agree

In terms of the source of competitiveness and upbringing of maritime institution. It has been perceived that human resources are its primary source. The respondents stressed that the potential source of competitiveness of maritime institution in Nueva Ecija is skilled labor ($\mu=3.76$ $\sigma=0.85$). Educational institutions are always run by its people, from daily operations to planning and administration. Skilled people are needed thus competitiveness such as high caliber faculty members are identified as a source of competitiveness of maritime institution.

This also includes skilled laborers that are known outside the institution that brings in prestige resulting in high competitiveness and globalization capability of the maritime institution. Next to skilled labor is public awareness. As institutions are known outside, it adds a certain dignity that increases its competitiveness. This was followed by reputation, the trust of the people and being known as an institution with quality service increases the competitiveness. The ability of maritime institution to consistently provide the same quality service and result from time to time similarly increases competitiveness.

CHAPTER FOUR CONCLUSIONS AND RECOMMENDATIONS

A. *Conclusions*

The contribution of maritime industry in the Philippine economy is substantial for sustainable growth as they provide transport solutions that can foster economic activity. Efficient and rapid movement of cargo indicates strong business activity. However, in a fast-changing business environment, the pressure to be abreast in industry trends is high. This is the reason internal factors should be taken into account to determine the best strategy to use strengths to maximize opportunities and minimize weaknesses to avoid threats.

Based on the results of the study, the maritime institution in Nueva Ecija is male dominated with a ratio of 1:9. This calls the need for program enhancement to encourage female students to pursue maritime courses especially in marine transportation and cruising services.

In terms of program, marine transportation and marine engineering remained to be the preferred specialization of aspiring seafarers. On the other hand, customs administration and cruise ship hotel and restaurant service are gaining popularity.

The current challenges that the maritime institution is facing were also assessed using the following indicators: manpower competency, infrastructure/facilities, compliance, and industry linkage. The study revealed that on-site training, lack of access to training facilities, policies, and high boarding cost are the pressing challenges that must be addressed to improve the competitiveness of the maritime industry in Nueva Ecija.

Conversely, quality of education has the highest degree of impact to the internal and external environment of maritime institution according to 37.2% of the respondents. Moreover, 37.8% of the respondents stressed that the potential source of competitiveness of maritime institution in Nueva Ecija is skilled labor.

B. *Recommendations*

Based on the findings of the study on the internal and external environment of maritime competitiveness in Nueva Ecija, it has identified key factors affecting the competitiveness of the maritime industry. Based on the findings, the following recommendations are proposed:

- **Infrastructure:** Investment in the facilities and other critical infrastructure that supports maritime activities should be prioritized by the institution and stakeholders to address infrastructure challenges.
- **Increase funding for training facilities** that provide access to training programs for the maritime industry and collaboration with other stakeholders to secure funding and resources for the development of the training facilities.
- **Develop online training programs:** Develop online training programs that can be accessed remotely by individuals. This can include the development of online courses or the use of virtual reality technology to simulate real-life training scenarios.
- **Provide financial support for training:** Provide financial support to individuals who wish to attend training programs.
- **Public-private partnerships:** The establishment of public-private partnerships is recommended to develop and implement policies that enhance the competitiveness of the maritime industry in Nueva Ecija.
- **Recognize and reward skilled workers:** Recognize and reward skilled workers to encourage them to remain in the maritime industry. This can include higher salaries, career advancement opportunities, and other benefits that recognize and reward the value of skilled workers to the industry.
- **Invest in modern technology:** Invest in modern technology and equipment to improve the efficiency and competitiveness of the maritime industry.
- **Develop and enforce regulations:** Develop and enforce regulations that promote compliance with industry standards and best practices.
- **Establish monitoring and enforcement mechanisms:** Establish monitoring and enforcement mechanisms to ensure that industry stakeholders are complying with industry standards and regulations. This can include regular inspections, audits, and other monitoring mechanisms to identify and address compliance issues.
- **Provide training on technology:** Provide training on the use of modern technology to ensure that workers in the maritime institution are equipped with the necessary skills and competencies. This can include the development of training programs and the use of online resources and digital tools for training.

The implementation of these recommendations can contribute to enhancing the competitiveness of the maritime industry in Nueva Ecija and position the region as a leading player in the Philippine maritime sector.

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APPENDICES

A. Appendix I. Survey Questionnaire

Dear Respondents:

The researchers in this study abide by the Republic Act No. 10173 also known as the Data Privacy Act of 2012 which aims “to protect the fundamental human right of privacy, of communication while ensuring free flow of information to promote innovation and growth.” Your identity and responses will be kept confidential and the results shall be used for academic and company purposes only.

The Researchers

Respondent's Name(Optional): _____

Current Home Address (Optional): _____

➤ *Part I: Profile*

• *Respondent's Sex*

- ✓ Male
- ✓ Female

• *Respondent's Occupation*

- ✓ Employee (Non-teaching and Teaching)
- ✓ Student
- ✓ Alumni

• *Program/Course*

- ✓ Bachelor of Science in Marine Transportation
- ✓ Bachelor of Science in Marine Engineering
- ✓ Bachelor of Science in Customs Administration
- ✓ Cruise Ship Hotel and Restaurant Services
- ✓ Non-maritime related

➤ *Part II: Survey Questionnaire*

Direction: Please rate the answer that is appropriate to your case.

On a scale of 1 to 5 with 5 being the highest and 1 as the lowest, how do you rate the degree of impact of the following challenges:

	Highly Significant impact (5)	Significant impact (4)	Substantial impact (3)	Slight impact (2)	No impact (1)
Manpower Competencies					
Job Placement					
On-site Training					
Technical Competency					
Physical Factors/ Mental Factors					
Infrastructure/Facilities					
Lack of access to New Technology					
Lack of Training Facilities					
Compliance					
Policies					
Industry Linkage					
Waiting Time					
High Boarding Cost					

	Highly Significant impact (5)	Significant impact (4)	Substantial impact (3)	Slight impact (2)	No impact (1)
Manpower Competencies					
Job Placement					
On-site Training					
Technical Competency					
Physical Factors/ Mental Factors					
Infrastructure/Facilities					
Lack of access to New Technology					
Security of Tenure					

On a scale 1-5, please rate the degree of impact of the following internal and external factors to maritime institution:

	Highly Significant impact (5)	Significant impact (4)	Substantial impact (3)	Slight impact (2)	No impact (1)
Facilities/Infrastructure					
Technological advancements					
Job Placement					
Institution Connection					
Reputation					
Local government support					
Competition					
Quality of education					
Programs					
Local regulatory					
Public awareness					
Marketing					
Policies					

On a scale of 1-5, please rate the potential source of competitiveness of maritime institution in Nueva Ecija

	Extremely High (5)	Very High (4)	High (3)	Low (2)	VeryLow (1)
Facilities/Infrastructure					
Technological advancements					
Reputation					
Institution Connection					
Salary					
Skilled Labor					
Public Awareness					

What improvements can you suggest to improve the maritime industry in Nueva Ecija?

- *In your opinion, what are the key areas for improvement in the maritime institution in Nueva Ecija?*
- ✓ Curriculum and course offerings
- ✓ Quality of teaching and instruction
- ✓ Facilities and equipment
- ✓ Industry partnerships and collaborations
- ✓ Others (please specify)

- *What strategies or actions do you think can be implemented to improve the quality of education and training programs in the maritime institution in Nueva Ecija?*
 - ✓ Hiring more experienced instructors
 - ✓ Upgrading facilities and equipment
 - ✓ Providing more opportunities for hands-on training and internships
 - ✓ Enhancing industry partnerships and collaborations
 - ✓ Other (please specify)

- *How can the maritime institution in Nueva Ecija better prepare its graduates for the demands and challenges of the industry?*
 - ✓ Providing more specialized training and certifications
 - ✓ Emphasizing soft skills such as communication and leadership
 - ✓ Offering mentorship and career development programs
 - ✓ Connecting students with job opportunities and industry networks
 - ✓ Other (please specify)

- *How can the maritime institution in Nueva Ecija improve its overall competitiveness in the industry?*
 - ✓ Strengthening its research and development capabilities
 - ✓ Developing innovative and market-driven programs and services
 - ✓ Enhancing its branding and marketing efforts
 - ✓ Investing in modern technology and equipment
 - ✓ Other (please specify)

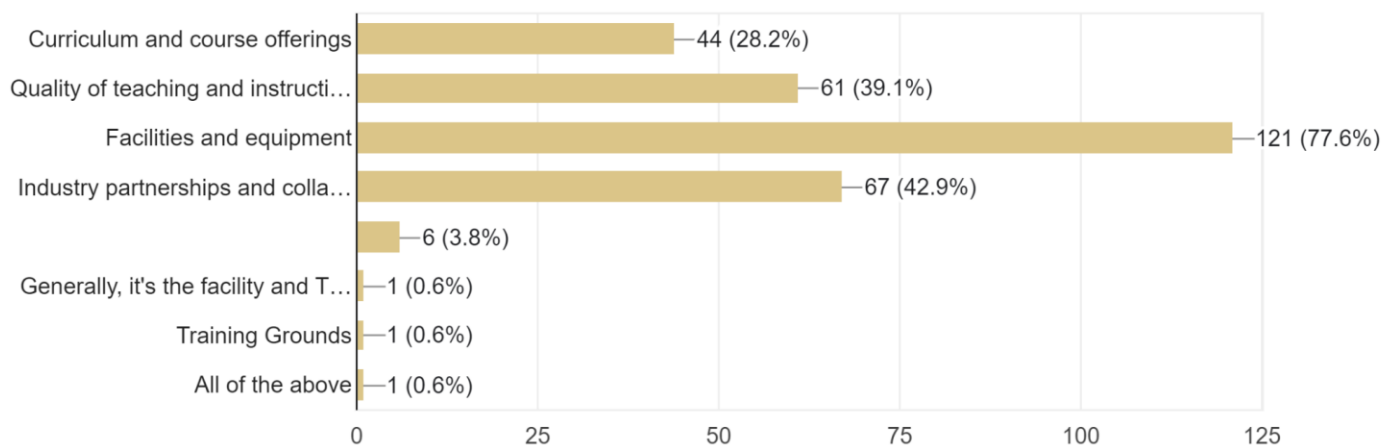
- *What specific actions or initiatives do you think the maritime institution in Nueva Ecija should prioritize in its improvement plan?*
 - ✓ Upgrading and modernizing facilities and equipment
 - ✓ Expanding industry partnerships and collaborations
 - ✓ Enhancing the quality of teaching and instruction
 - ✓ Providing more specialized training and certifications
 - ✓ Other (please specify)

Thank you for your time and cooperation to fill-out this survey!

B. Appendix 2. Survey Data

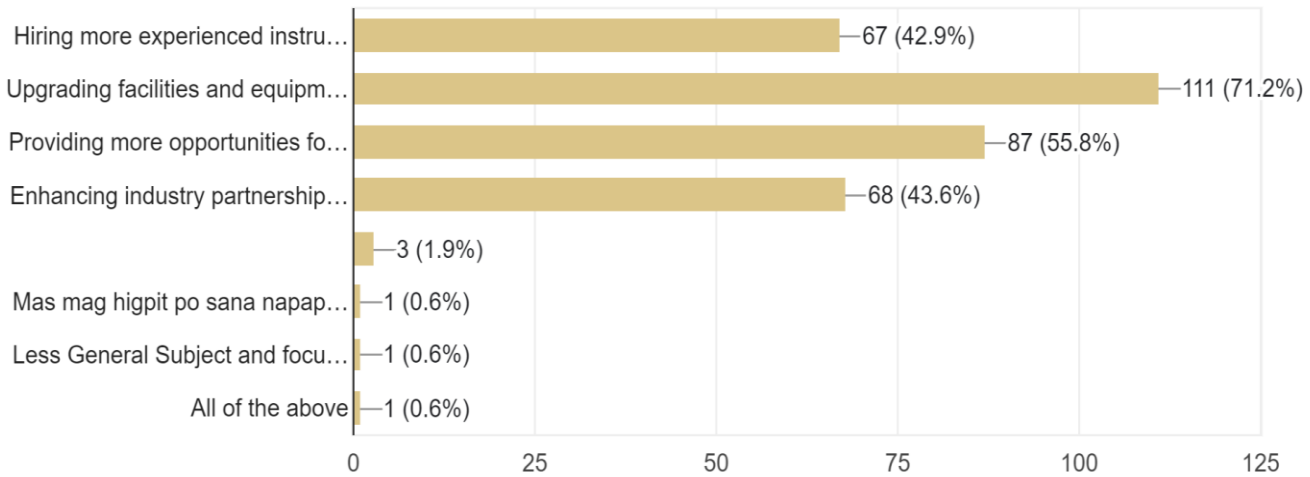
In your opinion, what are the key areas for improvement in the maritime institution in Nueva Ecija?

156 responses



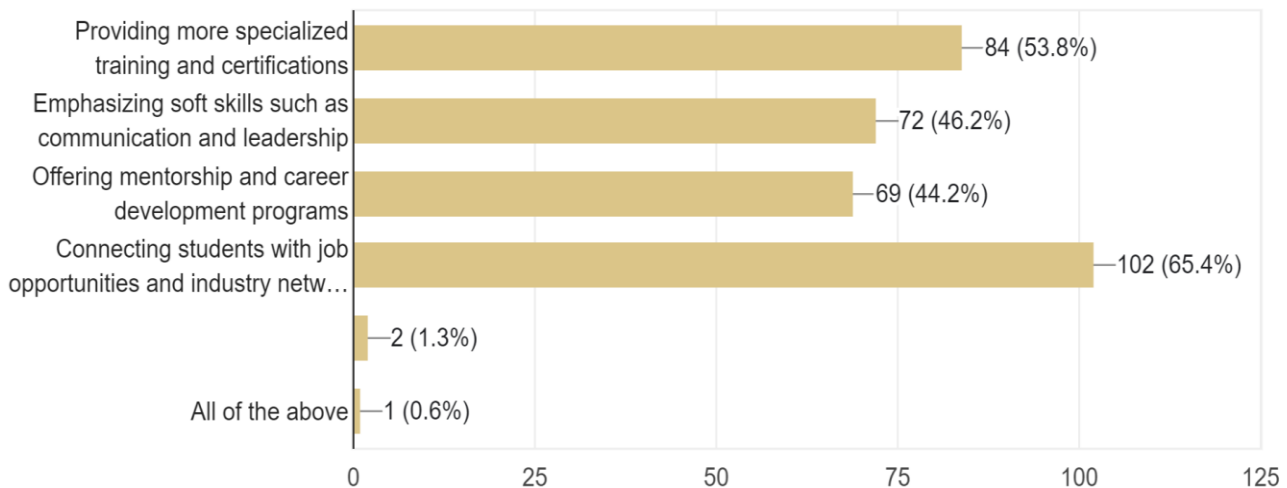
What strategies or actions do you think can be implemented to improve the quality of education and training programs in the maritime institution in Nueva Ecija?

156 responses



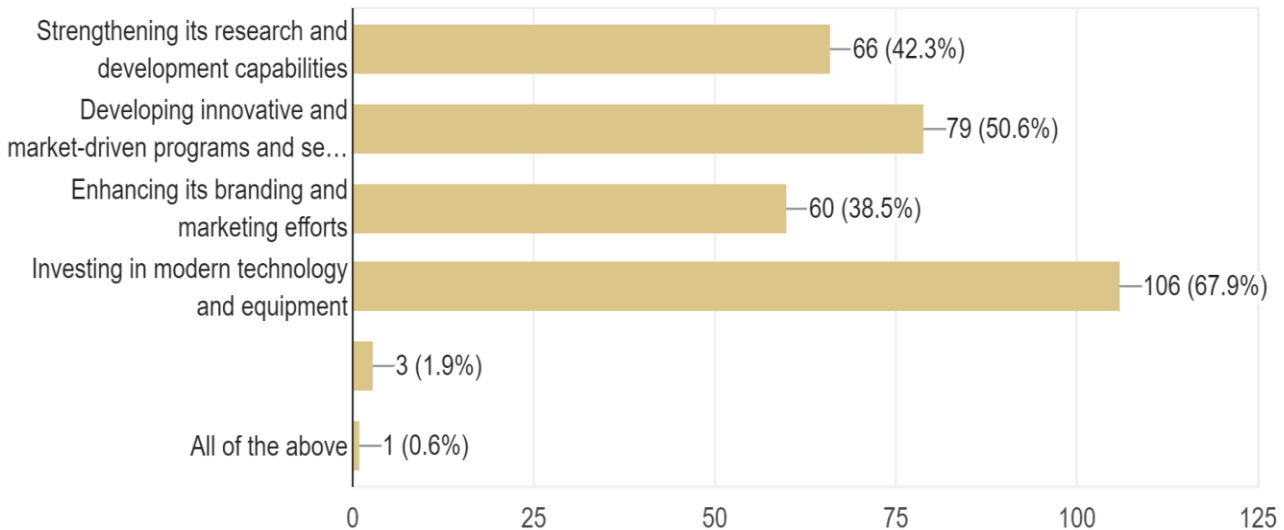
How can the maritime institution in Nueva Ecija better prepare its graduates for the demands and challenges of the industry?

156 responses



How can the maritime institution in Nueva Ecija improve its overall competitiveness in the industry?

156 responses



What specific actions or initiatives do you think the maritime institution in Nueva Ecija should prioritize in its improvement plan?

156 responses

