# Satisfaction of Maritime Students in using Laboratory Facilities

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## **ABSTRACT**

This study aimed to determine the level of Satisfaction of Maritime students in using Laboratory Facilities and the problems encountered with regards to service provided by laboratory facilities. Descriptive type of research was employed in the study. Results showed that the students are satisfied in using each laboratory facility provided by the school administration while the time intended for the use of each laboratory facility does not satisfy the students. The students encounter difficulty on how to operate equipment especially the equipment of GMDSS laboratory. The students are not aware about the fire fighting and first aid equipment beside the point that this is important in emergency purposes.

Keywords: Satisfaction, Laboratory Facilities, Maritime Students, Filipino

### INTRODUCTION

Physical plant and facilities are major considerations in developing the proficiency of the students to handle equipment and machines needed for their respective fields of specialization. Making these as requirements for the program of study to be utilized by the students is very important for improving the competence (Dotong, confidence and Satisfaction of employees and clients is an important element of success for any organization and any sector of the economy (Bay, An & Laguador, 2014). The measurement of student satisfaction can be used to certain educational institutions, to help them consider their strengths and to identify the areas that need improvement. In the Philippines, Higher Education (HE) students were considered to be the "primary customers" of a University, even before they were liable for the payment of "up-front" tuition fees. Students are the primarily recipients of the services offered by the school. It is to confirm that the student is treated as a customer who has the right on meeting his/her value and satisfying needs. According to Carey, Cambiano and De Vore (2002), satisfaction actually covers issues of student's perception and experiences during the college years. Hence, this will

bring the institution to a competitive environment, service oriented establishments are under the pressure of demonstrating that their services are customerfocused and that continuous performance improvement is being done.

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Matzdorf et al., (2003) emphasized that despite rhetoric of added value, facilities management suffers a dearth of objectively researched, publicly available information concerning the impact of facilities on businesses at the level of market sectors or individual organizations. Many institutions view facilities of high standard as a very important factor to students' choice of school. An Accenture global customer satisfaction report (2008) found that price is not the main reason for customer churn; it is actually due to the overall poor quality of customer service. Customer satisfaction is the metric you can use to reduce customer churn. By measuring and tracking customer satisfaction you can put new processes in place to increase the overall quality of your customer service (Beard, 2014).

Customer satisfaction can be defined as an expectation of a customer regarding a product. Beyond satisfying needs, customer value is the key to establish and maintain long run relationships. Hence,

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providing excellent customer value as a driving force of customer relationships management performance plays a key role in gaining sustainable competitive advantage. In the province of Batangas, the Lyceum of the Philippines University - Batangas has continuously been accepting foreign students from different parts of the world such as Africa, Asia, and South America since 2005. The students are on different programs including Marine Transportation, Marine Engineering, Medical Technology, Nursing, and Dentistry. Consequently, there were 206 Nigerian students who are enrolled in Lyceum International Maritime Academy (LIMA) in 2012. This may be the biggest number of foreign students enrolled in a single program in the Philippines. The competency of academic instructions being offered by LIMA line of professionals and the advancement of facilities invested by LPU-B as premier and leading institution in the field of the maritime profession are the main reasons of this phenomenon (Buted, et al, 2014).

The Lyceum International Maritime Academy (LIMA) in Batangas City is considered as the top performing maritime school in Region 4-A. Its goal is to provide quality education and train future maritime professionals and in fulfilling those goals, the university provides high standard facilities, especially for the maritime students. One of the major concerns of maritime students in choosing their university is the quality of laboratory facilities that the school may provide for them. It is the leading maritime school in the CALABARZON region. Its goal is to develop competitive maritime professionals and it boasts of its laboratory facilities. The following are the list of laboratory facilities of LIMA: computer laboratory, chemistry laboratory, physics laboratory, and GMDSS laboratory, full mission bridge with Kongsberg simulator, machine shop, and seamanship laboratory.

Computer laboratory are more than just rooms with lots of computers. Care must be taken to ensure that the laboratory is easy to access and fulfils its purpose. Computer labs are also used to instruct students on computer use, programming, and related subjects. However, many institutions give little thought to the design and layout of the lab. Too often, they simply fill a room with computers and set up the machines any way they fit inside the room (Garger, 2011).

According Den Blink(2009)computer labs have been configured to support teaching and learning by providing rows of computers in a lecture-style classroom set-up. The problems that are common in computer lab are that the pc's are old or out dated and

don't have enough ram or current programs installed and are locked down so you can't install anything. Also, the number of pc's available for students especially in crowded schools (Helaine, 2014).

The primary focus of the Chemistry Laboratories is to develop answers to research questions both for energetic materials and other materials. The synthesis of new energetic materials, their testing and performance products are analyzed to provide safety information (Walsh, 2011).

The common problems found in both chemistry and physicslaboratories are; in planning and application, it is much time consuming, short period of time in using the laboratory, checking students' performance during the activities can be difficult in over-crowded classes, and lack of laboratory equipment, or insufficient lab conditions which limits the teacher to perform a simple lab activity (McLeod, 2011).

Consequently, LIMA is providing the latest maritime facility in order to catch up in modernization of the shipping industry. One of those facilities is the full mission bridge which contains the Kongsberg simulator that provides actual navigation, automation, and dynamic positioning systems. It is one of the best achievements of the university, being one of the top maritime schools in the region.

This study aims to test the quality of services offered by LIMA laboratory facilities and the level of satisfaction among the maritime students. The result of the study will inform the LIMA administration regarding the thoughts of the students concerning the laboratory facilities, and hopefully to provide solutions or realization which the university may consider in its drive to sustain quality education. In that way we can contribute in helping the following batches of students with regards to the usage of the laboratory facilities.

### **OBJECTIVES OF THE STUDY**

This study aimed to know the level of satisfaction of LIMA students in using laboratory facilities. Specifically, the study sought to identify the laboratory facilities frequently used in LIMA; determine the level of satisfaction of LIMA students in using laboratory facilities; determine the problems encountered by students with regards to service provided by laboratory facilities and to propose plans to improve the level of service offered by LIMA laboratory facilities.

### **METHOD**

This section presents the method used by the researchers to gather the data necessary to answer the problems stated. It outlined the Paper's Research Design, the Respondents of the Study, the Instruments, the Data Gathering Procedures, and the Data Analysis.

## **Research Design**

This study used the descriptive method of research. Descriptive research is conclusive in nature, as opposed to exploratory. This research gathers quantifiable information that can be used for statistical inference on your target audience through data analysis. Ittakes the form of closed-ended questions, which limits its ability to provide unique insights. However, used properly it can help an organization better define and measure the significance of something about a group of respondents and the population they represent (Penwarden, 2014). The researchers used the descriptive method to know the level of satisfaction of maritime students in using the laboratory facilities.

# **Participants**

The respondents of the study were two hundred fourteen (214) Maritime students. In order to determine the respondents accurately, the researchers used a stratified random sampling where samples are taken proportionally with the total number of population of second and third year students in Bachelor of Science in Marine Transportation (BSMT). Distribution of the questionnaire is proportionally allocated to all sections of the respondents.

### **Instruments**

The data needed in this study were gathered through the questionnaires made by the researchers. List of survey questions asked to respondents is designated to extract specific information. The content of the questionnaire was composed through the related studies and the result of the pre- interview conducted to assess the most common problems encountered by students of LIMA that are applicable in our research and this was validated by the research adviser and the statistician. The purpose of Part I is to know the laboratory facilities utilized by LIMA students. Part II aims to acquire information about the level of satisfaction of LIMA students in using laboratory facilities. Part III intends to identify the problems encountered by students with regards to services

provided in the laboratory. The researchers consulted and obtained the approval of the research adviser regarding the preparation and contents of the questionnaires prior to use.

#### **Procedures**

After the approval of the questionnaires, they were distributed personally to the respondents, 108 for the second year and 106 for the third year. The content of the questionnaire was explained first to the respondents before answering. Accomplished questionnaires were collected; answers on the questionnaire were tallied and interpreted.

# **Data Analysis**

The data gathered presented in tabular form to interpret the results and descriptive statistics such as frequency distribution and weighted mean were used. Frequency distribution and weighted mean were utilized to evaluate the level of satisfaction of LIMA students in using laboratory facilities. The given scale was used to interpret the result of the data gathered: 3.50-4.00- Highly Satisfied, 2.50-3.49- Satisfied, 1.50-2.49- Less Satisfied, 1.00-1.49- Not Satisfied

#### RESULTS AND DISCUSSION

Table 1. Laboratory Facilities Frequently Utilized by LIMA Students

Computer Laboratory	f	%	Rank
1. Student Station	190	89	1
2. Management Station	136	64	3
3. Server	130	61	4
4. Ventilation	162	76	2
5. Equipment (printers, scanners, etc.)	107	50	5
Physics/ Chemistry Laboratory	f	%	Rank
1. Ventilation	178	83	2
2. Utilities	155	72	4
3. Apparatuses	187	87	1
4. Ventilation	170	79	3
5. First Aid and Fire Fighting	126	59	
Equipment	120	39	5
C. GMDSS Laboratory	f	%	Rank
1. VHF/ MF/ HF DSC Controllers	196	92	1
2. INMARSAT B/C/M	182	85	2
3. NAVTEX Receiver	177	83	4
4. EPIRB	154	72	5
5. SART	178	83	3

Table 1 presents the different components of computer laboratory utilized by LIMA students. The result shows that the Students Station is the most usable part of the facility that was chosen by 190

respondents which accounts 89 percent of the total sample population. This section is composed of the computers that the students will use on a regular basis. Equipment is chosen by 107 respondents which accounts 50 percent of the total respondents and ranking at number five among the components of this facility. This last ranked section is consists of different equipment such as printers, cameras, headsets, scanners, and others.

It reflects that the students are exposed in using the main feature of this facility. According to Garger (2011), Computer laboratory is more than just rooms with lots of computers. Proper care must be taken to ensure that the laboratory is easy to access and fulfils its purpose. Many high schools and colleges use computer labs to allow student access to the software necessary to complete coursework. Computer labs are also used to instruct students on computer use, programming, and related subjects.

In terms of different parts of the Physics and Chemistry Laboratory used by the LIMA students, the apparatus ranked first and chosen by 187 students and comprises 87 percent of the total respondents. This means that the students are capable to use the common laboratory apparatus which includes beaker, burette, test tubes, and others. The last ranked section is the First Aid and Fire fighting Equipment in the facility. This was chosen by 126 students which accounts to 59 percent of the total respondents. It simply means that some students are not aware of this section beside the point that this is important for emergency purposes.

It can be concluded from the table that the LIMA students are gaining experiences in using the primary feature of both physics and chemistry laboratory facility. In terms of different equipment in the GMDSS facility utilized by the LIMA students it shows that 92 percent of the total respondents (196 respondents) selected the VHF/MF/HF Controllers as the top rank GMDSS equipment used by the LIMA students. The first ranked facility equipment shows that the students are equipped to easily acquire practical knowledge of modern shipboard communication system. On the other hand, the EPIRB was selected by 154 students which comprise 72 percent of the sample population. This is the lowest ranked GMDSS equipment used by the LIMA students.

It can be derived from the table that the LIMA students are using the different GMDSS equipment which is primarily used by maritime students to practice their communication skills and to be familiar with the equipment used for communicating with

other vessels or in port. With the aid of communication and navigation simulation exercises, students will be equipped to easily acquire practical knowledge on managing vessels safely and efficiently.

Table 2 presents the mean score of Level of Satisfaction of LIMA Students in Using Computer Laboratory Facility. It can be seen in the table that the response of the respondents about the facility are satisfied with a composite mean 3.27.

Table 2. Level of Satisfaction of LIMA students in Using Computer Laboratory

Computer Laboratory	WM	VI	Rank
1.The number of computer			
units are enough for the	3.31	Satisfied	1
number of users.			
2.The ventilation in the			
facility is comfortable for	3.29	Satisfied	2
the students.			
3. The program in computer	3.22	Satisfied	3
systems are updated.	3.22	Saustieu	J
Composite Mean	3.27	Satisfied	

The result shows that the students are satisfied to the number of computer units in relation with the number of students and highest rank with a weighted mean of 3.31. The respondents are also satisfied that the ventilation in the facility is comfortable for the students with a weighted mean of 3.29 and ranked second in the list. The lowest rank among the satisfaction of the students in using computer laboratory is the program in computer systems are updated with a weighted mean of 3.22.

This explains that the respondents are satisfied in using the computer laboratory. It also refers to the accessibility of the laboratory facility for the use of maritime students as a costumer of the school. Customer satisfaction can be defined as an expectation of a customer regarding a product. Beyond satisfying needs, customer value is the key to establish and maintain long run relationships.

Table 3 shows the mean score of Level of Satisfaction of LIMA Students in Using Physics and Chemistry Laboratory Facility. It can be inferred in the table that the response of the respondents about the facility are satisfied with composite mean of 3.19.

The result shows that the students are satisfied with the quantity of equipment and apparatus provided by the facility with a weighted mean of 3.25 and ranked number one. It was followed by the quality of equipment and apparatus provided by the facility which ranked second with a weighted mean of 3.24.

Table 3. Level of Satisfaction of LIMA Students in Using Physics / Chemistry Laboratory

		v	
Physics / Chemistry Laboratory	WM	VI	Rank
1. The quality of equipment			
and apparatuses offered by	3.24	Satisfied	2
the facility.			
2. The quantity of			
equipment and apparatuses	3.25	Satisfied	1
provided by the facility.			
3. The amount of time			
intended for use in each	3.06	Satisfied	3
laboratory facility.			
<b>Composite Mean</b>	3.19	Satisfied	•

The amount of time intended for use of each laboratory facility is the lowest rank among the students satisfaction in using the laboratory facility with a weighted mean of 3.06. It can be reflected from the result that the students are satisfied in using Physics and Chemistry laboratory wherein they can learn to practice the activities of a scientists, collecting and analysing data, performing procedures, and thinking of a new question to explore.

**Table 4. Level of Satisfaction of LIMA Students in Using GMDSS Laboratory** 

<b>GMDSS Laboratory</b>	WM	VI	Rank	
1. Students get enough				
time and frequency in	2.99	Satisfied	2	
using the Poseidon	4.33	Sausticu		
GMDSS simulator				
2. The Poseidon				
GMDSS simulator				
gives useful	3.08	Satisfied	1	
experience for future				
occupations				
3. The Poseidon				
GMDSS simulator is	2.83	Satisfied	3	
easy to operate				
Composite Mean	2.97	Satisfied	•	

Table 4 shows the the mean score of Level of Satisfaction of LIMA Students in Using GMDSS Laboratory Facility. It can be concluded in the table that the response of the respondents are satisfied about the facility with a composite mean of 2.97.

A result shows that the students are satisfied that the Poseidon GMDSS Simulator gives useful experience for future occupation with a weighted mean of 3.08 and ranked first in the list. This means

that the facility is giving benefits to the students which they can apply in their profession. On the other hand, students are satisfied that they get enough time and frequency in using Poseidon GMDSS Simulator which ranked second and with a mean of 2.99. It was followed by the Poseidon GMDSS Simulator is easy to operate for the third and lowest rank with a weighted mean 2.83.

Overall, the students are satisfied in using the GMDSS laboratory facility. It can be concluded that the facility meets its purpose which is to provide students in acquiring a broad concept of a shipboard communication system and hands-on experience of modern shipboard electronic navigation system.

Table 5 shows the problems encountered by students with regards to service provided by computer laboratory facilities in LIMA.

Table 5. Problems Encountered by Students with Regards to Service Provided by Laboratory Facilities

WM	VI	Rank
2.27	Sometimes	2
2.24	Sometimes	3
2.92 Often		1
2.48	Sometimes	
WM	VI	Rank
2.43	Sometimes	3
2.44	Sometimes	2
2.59	2.59 Often	
2.49	Sometimes	
$\mathbf{W}\mathbf{M}$	VI	Rank
2.36	Sometimes	3
<ul><li>2.75 Often</li><li>2.71 Often</li></ul>		
		1
		2
2.61	2.61 Often	
	2.27 2.24 2.92 2.48 WM 2.43 2.44 2.59 2.49 WM 2.36 2.75 2.71	2.27       Sometimes         2.24       Sometimes         2.92       Often         2.48       Sometimes         WM       VI         2.43       Sometimes         2.44       Sometimes         2.59       Often         2.49       Sometimes         WM       VI         2.36       Sometimes         2.75       Often         2.71       Often

**Table 6. Proposed Action Plan** 

	Key Result Area		Strategies		Person involved
1.	Computer units are old, outdated,	•	Purchasing new computer units	•	Management
	and current programs installed are	•	Installing programs that are		Information system
	locked down		accessible for the students	•	Instructors and
					Technicians
2.	Short period of time for the use of	•	Reserving a whole period for	•	Instructors
	students		laboratory classes once a week		
3.	Difficulties in operating GMDSS	•	Seminars on formulating teaching	•	Instructors
	equipment		techniques and strategies		

The result presents that the respondents said that sometimes they encounter some problems in computer laboratory with a composite mean of 2.48. The problem that ranks first is the current programs installed are locked down so you cannot install anything with a weighted mean of 2.92 and verbally interpreted as often, while the computer units are old and out dated ranks last with a weighted mean of 2.27 and verbally interpreted as sometimes.

The only way in which learners can attain digital literacy is by having hands- on experience with computer equipment and computer room allows learners to become comfortable in the use of computer equipment.

As the students weigh the difficulties to the service provided in the Physics and Chemistry laboratories, it shows that the problem with short period of time for usage ranked first with a weighted mean of 2.59, meaning it is often encountered by users of the facilities. Insufficient laboratory conditions and lack of laboratory equipment and apparatuses ranked next with weighted means of 2.44 and 2.43 respectively, both of them interpreted as sometimes. The three problems combined for a composite mean of 2.49, showing that problems with Physics and Chemistry laboratories are faced sometimes.

Science laboratories are of great help for students in all programs. These should provide experiences for direct involvement which highlight the tentative nature of science. Enough and functional laboratory apparatuses is an essential factor for learning and customer satisfaction.

Difficulties in operating GMDSS equipment ranked first with a weighted mean of 2.85 that shows the problem is often encountered by the users. Ranking second is insufficient time in using the facility with a mean of 2.71, also often met by students. Equipment failure ranked third with a weighted mean of 2.36 and verbally interpreted as sometimes. The three problems combined for a composite mean of 2.61 which means these problems are often encountered by students.

The Global Maritime Distress and Safety System (GMDSS) is an important facility that equips students with knowledge about safety procedures, types of equipment, and communication protocols used to increase safety and make it easier to rescue distressed vessels. It is a very important facility and it is essential for the university to confront the problems encountered by the students for maximized learning outcomes.

#### CONCLUSION AND RECOMMENDATIONS

All laboratory facilities provided by LIMA are utilized by students. Based on the outcome and interpretation of the survey, all students are satisfied in using each laboratory facility provided by the LIMA administration. The respondents sometimes encountered problems in using different laboratory facilities in LIMA. A propose plan of action was formulated to address the problems encountered.

Learning process should always meaningful and challenging yet enjoyable in order to stimulate the enthusiasm and interest of the students to perform certain tasks or academic related activities with cooperation (Chavez, Dotong & Laguador, 2014). Therefore, it is recommended that the administrators, faculty, and staff must provide more time for the students to use each of the laboratory facility in LIMA during experiments and practical activities. The laboratory instructor must demonstrate well the use of laboratory equipment. Having an effective classroom management is a skill that needs to be mastered by the Maritime Professional teachers (Laguador & Alcantara, 2013) in order to facilitate the student learning activities properly. The students encounter problems on how to operate or use laboratory equipment. Develop the courageous initiative to remind concerned administrators. proprietors and educational leaders to augment university provisions of teaching devices and materials in order to upgrade college instructors' teaching skills/practices in using multimedia-assisted instruction (Fajardo, 2014). The administrators may provide more first aid and fire fighting equipment in each laboratory facility. In case of accident during performing laboratory experiments, there will be enough solution to distinguish the problem. The LIMA students should be aware that in case of any accident while performing experiments, there are first aid and fire fighting equipment in each laboratory facility and they should know where they can find that equipment. The LIMA students should not hesitate to notify the LIMA administration in case they have any concern about the services provided by any laboratory facility in LIMA. The administration knows possible and better actions to fulfil those concerns.

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