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Deck Function 2: The Perceived Seamanship Competency of the Domestic Vessel on Board Trainees

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Abstract
This study investigated the domestic vessel on board trainees perceived seamanship competencies vis-à-vis the minimum requirements of STCW 1978 as amended in the Maritime Education College of the University of Cebu Lapu-Lapu and Mandaue. Categorically, this study determined the respondents' profile in terms of age, gender, type of domestic vessel boarded, and year completed academic requirements. Furthermore, it defined the perceived deck function 2 technical competencies, the relationship between the profile and the perceived competencies of the cadets, the significant difference in their technical competencies when grouped according to profiles, and the conclusion, recommendations, and the proposed action plan. The study used the descriptive-correlational method, and one hundred BSMT offshore domestic cadets were chosen as respondents. The study was conducted at the University of Cebu Lapu-Lapu and Mandaue. There searchers utilized an STCW-based checklist to gather the data needed. Frequency count, percent, Chi-square, and Kruskal-Wallis were used to treat the data collated. The study revealed a notable gap between the perceived competencies in ensuring satisfactory trim, stability, hogging, and sagging. It also determined a significant relationship between profile and gender and the perceived competencies. Moreover, the studys howed no significant difference between the technical competencies when grouped according to profile. The results concluded that the success of producing quality seafarers is the primary responsibility of themaritime institute to ensure a globally competitive STCW '95 (Standards of Training, Certification, and Watch keeping) compliant maritime education graduates.

Keywords: Deck Function 2, seamanship competency, descriptive-correlational, Mandaue City, Philippines

Introduction

The Maritime sector is of critical significance to any economy. It is the primary means for transporting goods internationally, which accounts for over 70% of transportation requirements of the world. (Sirimanne et al.,2019).

Currently, maritime activities are expanding, bringing benefits to people worldwide. The merchant navy, offshore oil subsector, commercial fishery, and cruise companies have added impetus to the growth in the industry. The sector is a significant catalyst for socio-economic development and international competitiveness in a changing world (Study Mode, 2014). With this development, the shipping industry worldwide has also evolved and adapted to meet the challenges of providing businesses all over the globe with modern and cost-efficient vessels. Thus, organizations must continue developing and implementing up-to-date technology (Yang et al., 2007). Technology deployment through innovation is a great enabler that increases the possibility of improving operational performance, productivity, and life cycle optimization of the assets, as seen in other industries (Frankel, 1991; Nikitakos and Lambrou, 2007). Cheng et al. (2011) review of cases found that technology, organizational structure, and business processes impact one another. In today's technology-intensive environment, organizational structures and business processes need to be developed in coordination with technological development. As a result, many changes were made to the ship's construction, operation, and management suited this purpose.

The challenge now for the maritime industry is to provide these modern and high-technology vessels with officers and ratings that have the technical skills and management knowledge because maintaining technical skills and management knowledge is also the key to keeping safe shipping operations. Against this backdrop, the future of maritime jobs and skills is becoming a significant concern in the context of Industry 4.0 (WMU, 2019). To increase flexibility and remain competitive, organizations
must develop a more highly skilled workforce, cultivating
specialist skills in new areas and attaining a higher level of systematic and
effective training (Xue, C 2003). This theory covers all seafarers worldwide, observing high standards of competence and professionalism in their duties performed onboard. Therefore it follows that for a seafarer to be able to serve the majority of today's merchant fleet, they must possess the minimum requirement of competence.

Verification made on the performance of those cadets who undergo cadetship on board domestic vessels through their training record book and panel interview assessment indicated an alarming trend that they were acquiring fewer seamanship competencies. As such, it is vital to gather data and information from the trainees as inputs to determine if compliance with the minimum STCW requirements of shipboard training has been attained. Limited competency, or if there is a gap from the requirement, will result in deficiency in the predetermined set of competencies that a cadet shall demonstrate to authorities as a component of becoming an officer.

It is on this premise that the researchers conducted a study on the domestic ships' on board trainees perceived seamanship competencies vis-a-vis STCW '78 as amended minimum requirement such as: supervise the preparation of holds and deep tanks for loading, supervise the operation of the ship's cargo gear, supervise the loading, ensure a solid tow and securing of all cargoes in packaged form, ensure separation between bulk cargoes or packaged goods if required, supervise to ensure that adequate precautions are taken to ensure ventilation and facilitate inspection during voyage, use of the International Maritime Dangerous Goods (IMDG) Code, inspect the cargo at regular intervals, record all inspection and the conditions found, take actions to avoid damage to ship or cargo, inspect hatch covers, gear and cargoes before and during discharging, ensure that all cargoes are discharged in good condition and at the right destination, ensure satisfactory trim, stability hogging and sagging at all times, identify any damage to ship or cargo after discharging and establish possible causes (STCW 2011). The goal is to determine what component of the seamanship competencies the cadets could not acquire during their onboard training.

Objectives of the Study

The study aims to determine the domestic vessel cadets' perception of their seamanship competencies under Table ll/l of the Standards of Training, Certification, and Watchkeeping (STCW) 1978 as amended. Furthermore, the study seeks to discern the relationship between the respondents' profile and the Function 2 technical competencies and find out the difference in the respondents' Function 2 technical competencies when the respondents are grouped according to their profile. The findings will be used to design an action plan to improve the department's educational management.

Methodology

Research Design

This study used the descriptive-correlational method to determine the domestic vessel cadets' seamanship competencies under Table II/I of the STCW 1978 as amended requirements.

Research Environment

This study was conducted at the University of Cebu Lapulapu and Mandaue (UCLM) campus. It is located at the foot of the old Mactan Bridge that separates the cities of Mandaue and Lapulapu. The university offers several courses, including the Bachelor of Science in Marine Transportation (BSMT) and the Bachelor of Science in Marine Engineering (BSMaRE).

Research Respondents

The respondents of this investigation were one hundred (100) BSMT cadets who had taken their twelve (12) months of apprenticeship or cadetship training on board domestic vessels of various functions from 2012 to 2016.

Research Instrument

This study used STCW-based researchers – made checklist accomplished by the respondents. The data gathered from the instrument made up the domestic vessel cadets' perception of their seamanship competencies which they answered as competent and not competent.

The checklist also contains the respondents' general information regarding age, gender, type of vessel boarded, and year completed academic requirements.

Treatment of Data

Frequency count, percentage, Chi-square, and Kruskal-Wallis were used to treat the collected data.

Research Procedure

The researchers sent a letter requesting the approval of the UCLM Campus Affairs Director through the office of the Maritime Superintendent to conduct the research. When the request to conduct the study was granted, the researchers started distributing the checklists to the respondents who were applying for their baccalaureate degree at the Shipboard Training Office. After gathering and collating the data, the researcher submitted the documents to the statistician for treatment.

Results And Discussion

This section presents the profile of the subjects in terms of age, gender, type of domestic vessel boarded, and year completed academic requirements. The following section discusses the perceived seamanship competency of the domestic ship on board trainees, the significant relationship between the respondents' profile and their perceived competency, and the significant difference in the respondents' perceived seamanship competency when grouped according to their profile.

Table 1 Profile of the Respondents

Variables	f	Percentage
Age		
20	4	4.00
21	20	20.00
22	20	20.00
23	25	25.00
24	10	10.00
25	13	13.00
26	8	8.00
Total	**100**	**100.00**
Gender		
Male	81	81.00
Female	19	19.00
Total	**100**	**100.00**
Type of vessel boarded		
Passenger	8	8.00
General Cargo	10	10.00
Container	3	3.00
Tanker	29	29.00
LCT	50	50.00
Total	**100**	**100.00**

Year completed academic requirements		
2011	11	11.00
2012	9	9.00
2013	18	18.00
2014	25	25.00
2015	18	18.00
2016	19	19.00
Total	**100**	**100.00**

As shown in Table 1, most of the respondents' ages range from twenty-one to twenty-three years old, comprising 65% of the total subjects. Regarding gender, the study revealed that eighty-one (81) males and nineteen (19) female respondents were able to board domestic vessels from 2012 to 2016. This result indicates that female cadets are now slowly accepted in the maritime profession, which is traditionally a male-dominated domain. This result represents a positive trend in gender balance, with the report estimating 24,059 women serving as seafarers, which is a 45.8% increase compared with the BIMCO/ICS 2015 Seafarer Workforce Report (IMO 2022). On the type of vessel boarded, 50% of the respondents answered Landing Craft Tank (LCT). This vessel is a World War II-type naval vehicle carrier converted into a cargo ship in the domestic maritime industry that serves explicitly as transportation for cars, buses, and trucks. This finding is because most shipping companies that operate this vessel do not impose strict requirements for a shipboard apprenticeship. The tanker vessels employed to deliver fuel and oil cargoes from Cebu to its neighboring islands register 29% of the respondents. Concerning the year that the respondents completed their academic requirements, the year 2014 had the largest at 25%.

Table 2 Function 2 Technical Competencies in Supervising the Operation of the Ship's Cargo Gear

Indicators	Competent f	Percent	Not Competent f	Percent
1.1 **Supervise the preparation of holds and deep tanks for loading**				
1.1.1 demonstrate an understanding of the safe handling of hatch covers	84	84.00	16	16.00
1.1.2 assist in general preparation of holds including the laying of dunnage	74	74.00	26	26.00
1.1.3 calculate the capacity of spaces available for the cargo	60	60.00	40	40.00
1.1.4 clean and prepare bilges, wells and strum boxes	54	54.00	46	46.00
1.1.5 test hold scuppers	47	47.00	53	53.00
1.1.6 test bilge suctions	50	50.00	50	50.00
1.1.7 assist with opening up, overhaul and testing a non-return valve	60	60.00	40	40.00
1.1.8 understudy the deck officer in supervising a tank cleaning	61	61.00	39	39.00
1.1.9 use a checklist for entry into an enclosed space	63	63.00	37	37.00
1.1.10 inspect fresh water tank	63	63.00	37	37.00

Table 2 reflects the respondents' function 2 technical competencies under the indicator on demonstrating an understanding of the safe handling of hatch covers like 84% competent; assisting in general preparation of holds including the laying of dunnage at 74%; use of a checklist for entry into an enclosed space and inspecting fresh water tank at 63% competent. Cadets rated themselves competent with the tasks mentioned above because they performed them during their apprenticeship. The tasks rated as not competent, like testing bilge suction, testing hold scuppers, and cleaning and preparing bilges, wells, and strum boxes, are indicators that cadets do not commonly perform.

According to Kolb, learning is the process whereby knowledge is created through experience transformation. That knowledge results from grasping and transforming experience (Kolb, 1984.) In this

scenario, the cadets already know where these parts of the ship are located but cannot perform the required tasks. Thus, they miss learning on the skill demonstration of skills.

Table 3 Respondents' Function 2 Technical Competencies in Supervising the Operation of the Ship's Cargo Gear

Indicators	Competent f	Percent	Not Competent f	Percent
1.2 **Supervise the operation of the ship's cargo gear**				
1.2.1 practice knots, bends, hitches and whippings	63	63.00	37	37.00
1.2.2 practice splices in ropes and wires	66	66.00	34	34.00
1.2.3 identify types of ropes and wires and know their uses	64	64.00	36	36.00
1.2.4 break out new coils of rope and wires	54	54.00	46	46.00
1.2.5 stow wire and ropes with due regard to their preservation	59	59.00	41	
1.2.6 assist with the rigging of heavy lift derricks	73	73.00	27	27.00
1.2.7 inspect holds for safety, with special regard to hatch boards, ladders	65	65.00	35	35.00
1.2.8 assist with rigging clusters and portable lights	54	54.00	46	46.00
1.2.9 with due regard to safety, start, operate and assist with routine inspection and maintenance of Winches	51	51.00	49	49.00
1.2.10 derrick/cranes	47	47.00	53	53.00
1.2.11 assist with topping and lowering cranes and derricks	62	62.00	38	38.00

The top 5 indicators in which more cadets are competent are the tasks common in domestic vessels and are less complex. Thus, cadets were allowed to perform by their supervising officers as part of their daily tasks on board vessels, especially on making up wire running gear or standing gear such as preventers, practice splices in ropes and wires, and assisting with the rigging of heavy-lift derricks. Supervising the operation of the ship's cargo gear is a competency encompassing mostly the duties and responsibilities of an officer on monitoring the established standard safety procedures on the preparation of the ship's cargo gears before loading or discharging. Constructivism theory promotes that people construct their understanding and knowledge of the world through experiencing things and reflecting on those experiences. So when an individual encounters something new, they have to reconcile it with their previous ideas and experiences, may change what they believe, or maybe discard the new information as irrelevant (Bruner,1996). In a nutshell, those communities of practice are groups of people who share a concern or passion for something and learn how to do it better as they regularly interact (Culver and Trudel, 2006).

Table 4 Respondents' Function 2 Technical Competencies in Supervising the Operation of Loading

Indicators	Competent f	Percent	Not Competent f	Percent
1.3 **Supervise the loading**				
1.3.1 assist in the supervision of loading of cargo	63	63.00	37	37.00
1.3.2 assist in cargo documentation	60	60.00	40	40.00
1.3.3 check that dangerous goods are being stowed in accordance with the IMDG Code	52	52.00	48	48.00
1.3.4 inspect cargo gear during operation	50	50.00	50	50.00
1.3 5 assist with separation of cargo	55	55.00	45	45.00
1.3.6 prepare and interpret cargo plans	57	57.00	43	43.00
1.3 7 calculate cargo loaded, stability and loading stresses using stress diagrams, stress indicators	57	57.00	43	43.00

or loading computers where applicable				
1.3.8 sketch and interpret the markings on four	73	73.00	37	37.00
different types of container				
1.3 9 explain the Different classes of containers	68	68.00	32	32.00
1.3.10 correct methods of handling containers	61	61.00	39	39.00
1.3.11 identify the markings of containers	55	55.00	45	45.00
1.3.12 assist in receiving, checking and stowing	56	56.00	44	44.00
1.3.13 assist in taking on freshwater	64	64.00	36	36.00

Table 4 presents the competencies of the respondents in supervising the ship's loading. The study revealed that most subjects considered themselves competent in the tasks to be performed. This finding means that most of the respondents were able to experience performing supervision of loading on the vessel they boarded. This result is reinforced by the concept that situated learning involves people being full participants in the world and generating meaning. The purpose is not simply to learn from the talk as a substitute for legitimate peripheral participation but rather to learn to talk (Pittaway and Cope, 2007). A good learning experience is authentic, interactive, and collaborative to enhance engagement and improve knowledge retention. Besides, it adds value to the learner, encourages social learning, promotes learner self-assessment, and is inquiry-based. A good learning experience strengthens learning and development (FinancesOnline, 2022).

Table 5 Respondents' Function 2 Technical Competencies in Ensuring a Solid Stow and Securing of all cargoes in Packaged Form

Indicators	**Competent**	**Percent**	**Not Competent**	**Percent**
	f		**f**	
1.4 **Ensure a solid stow and securing of all cargoes in**				
packaged form				
1.4.1 assist in securing cargo stowed below deck	60	60.00	40	40.00
1.4.2 assist in securing cargo stowed on deck	53	53.00	47	47.00
1.4.3 assist with securing containers	56	56.00	44	44.00
1.4.4 assist in checking lashings on deck containers	52	52.00	48	48.00
1.4.5 assist in checking the lashing on break bulk cargo	58	58.00	42	42.00
stowed on open flats				

As shown in Table 5, most subjects considered themselves competent in the tasks to be performed. This result means that most of the subjects experience how to ensure a solid stow and securing of all cargoes in packaged form. Those who rated themselves as not competent are the cadets who were not assigned to a container vessel. The indicators listed in Table 5 are mostly performed in a container vessel. This result is expected because the tasks under competence indicator 1.4 are routine operations during cargo loading by all the vessels boarded by the subjects except for the tanker, which carries liquid cargo. Furthermore, it is a usual practice on board these vessels to assign the cadets to assist the crew during the stowing and securing of cargoes.

On the other hand, the reason why not 100% of the subjects considered themselves competent aside from the tanker vessel boarded is due to the decision of their immediate supervising officer. The additional competency needs identification is possible for the domestic vessel cadets through their training record book assessment. This analytical procedure aims at identifying specific training needs for an individual or group of employees so that training can be tailored to their needs. This analysis focuses on individuals and their particular needs concerning skills, knowledge, or attitudes they must develop to perform their assigned task (Halim and Ali, 1988). It is a reality on board the ship that some officers will not make the training record book the basis for the tasks given to cadets. Thus, acquiring knowledge and practical skills will not occur despite the availability of the equipment and the prevailing opportunity.

Another factor to consider is the cadet's attitude and motivation to adapt to the onboard situation. Without the self-motivation and the right attitude to learn, no matter how well-equipped the vessel boarded is, the

learning and acquiring of skills will not occur. So to prepare the cadets, the MHEI should prepare the cadets on how to adapt to the shipboard environment.

Table 6 Respondents' Function 2 Technical Competencies to Ensuring Separation Between Bulk Cargoes or Packaged Goods

Indicators	Competent f	Percent	Not Competent f	Percent
1.5 **Ensure separation between bulk cargoes or packaged goods if required**				
1.5.1 assist in the separation of cargo	73	73.00	37	37.00
1.5.2 understand reasons for separation of cargo parcels	67	67.00	33	33.00

The study revealed that most respondents considered themselves competent in the tasks to be performed under the competence indicator on ensuring the separation between bulk cargoes or packaged goods. Most cadets rated themselves competent because this task is one of the most manageable tasks given to cadets onboard during their training, especially in container vessels. The result can be attributed to the ships boarded by the subjects except for the tanker, which carries liquid cargo. It is a regular practice on board these vessels to assign the cadets to assist the crew during the stowing and securing loads.

Not 100% of the respondents considered themselves competent may be credited to their frame of mind related to the work routine during cargo handling. Dahama (1979) added that the purpose of manpower training is to prepare a person to function willingly and understand his work situation. Individual development focuses on the importance of personal growth and development through learning programs or training activities. If a cadet is not accustomed to working, the possibility is that they will not endeavor to engage in tasks where completion may go beyond the regular duty hours. Thus, a more significant portion of the competency required for the specific task will not be acquired by the trainee.

Table 7 Respondents' Function 2 Technical Competencies in Supervising to Ensure that Adequate Precautions are taken to Ensure Ventilation and Facilitate Inspections during the voyage

Indicators	Competent f	Percent	Not Competent f	Percent
1.6 **Supervise to ensure that adequate precautions are taken to ensure ventilation and facilitate inspection during the voyage**				
1.6.1 assist in the control of cargo ventilations and temperature	68	68.00	32	32.00
1.6.2 trim ventilators	67	67.00	33	33.00

Table 7 reveals that most subjects considered themselves competent in the tasks to be performed. This finding means that most subjects experienced how to supervise the crew to ensure adequate precautions are taken to ensure ventilation and facilitate inspection during the voyage. Training is the process of teaching, informing, or educating people so that they may become as well qualified as possible to do their job and they become qualified to perform in positions of greater difficulty and responsibility (Van Dorsal, 1962: Jucius, 1963). The cadets' competence indicates that this task is commonly provided and assigned to cadets to ensure ventilation of goods since there are goods that may develop moisture during transit and will result in damage of goods that could result in a liability on the part of the vessel transporting the goods.

Table 8 Respondents' Function 2 Technical Competencies in the Use of International Maritime Dangerous Goods Code

Indicators	Competent f	Percent	Not Competent f	Percent
1.7 **Use the international maritime Dangerous Goods (IMDG) code**				
1.7.1 compile a list of all dangerous goods containers with their IMO classification and storage position	55	55.00	45	45.00
1.7.2 demonstrate how to identify a product and handling procedures from IMDG Code	50	50.00	50	50.00

Table 8 shows that the majority of the respondents considered themselves competent in the tasks to be performed. This finding means that most of them were able to experience loading dangerous goods during their training on board the vessel they boarded. And most cadets were mainly knowledgeable about the different classifications of goods as listed in the International Maritime Dangerous Goods Code (IMDG). According to Ghosh et al. (2014), it is generally accepted that many seamanship skills are best "learned on the job," however, some can be initiated in a simulated environment and then further developed on board the working or training ship through experience.

Table 9 Respondents' Function 2 Technical Competencies in Inspecting the Cargo at Regular Interval

Indicators	Competent f	Percent	Not Competent f	Percent
1.8 **Inspect the cargo at regular interval**				
1.8.1 check connection of refrigerated containers to ship's support systems and make a record of daily readings	55	55.00	45	45.00
1.8.2 accompany officer of the watch on rounds	57	57.00	43	43.00

Table 9 reveals that most respondents considered themselves competent in the tasks under indicator inspect the cargo at regular intervals. This result means that most of them were able to experience performing the tasks during their training on board the vessel they boarded. The result can be attributed to the type of vessels the subjects have boarded. Since all vessels regularly transport cargoes, the opportunity to perform the tasks under competence; inspect the cargo at regular intervals is always present. It is also important to consider the self-motivation of the respondents because without it, even if there is plenty of opportunities to perform the required tasks, it will seldom happen. Desrosiers (2000) stated that Sea training is a time for maritime students to gain experience, skills, and knowledge that will serve them for the rest of their careers.

Thus, it can be concluded that if the respondents were given a chance to perform the tasks by their immediate onboard officers, the percentage of the respondents that considered themselves competent would become higher. However, it is interesting to verify this result because the first task under this competency is all about refrigerated containers, of which there are only a few respondents whose ships boarded are containerized cargoes. One way of validating this result is through the Shipboard Training assessment processes that the respondents will undergo.

Table 10 Respondent's Function 2 Technical Competencies in Recording all Inspections and the Conditions Found

Indicators	Competent f	Percent	Not Competent f	Percent
1.9 **Record all Inspections and the conditions found**				
1.9.1 take ullages and temperature where applicable of	60	60.00	40	40.00

liquid cargo				
1.9.2 take and record hold air temperature	55	55.00	45	45.00

As shown in Table 10, the majority of the respondents considered themselves competent under the indicator; record all inspections and the conditions found. This finding means that most of them were able to experience performing the tasks during their training on board the vessel they boarded. The result can be associated with assigning cadets to perform tank sounding to ascertain or measure ullage or the free space between the liquid and the tank top, as well as for taking and recording the temperature of the air within the cargo hold. With this practice, it is expected that the cadet will already be competent upon disembarkation. Kongsvik et al. (2020) stated that seamanship is readily changing and developing in line with new technology – thus doing away with the old traditional skills depending upon the type and size of vessel one is sailing on.

Table 11 Respondents' Function 2 Technical Competencies in Taking Actions to Avoid Damage to the Ship or Cargo

Indicators	Competent	Percent	Not Competent	Percent
	f		f	
1.10 **Take actions to avoid damage to the ship or cargo**				
1.10.1 tend mooring lines, wires and gangway while vessel is alongside	66	66.00	34	34.00
1.10.2 as a team member assist with battening down and securing hatches/or cargo tank lids	69	69.00	31	31.00
1.10.3 keep a security deck watch	70	70.00	30	30.00

Table 11 reveals that most respondents considered themselves competent in the tasks under indicator take actions to avoid damage to ship or cargo. This finding means that most of them were able to experience performing the tasks during their training on board the vessel they boarded because these particular tasks are always performed routinely onboard. It is a protocol to constantly check mooring lines whenever the ship is docked at the pier or wharf.

The result can be associated with the practice on board of assigning cadets to perform deck watch duty while the vessel is alongside the pier or wharf and to assist the crew in stowing and securing cargoes. Although the result indicates a positive rating, it cannot be relied on to conclude that most respondents performed competency tasks.

The future sustainability of the shipping industry is overwhelmingly dependent on an adequate pool of capable and effective manpower. When such is the case, it is imperative that the prospective officers (trainees) are trained comprehensively onboard to acquire the necessary knowledge, understanding, and proficiency to handle the three-fold routine, critical, and emergency shipboard operations with courage and confidence (Karthik, 2015).

Table 12 Respondents' Function 2 Technical Competencies in Inspecting Hatch Covers, Gear, and Cargoes Before and During Discharging

Indicators	Competent	Percent	Not Competent	Percent
	f		f	
1.11 **Inspect hatch covers, gear and cargoes before and during discharging**				
1.11.1 Under supervision::rig and use stages and bosun's chair	66	66.00	34	34.00
1.11.2 top and lower derricks/cranes	66	66.00	34	34.00
1.11.3 overhaul running rigging	58	58.00	42	42.00
1.11.4 overhaul blocks and shackles	56	56.00	44	44.00

1.11.5 make survey with the chief officer of all cargo handling gear and demonstrate an understanding of the test certificates and other documents involved	58	58.00	42	42.00
1.11.6 as a team member assist with handling and securing hatch covers	58	58.00	42	42.00
1.11.7 assist with opening, closing, and securing of insulated plugs and slabs	44	44.00	56	56.00
1.11.8 assist with handling and securing hatch beams	47	47.00	53	53.00
1.11.9 assist with the inspection of cargo hooks, chains, swivels, etc	68	68.00	32	32.00
1.11.10 assist in checking the safety of walkways, ladders, handrails, container stools and other container fittings	56	56.00	44	44.00

As shown in the table, the majority of the respondents considered themselves competent in eight of the ten tasks to be performed. The top 3 indicators are as follows: assisting with inspection of cargo hooks, chains, swivels, etc.; under supervision, rig, and use of bosun's chair and derricks/cranes. These indicators are usually demonstrated to cadets by able-body seamen onboard but strictly adhere to safety. The result can be attributed to assigning cadets to assist the crew in inspecting, maintaining, repairing, stowing, and securing cargoes.

On the other hand, most subjects could not experience performing the task under 1.11.7 and 1.11.8 while they were undergoing their training onboard; thus, they considered themselves incompetent. The reason for these deficiencies is the fact that the majority of the respondents boarded the LCT vessel. LCT vessels do not have a hatch cover because the cargo space is designed primarily to load mobile cargoes and on-deck cargoes; thus, the cargo hold where the hatch cover is found is not necessary. Maluya (2006) stressed that theoretical knowledge is not enough, especially for some professional subjects like navigation and seamanship, which require hands-on activities to develop the related equipment skills.

Table 13 Respondents' Function 2 Technical Competencies in Ensuring That All Cargoes are Discharged in Good Condition and at the Right Destination

Indicators	**Competent**	**Percent**	**Not Competent**	**Percent**
	f		**f**	
1.12 **Ensure that all cargoes are discharged in good condition and at the right destination**				
1.12.1 assist in the supervision of loading and discharging of cargo	67	67.00	33	33.00
1.12.2 document and report cargo damage caused by stevedores	60	60.00	40	40.00
1.12.3 assist in the preparation of cargo documentation	70	70.00	30	30.00
1.12.4 inspect holds for completion of cargo discharge prior to sailing	68	68.00	32	32.00

Table 13 depicts that most subjects considered themselves competent under the indicator to ensure that all cargoes are discharged in good condition and at the right destination. This finding means that most of them were able to experience performing the tasks during their training on board the vessel they boarded. The result can be attributed to assigning cadets to assist the crew in the inspection during the loading and discharging operation. This practice in the domestic shipping trade allows a cadet to regularly experience performing all the tasks required to acquire the competence.

With an average of twice a day voyage for the domestic vessel, the opportunity to perform the tasks is numerous. The only possible reason why the result is not 100% is maybe due to the self-motivation or attitude of the cadets towards the functions, especially if loading and unloading happen when the cadet is off duty. Abangan (2013) suggested that shipboard training shall aim to ensure that the student performs needed tasks and acquire the necessary competencies required to qualify as an officer-in-charge of a navigational

watch. Shipboard training will serve as an avenue where theoretical knowledge and learned principles can be applied in real-time situations and circumstances.

Table 14 Respondents' Function 2 Technical Competencies in Ensuring Satisfactory Trim, Stability, Hogging and Sagging at all Times

Indicators	Competent f	Percent	Not Competent f	Percent
1.13 **Ensure satisfactory trim, stability, hogging, and sagging at all times**				
1.13.1 use of calculators and computers	40	40.00	60	60.00
1.13.2 use of stress finders	40	40.00	60	60.00
1.13.3 use of loading computers/calculators for trim and stability	43	43.00	57	57.00
1.13.4 understudy the deck officer in supervising a ballasting operation	62	62.00	38	38.00
1.13.5 under supervision, maintain the vessel in an upright condition during loading/discharging using helical tanks	57	57.00	43	43.00
1.13.6 assist with the rigging of clusters and portable lights	54	54.00	46	46.00

Table 14 reveals that only 3 of the six tasks under the competence ensure satisfactory trim, stability, hogging, and sagging at all times were considered by the subjects as competent. This result means they could not experience performing all the tasks during their training on board the vessel they boarded. The top 3 not competent indicators, particularly on the use of calculators and computers; use of stress finders; and use of loading computers/calculators for trim and stability, are considered critical tasks and, in most instances, not assigned or delegated to cadets. The incompetent result can be connected to the fact that it is very seldom that a cadet will be tasked to perform computation for trim and stability on board. Considering that stability and trim of the vessel are very critical during the voyage, the officer will only permit the cadet to observe or assist. According to Malaga (2014), students' learning is important because the maritime system is a people's system and human errors figure prominently in a casualty situation. Therefore, providing them with the required competencies is essential to a successful career as a seafarer.
This task is one competence under Function 2 that cannot be easily acquired by the cadets through practice onboard because of the importance of its nature. The result clearly shows that the tasks they perceived as competent require the presence of an officer or just observing or assisting.

Table 15 Respondents' Function 2 Technical Competencies in Identifying the Damage to Ship or Cargo after Discharging and Establish Possible Causes

Indicators	Competent f	Percent	Not Competent f	Percent
1.14 **Identify the damage to ship or cargo after discharging and establish possible causes**				
1.14.1 conduct an inspection of cargo spaces on completion of discharge and report defects or damages	72	72.00	28	28.00

As shown in Table 2, the majority of the subjects considered themselves competent under indicator 1.14. This finding means that most of them were able to experience performing the tasks during their training on board the vessel they boarded. The result can be referred to the fact that all the ships that the subjects boarded were transporting cargoes. Thus, the opportunity to perform or conduct an inspection of cargo

spaces on completion of discharge is always present. So, it is expected that the cadet is already competent to perform this task upon disembarkation.

Table 16 Relationship between the Subjects' Profile and Their Acquired Deck Function 2 Technical Competencies

Acquired Deck Function 2 Technical Competencies in relation to:	df	Computed Value	Critical Value	Decision on Ho	Interpretation
Age	6	5.718	12.592	Failed to reject Ho	Not Significant
Gender	1	5.623	3.841	Reject Ho	Significantly related
Type of vessel boarded	4	4.339	9.488	Failed to reject Ho	Not significant
Year completed academic requirements	5	4.315	11.070	Failed to reject Ho	Not significant

The study revealed a significant relationship between the respondents' gender and their acquired deck function 2 technical competencies with a computed value of 5.623 and a critical value of 3.841, which rejects the hypothesis. The reason for this relationship is that the maritime shipping industry is still a male-dominated profession or realm. Often, a female is considered weak onboard a ship and cannot be truly trusted to perform a man's job. Thus, a female apprentice is always required to prove herself beyond expectations before she will be allowed to join openly with her male counterpart. As a consequence of this practice, a female cadet usually cannot perform the tasks required to acquire the competencies needed while undergoing shipboard training resulting in deficiencies or gaps in skills. Although females onboard ships are steadily increasing, their number is still too minimal to make a change, especially in the cargo ships where most shipping companies prefer men over women.

A few groups of female seafarers in the Philippines and abroad initiated campaigns for equal treatment, but their objectives were not yet attained. Unless male and female seafarers are treated equally, there is always significant relation between their gender and their expected performance.

Some people also believe that women cannot do jobs involving strength and heavy mechanical work. Thanks to the advancement of technology, the demand for physical power has been turned into a growing demand for brainpower. The former need was one of the reasons why only a small number of women were taken onboard the training ship of the Danish Maritime Authority. And that "shipping is still a man's world." It further mentions that few women choose it as a career, and those who do, find themselves "hitting glass ceilings" at the middle management level in some countries. These are countries where women's equality is not well understood (Aggrey, 2000).

Table 17 Difference in the Respondents' Acquired Deck Function 2 Technical Competencies when Grouped According to Profile

Acquired Deck Function 2 Technical Competencies in relation to:	df	Computed Value	Critical Value	Decision on Ho	Interpretation
Age	3	3.64	0.304	Failed to reject Ho	Not Significant
Gender	1	1.25	0.263	Failed to reject Ho	Not significant

Type of vessel boarded	2	0.62	0.735	Failed to reject Ho	Not significant
Year completed academic Requirements	5	4.32	0.504	Failed to reject Ho	Not significant.

Statistically, the study revealed no significant difference in the subjects' acquired deck Function 2 technical competencies when grouped according to profile. This result can be attributed to a very slight difference only that, if treated in statistics, will not be able to establish a significant difference.

Conclusion

The success of producing quality seafarers is the primary responsibility of the maritime institution, specifically the On-Board Training Office, to ensure a globally competitive and STCW 1978 as amended conformant maritime education graduates. Therefore, the On-Board Training Office should establish a control mechanism. To ensure that a structured training program will be provided to the cadets following the established standards.

Recommendations

Based on the conclusion mentioned above, the following recommendations are offered:

1. For future researchers to conduct a study on the following:

    1.1 Comprehensive Evaluation of Maritime Students on Computer-Based Assessment of Seamanship Skills;

    1.2 Experiences of Maritime Cadets Onboard International and Domestic Vessel: A Comparative Study; and

    1.3 Tanker Vessel Seamanship Competencies of Maritime Cadets.
2. Adopt the proposed action plan.

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