Oceanography & Fisheries
Open access Journal
ISSN: 2476-0536

Juniper Publishers
key to the Researchers

Research Article
Volume 3 Issue 3 - June 2017
DOI: 10.19080/OFOAJ.2017.03.555611

Oceanogr Fish Open Access J

Assessment of Simulator Adaptability in West African Maritime Institutes: A Data Envelopment Analytical Approach

Chinedum Onyemechi[1*] Abiodun Sule[2] and Chinemerem Igboanusi[3]

[1]*Department of Maritime Management Technology, Federal University of Technology Owerri, Nigeria*

[2]*Federal College of Fisheries and Marine Technology, Nigeria*

[3]*Department of Transport Management Technology, Federal University of Technology Owerri, Nigeria*

Submission: February 02, 2017; **Published:** June 28, 2017

***Corresponding author:** Chinedum Onyemechi, Department of Maritime Management Technology, Federal University of Technology Owerri, P.M.B 1526 Owerri, Nigeria, Email: c_onyemechi@yahoo.com

Abstract

The work analyzed the role of simulators and technical laboratories in influencing curriculum development strategies of West Africa's maritime educational sector. The application of IMO's STCW requirements on simulator based education were also analyzed in juxtaposition with the educational programmes in the higher education maritime programmes of West African institutions. Development knowledge gaps were identified and recommendations made accordingly. The gains of implementing a port simulator training programme for the region's expanding port sector were emphasized. The focus of the work remains creation of officers with shorter sea time exposure during training.

Keywords: Port development; Marine technology; Marine transportation Entrepreneurial education; Ship simulator based training

Introduction

West Africa's port sector deserve a closer attention owing to recent developments in the sector especially the recent adoption of the Landlord model which has evolved modern and ultra modern concepts into the port business. To this end a truly focused training model becomes necessary in the region's port sector. Having reduced their activities by concessioning the operational activity, West African ports should focus on improving maritime training capacities of her staff in a new regulatory capacity. In this sense therefore, every section of the existing staff of the port Authority should be properly trained to perform extraordinarily in her new function. In the West African country of Nigeria, the conservancy role of Harbour maintenance is still a function of the port Authority. In this respect a good improvement is expected in this sub section through the acquisition of Harbour simulators in line with STCW requirements for the training of ship officers to ensure the port fulfills her function in the area of compulsory pilotage, Nigeria still operate compulsory pilotage districts in her port operational system. A model of training that combines full academic and part industry contribution thus can be worked out between the academic sector and the port industry. Here the port authorities can purchase the training simulators and carry out training programs with adjoining higher education training institutions. The cost imperatives of development of deep sea ports demands that training of seafarers become a priority. Employing modern training facilities to achieve this should be jointly employed in the development effort.

Objectives

This work thus is designed to achieve the following objectives:

1. To assess West African port Authority's preparedness for a simulator based training model for her Authority pilots based on available facilities.

2. To design a training model that is simulator compliant in line with STCW regulation for West African port pilotage system in a way that develops human capacity in the sector

Materials and Methods

The focus of development in most West African ports has for years now been based on competition that aims to produce a hub port among the various port systems in the sub region, with less attention being placed on man power development especially in the area of investing in training facilities that will enhance productivity in the pilotage sub sector. So much money is being invested in building more ports in Lagos area of Nigeria, Port harcourt area of Nigeria, Cotonou area of Benin Republic, Ghana, Cote D I'voire etc, with just few investments in training facilities. A change in the growth trend that ensures complementary development in in training infrastructures is what is needed in the region at this time.

To date the training of seafarers with practical sea time exposure is still a necessity in most West African states. In the West African country of Nigeria for example the creation of a standard method that will accommodate all cadets leaving the high school still constitutes a problem. Existing exposure methods to sea experience are student's industrial work experience during training and few programs run by Nigerian Maritime Administration and Safety Agency (NIMASA). These need to be complemented by the acquisition of bridge and other kinds of simulators in both the high school and the industry.

The realization for the need for further training in terms of sea time exposure and simulator time exposure is further buttressed by new expansions taking place in ports of this region. If the ports are made to establish simulator based training infrastructures that will serve their staff and the cadets of the region, this will be a step in the right direction.Ghan Ports and Harbours Authority for example has taken a step in this direction though she is yet to purchase the necessary simulator packages.

Literature Review

The place of simulators in the training of Seafarers has been given a fair position in IMO's STCW code 95 as amended. To consolidate that IMO also designed a train the trainer program to highlight this. This program has been featured in at Ghana's Regional Maritime Academy Ghana an academy in the West African sub region.The use of simulators for training of seafarers has been made mandatory only for RADAR and ARPA simulators. Trainers or assessors in the simulator are expected to have undergone trining in such simulators and as such familiar with the simulators. Other simulator types are also mentioned such as ship handling simulators, cargo handling simulators, engine simulators among others.

The sections of the STCW 95 that emphasized the use of simulators include; Regulation-I/6-Training and Assessment; Section A-I/6-Training and Assessment (Mandatory); Section B-I/6-Guidance regarding Training and Assessment. Training is the transfer of experience and skills necessary for a student to accomplish set tasks. It is usually transferred from lecturer to student by various methods such as a formal classroom. However, some special form of skills such as those required in seafaring can only be transferred by senior officers who are still in touch with the vessel and who may have learnt through their mistakes in the work to junior officers. Lecturers in the class room may have lost aspects of this experience based on their distance from the vessel. The best skills can only be transferred by up to date officers on board ships. Holder [1]. According to Ali [2] STCW Convention gives weighting to the training conducted at a simulator with the experience of an in-service training. A system of training known as competency based training CBT is emphasized by STCW of which simulator based training is just but one way of achieving it. The instructor in

a simulator is required to be both qualified and experienced. Compulsory under the STCW is the RADAR and ARPA simulator training, with other types of simulator training classified as non mandatory.

Methodology

The method adopted was a secondary data analytical method which analyzed the focus of major international training providers in the region with a view to determining distributed focus on Simulator based training provision for West African seafarers in recent times.

A survey of number of trainings conducted on this subject in the West African sub region was also done in a bid to determine the level of focus on the subject in the region under study. Internet published sources were applied using a revealed preference approach to analyze four sectors of maritime education offering institutions in West African sub region. A data envelopment analysis of graduate output from Nigeria Maritime Academy Oron and NIMASA job placement program of Nigeria was done.

Report of Findings

Activities of the International Maritime Organization in West Africa in the year 2014 merely focused on trainings in areas outside the focus of Simulator based training for seafarers. The trainings had rather emphasized the development of safety centers in the region and further sub centers for the already existing Maritime Safety Coordinating centers in the sub region. The other area of attention by IMO that year was environmental sustainability Under Advisory/assessment missions 13 trainings were conducted by IMO with 6 focusing on safety while 7 focused on the subject of legal trainings. IMO missions further carried out other trainings in Africa in the same year 2014 as follows 12 national events, 13 regional events and 2 other events distributed as follows:10 covered the subject of safety, 11 covered the subject of environment while 2 covered the subject of facilitation. Furthermore, trainees in IMO sponsored

How to cite this article: Chinedum O, Abiodun S, Chinemerem I. Assessment of Simulator Adaptability in West African Maritime Institutes: A Data Envelopment Analytical Approach. Oceanogr Fish Open Access J. 2017; 3(3): 555611. DOI: 10.19080/OFOAJ.2017.03.555611.

training events for the year registered 1091 participants in the same 2014 distributed as follows: 553 registered for safety trainings; 430 for environment while 108 were registered under facilitation. IMO [3].

A train the trainer course on the use of simulators was recently conducted for the African region at the Regional Maritime Academy Ghana with attendants from across Africa. The essence of the training was maily to stimulate the interest of lecturers in applying simulator based training in their various institutions. This being the case, the acquisition of such facilities becomes necessary by the institutions concerned.

Maritime education in West Africa

The offer of maritime education in West Africa can be divided into the following major sub headings;

I. Maritime education from departments in university based institutions

II. Maritime education from dedicated maritime polytechnics

III. Maritime education from dedicated maritime universities

IV. Industry supported private sector maritime education group

All of the above three sectors needs adequate attention in terms of facility provisions and continuous update of knowledge in the growing maritime education sector. A new model of development that emphasizes collaboration between the industry user corporations and maritime education institutions might be necessary at this point to enhance acquisition of modern simulators and thus encourage simulator based training in West African colleges outlined above [4-6].

Simulators in west african institutions

West African institutions with simulators include Maritime Academy Oron which acquired a full mission bridge simulator in the year 2014.The bridge Simulator was delivered and installed by VSTEP at the Maritime Academy of Nigeria faculty in Oron Nigeria. The simulator is certified by Det Norske Veritas, Germanische Lloyd DNVGL as a class B simulator. Facilities included in the simulator include, a GMDSS and Radio Communications simulator as well as a 120° external field of view and NAUTIS Instructor station.

Another group or sector pioneering the use of maritime simulators in West African sub region is industry supported private sector group. This group is found mostly in the Nigerian content supported offshore support vessel sector in Nigeria. A good example is PEM Offshores group in Lagos, Nigeria which operate varieties of Kongsberg bridge and Dynamic positioning simulators for interested Nigerian based oil companies operating offshores Nigeria. PEM Offshore Limited entered into a multi-million dollar contract relationship with Kongsberg Maritime for the supply of a full suite of Offshore Anchor Handling, Dynamic Positioning, Power Management and Crane Simulation systems in the year 2015. The new simulators serve as a world-class offshore simulation training centre and the first of its kind in Nigeria and West Africa.

Further examples of rising use of simulators in West Africa is the acquisition from Kongsberg of by the Regional Maritime University Accra Ghana of a marine engine simulator billed to simulate the slow, medium and high speed diesel engine groups in a bid to supply the developing offshore support vessel sector in Accra, Ghana. Under the Skill Development Fund/World Bank funding, the Regional Maritime University was granted funding to procure equipment for skills training for the oil and gas industry. This is to help in achieving the local content policy of Ghana. In the year 2014 the Regional Maritime University Accra, Ghana signed a contract with Kongsberg Maritime of Norway to supply and install a Full Mission Engine room Simulator. The simulator has been designed to simulate, Slow Speed, Medium Speed and High Speed Marine engines as well as having the latest Anchor Handling Tug model with DP3 classification (Table 1-3).

Table 1: Data Presentation; Graduates From Maritime Academy Oron, Nigeria.

Year	Intake at Oron	Grad from Oron	Rec-NIG	Rec-FRGN
2004	234	188	3005	897
2005	303	187	3583	1523
2006	450	266	2991	1317
2007	560	428	842	750
2008	600	441	2018	842
2009	692	451	2058	556
2010	712	5	2908	439
2011	748	558	3784	1456
2012	750	559	4762	1778
2013	991		4905	1282

Source: NIMASA, Maritime Academy Oron.

How to cite this article: Chinedum O, Abiodun S, Chinemerem I. Assessment of Simulator Adaptability in West African Maritime Institutes: A Data Envelopment Analytical Approach. Oceanogr Fish Open Access J. 2017; 3(3): 555611. DOI: 10.19080/OFOAJ.2017.03.555611.

Table 2: Correlation Score Of Graduates Versus Ship Placement.

Name	Minimum	Maximum	Mean	Standard Derivation
CBV-NIG-1	0	4905	1133.9925	1619.1011
ICBV-FRGN1	0	223327	64978.8929	76463.2976
Input 3	0	73907	22542.4286	25972.741
INTAKE ORON-1	0	869973	259301.7857	311423.0551
GRAD-ORON-1	0	173099	35959.4643	48640.5782
Output 3	0	262876	73673.2143	89754.6427

Table 3: Result Output from Data Efficiency Analysis of graduates versus Ship placement.

	Efficiency	Graph	✓
City 16	100 %	100%	
City 17	84.7 %	85%	
City 18	66.2 %	66%	
City 19	70.5 %	70%	
City 20	100 %	100%	✓
City 21	55.1 %	55%	
City 22	61.9 %	62%	
City 23	67.1 %	67%	
City 24	44.9 %	45%	
City 25	46 %	46%	
City 26	79.8 %	80%	
City 27	100 %	100%	✓
City 28	100 %	100%	✓

✓ : Efficients

* : Weak Efficients

Recomendation

Efficient points were recorded only in the years 2004, 2007, 2013 and 2014. More efforts should be made by Nigeri's ship placement body, NIMASA to place more Nigerian graduates on board, while efforts should be made to place more facilities in the university based maritime programmes of Nigeria to help them add to the number of sea men in the country's maritime fleet.

Conclusion

The work analyzed the efforts made by West African institutions to imbibe simulators in their training curriculum. Four groups of institutions that offer maritime education training in West Africa were analyzed. The work discovered the maritime strong investment prerogative among specialized maritime universities and few private sector industry supported group in the area of acquisition of simulators for maritime education. The least appears to be maritime education departments located in universities which has made the least effort to acquire simulators. The major method of research was published acquisitions based on revealed preference approach.

References

1. HOLDER LA (1997) TRAINING AND ASSESSMENT ON BOARD. WITHERBY & COMPANY LIMITED, LONDON, ENGLAND.
2. ALI A (2006) SIMULATOR INSTRUCTOR - STCW REQUIREMENTS AND REALITY. POMORSTVO, 20(2): 23-32.
3. IMO (2015) INTEGRATED TECHNICAL COOPERATION PROGRAMME; IMO TECHNICAL COOPERATION COMMITTEE, 65TH SESSION; AGENDA ITEM, 3A TC 65/3(A).
4. http://vstepsimulation.com/news/nautis-fmb-simulator-delivered-to-the-maritime-academy-of-nigeria/

How to cite this article: Chinedum O, Abiodun S, Chinemerem I. Assessment of Simulator Adaptability in West African Maritime Institutes: A Data Envelopment Analytical Approach. Oceanogr Fish Open Access J. 2017; 3(3): 555611. DOI: 10.19080/OFOAJ.2017.03.555611.

5. HTTP://PEM-OFFSHORE-INC.PEMOFFSHORES.COM/PEM-OFFSHORE-SELECTS-KONGSBERG-OFFSHORE-VESSEL-SIMULATORS-FOR-NIGERIAS-FIRST-OFFSHORE-TRAINING-CENTER

6. /HTTP://RMU.EDU.GH/PAGES/NEWS.PHP?SITEID=MARITIME&ID=34

DOI: 10.19080/OFOAJ.2017.03.555611

How to cite this article: Chinedum O, Abiodun S, Chinemerem I. Assessment of Simulator Adaptability in West African Maritime Institutes: A Data Envelopment Analytical Approach. Oceanogr Fish Open Access J. 2017; 3(3): 555611. DOI: 10.19080/OFOAJ.2017.03.555611.