UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

UNCTAD

PORT MANAGEMENT SERIES

Volume 5

Port Management Case Studies

2015-2016 Cycle of the TrainForTrade Port Management Programme

English-speaking Network

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NOTE

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The summaries of the featured dissertations and participants' career profiles were prepared by John Moore, Jennifer Doyle, Janjarang Kijtikhun, Dominique Chantrel, Aylwin Zabula and Debbie Francisco under the supervision of Mark Assaf, Chief of the Human Resources Development Section-TrainForTrade, and the overall guidance of Geneviève Féraud, Head of the Knowledge Development Branch and Shamika Sirimanne, Director of the Division on Technology and Logistics.

Contact details:

Human Resources Development Section
TrainForTrade Programme, Knowledge Development Branch
Division on Technology and Logistics, UNCTAD
Palais des Nations
1211 Geneva 10, Switzerland
Phone: 41 22 917 5796
Fax: 41 22 917 0050
Email: trainfortrade@unctad.org
www.unctad.org/trainfortrade

What do our key stakeholders say about the PMP?

"Irish Aid is pleased to have supported the English-speaking network of the Port Management Programme since its launch in 2007. We have seen first-hand the commitment of ports from across the island of Ireland who provide expert support; the port managers who have participated; and the UNCTAD personnel who run the Programme. The Programme remains a strategic and relevant response to the challenges and growing trade opportunities of developing countries."

Mary Barrett, Assistant Principal, Multilateral Section,
Irish Aid, Department of Foreign Affairs and Trade

"Indonesia is all about islands, shipping and ports. With 17,000 islands it couldn't be otherwise. Better ports – and better run ports – are central to this country's development. Indonesia's Government knows this well. Improving the maritime sector is the country's highest priority right now. UNCTAD's port management project could not have come at a better time; the right assistance, the right time, the right place."

H.E. Kyle O'Sullivan, Irish Ambassador to Indonesia

"The UNCTAD Port Management Programme has created a really positive partnership between the Philippines and Ireland, providing a platform where experience, skills and best practice can be shared and exchanged. It has created an invaluable network of professional contacts and, more importantly perhaps, lasting friendships that can span continents. Long may it continue!"

H.E. Geoffrey Keating, Irish Ambassador to the Philippines

"Nigeria's Vice President Kemi Osinbajo in May this year signed an executive order to improve Nigeria's ranking in the global Ease of Doing Business Index. The order included a focus on airports and seaports. Last year I visited Lagos port for a briefing on the challenges and opportunities that management face. The UNCTAD Port Management Programme was presented as an important part of the capacity-building strategy."

H.E. Seán Hoy, Irish Ambassador to Nigeria

"I first travelled to Ghana in 2010 as part of a review team to assess Ireland's support for the UNCTAD port programme. At the time, we recommended further funding. Now seven years later as Ambassador of Ireland to Ghana, I realize the ongoing importance of the programme in helping build Ghana's trade capacity."

H.E. Seán Hoy, Irish Ambassador to Ghana

INTRODUCTION

UNCTAD assists developing countries in their efforts to integrate into the world economy on an equitable basis. In the area of trade, the focus has turned towards the reduction of non-tariff barriers and trade facilitation measures. This is because barriers, such as long waiting times at borders, inappropriate fees and cumbersome administrative procedures, constitute obstacles for trade that are as serious as tariff barriers. Consequently, UNCTAD is committed to assisting developing countries as they carry out these complex, behind-border measures, which include broad institutional and regulatory reforms as well as specific actions aimed at improving port efficiency, for example.

Port efficiency is important for trade facilitation because ports are the main entry and exit points for international trade. In volume terms, nearly 80 per cent of world merchandise transits by sea. For many developing countries, this figure surpasses 90 per cent. Port efficiency therefore has a direct impact on the ability of a country to participate in international trade. It follows that ports serving developing countries must operate efficiently for them to integrate into the world economy effectively.

UNCTAD assists ports in developing countries by conducting research, carrying out technical assistance activities and providing training and capacity-building. The TrainForTrade Port Management Programme (PMP) strengthens talent management and human resources development in ports in developing countries by setting up a sustainable capacity-building framework for training future managers. It also creates port networks, bringing together port experts from public and private entities from around the globe to share knowledge and expertise, and to capitalize on research conducted through the programme with regard to port management and port performance indicators.

A key component of the programme is the dissertation process. Participants first select a senior manager with knowledge of their chosen subject to be their mentor. Their work is supervised by the mentor as they conduct research on a specific problem faced by the port and propose feasible solutions. Having the participants consult with senior managers ensures that the research and findings will be of high interest to top management. This increases the likelihood that aspects of the dissertation will be implemented or integrated into management strategies. The Programme has also found that bringing senior and middle managers together is essential for creating a culture within the port that fosters the transfer of knowledge. The dissertation process requires that the participants put into practice what they have learned and allows them to immediately contribute to improving operations in their ports. Upon completion, the participants defend their dissertations before panels composed of senior managers from their respective ports, as well as senior managers from other ports that are members of the programme and representatives of UNCTAD. Each panel is composed of three members, including the participant's mentor. The panels evaluate the dissertations based on the following criteria:

- Clearness of the explanation of the problem and issues at hand.
- Pertinence of the research conducted.
- Quality of the analysis and ability to reflect on the practical implications of the suggestions made.
- Quality and feasibility of the conclusions proposed.
- Professional aspect of the work accomplished: The work must not simply consist of observations of what is going on; it must be useful to the company and help it to progress.

This publication presents the top 12 dissertations from the 2015–2017 cycle of the English-speaking network of the TrainForTrade Port Management Programme. The first chapter gives background information on the Port Management Programme and explains the dissertation process. Chapters two to five focus on the following subject matters: social, economic, financial and operational results of the research done by the participants from member countries: Ghana, Indonesia, Nigeria and the Philippines.

The dissertation process is a professional tool encompassing research, report writing and presentation through which the author demonstrates his or her knowledge and abilities in a particular aspect of their organization.

The output is focused on a real business issue for the organization and as such is a valuable resource for the business and a significant contribution to their employer organizations. The dissertation is actually akin to a professional business report into an aspect of the business where either a problem or an opportunity has been identified. Collectively, the dissertations, which are held on a searchable database, provide a collection of case studies that make up a tremendous source for knowledge sharing for the Network. The recommendations and conclusions arrived at are as varied as the organizations themselves. This outcome is to be expected as none of the ports featured in this publication are the same. Yes, they operate in the same sector of the maritime industry, yet, they are very different in many ways whether it's the ownership model, the governance regime, the stage of development, the handling methods used, or modes of cargo served. In most case studies, the conclusions and recommendations arrived at are unique to the port being researched and reported on. However, the framework of the Sustainable Development Goals, as shown in the final chapter, has made it possible to position the various recommendations in terms of how they accord with achieving one or more of the SDGs. This approach will prove useful when advising future cohorts in writing up their business reports (dissertations).

CONTENTS

Figures

Tables

A BRIEF HISTORY OF THE ENGLISH-SPEAKING NETWORK

Established in 1996, the UNCTAD TrainForTrade Port Management Programme supports port communities in developing countries to become more efficient and competitive regarding port management. The PMP is aimed at middle managers in port communities and helps develop the skill set needed to increase trade flows and foster economic development. The Programme creates port networks bringing together public, private and international entities.

The Port Management Programme operates through four language-based networks (English, French, Portuguese and Spanish) in Africa, Asia, Europe, Latin America and the Caribbean. Training in beneficiary ports is delivered by local instructors from the port community, supported by experts from UNCTAD and European ports associated with the programme. Senior managers from the participating ports are also trained to serve as local instructors in order to ensure programme sustainability and local ownerships. Up to now, the programme has benefited more than 3,300 port managers and organized more than 60 workshops for the training of trainers around the world.

The English network began in June 2007 when 60 representatives of eight African countries (Benin, Cabo Verde, Gambia, Ghana, Namibia, Nigeria, Sierra Leone and the United Republic of Tanzania), five Asian countries (Cambodia, India, Indonesia, Malaysia and Sri Lanka), and four European countries (France, Ireland, Portugal and Spain) attended the International Coordination Meeting of the UNCTAD Port Management Programme for English-speaking Port Communities in Developing Countries, organized in Dublin, Ireland with the support of the Dublin Port Company and Irish Aid, a division of the Department of Foreign Affairs and Trade in Ireland.

Moreover, in line with Sustainable Development Goals (SDG 17), the PMP fosters North–South, South–South and triangular cooperation through regular exchanges of local and international experts and best practices. The ports of Ireland and those in Northern Ireland of the United Kingdom of Great Britain and Northern Ireland, namely Dublin Port Company, Port of Cork Company, and Belfast Harbour Commissioners, play a central role in these exchanges by sending their port experts to the member ports of the English-speaking network of PMP and by hosting training events and coordination meetings.

The Government of Ireland, the main donor of the Port Management Programme has evaluated that the partnership between Irish Aid, Irish Ports, UNCTAD and the beneficiary ports is an example of best practice in development cooperation. Moreover, the independent evaluation of UNCTAD programmes conducted in 2017 by representatives of Member States and external evaluators stated the high quality and relevance of PMP and its recognized impact on its beneficiaries and stakeholders worldwide.

B. CORE FEATURES OF THE PORT MANAGEMENT PROGRAMME

The Port Management Programme targets port managers, and the main features of the programme are the following:

- Worldwide networks of port entities
- Public–private partnership model
- Sustainable training and capacity-building
- Talent management scheme
- Value added solutions in port communities
- Systematic methodology combining blended learning and digital technology
- Modern Port Management course
- Port performance measurements

Figure 1 Port Management Programme worldwide (Source: UNCTAD)

The Modern Port Management Programme consists of 240 hours of instruction over a two-year period. Participants must successfully complete eight modules and defend a final dissertation in order to obtain the UNCTAD Certificate in Modern Port Management. The course content is adapted to local contexts, and the final dissertation identifies challenges within the participants' respective ports and proposes concrete management solutions.

TrainForTrade provides capacity-development frameworks that help facilitate the integration of developing and transition countries into the world economy. The focus is on Sustainable Development Goals (SDG) in particular:

- SDG 1: End poverty in all its forms everywhere
- SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- SDG 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation
- SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development in particular with the targets to enhance North-South, South-South and triangular regional and international cooperation on access to science, technology and innovation and enhance knowledge sharing

SOCIAL AND ENVIRONMENTAL FOCUS

1. Corporate Social Responsibility and its Impact on Community Restiveness, a Case Study: Port of Onne, Nigeria

Ms. Marylin O. Makanjuola

"The programme increased my capabilities as a manager, increased my knowledge of port operations – making it easier to critically think through issues that rise up and come up with better solutions."

Mr. Onyeka Albert, Mentor and Principal Manager, Security Department, Eastern Ports, Nigerian Port Authority.

Author: Ms. Makanjuola Marylin Okwuchukwu,[1] Estates Department, River Ports Complex, Nigerian Ports Authority.

Ms. Marylin Okochukwu Makanjuola has been with the Estate Department of NPA since 2001 and is currently heading the department as Chief Estate Officer.

Ms. Makanjuola greatly appreciated that she took the opportunity when it was offered to her to join the PMP training. She said, "I actually did not fully appreciate the scope and relevance of the programme but upon the commencement I found it very relevant to my career as a port operator".

The dissertation dealt with CSR and its impact on community restiveness at the Port of Onne. Ms. Makanjuola graduated as top of the class in early 2017 and her recommendations are being taken into consideration by the Board. She expressed that the dissertation was a challenging assignment as she had to engage with stakeholders and communities around the port, yet, it was a rewarding experience: "The dissertation gave me the opportunity to go outside of my comfort zone in order to meet with host communities and I learned a lot from them... I would never have known I was capable of such abilities if not for UNCTAD."

[1] Ms. Okochukwu's mentor was Albert C. Onyeka, Principal Manager, Security Department, Eastern Ports, Nigerian Port Authority.

Introduction

Onne Port in Rivers State, Nigeria was commissioned in 1982. It is approximately 25 km from Port Harcourt on Ogu Creek. It serves as a hub port for west and central African regions and is a logistics centre for both onshore and offshore oil and gas industries, the largest such centre in the region. It has two major operational areas: the Federal Lighter Terminal (FLT) and the Federal Ocean Terminal (FOT). The FLT anchors light vessels and has a total of four berths with a quay length of 376 m and a natural draft of 10 m. The FOT anchors ocean-faring vessels with a capacity of 40,000–50,000 DWT, with a berth structure span of 2,140 m and a natural draft of 13 m. It is expected that the berth structure span will increase by up to 930 m in future.

The land for this port was acquired from the Onne and Ogu communities by the State Government; these communities remain the host communities for the Port and are the primary beneficiaries of any Corporate Social Responsibility (CSR) initiatives. The Port is administrated by the Onne Oil and Gas Free Zone Authority and Onne Port, Nigerian Ports Authority (NPA). The dissertation contends that Onne Port should be considered to have a unique situation in that it has two distinct host communities, the Onne and the Ogu. Traditional CSR practices, therefore, should be modified to avoid the stratification and fractionalization of the communities.

Using a mixed methods qualitative technique, this study investigated the causes of community restiveness in Onne Port communities, exploring the level of satisfaction with the CSR initiatives implemented, as well as the constraints on effective CSR programmes encountered by the Port authorities. The findings of this research are measured against the view of the Onne Oil and Gas Free Zone Authority and the NPA (Onne Port) that the cause of disputes between the Port and the host communities is the result of the high expectations and constant demands of the host communities that they are unable to meet.

Analysis

The following areas were identified as key CSR activities undertaken by the Port companies: infrastructure, education, health, agriculture, employment/ empowerment, peace and security and charity.

The data were obtained through questionnaires and semi-structured interviews with key stakeholders in three host communities selected based on their proximity to Port operations. A distribution of 30 questionnaires yielded 24 responses. The respondents were predominately male (62.5%) and a significant proportion (79.1%) had been employed in the host communities for periods ranging from 1 to 12 years. A total of 28 semi-structured interviews were conducted with a selection of community members (local chieftains, politicians, women and youth workers) who were deemed to have relevant information due to their position and/or their interaction with Onne Port in a community capacity.

An analysis of the data revealed that a majority of respondents felt that the Port companies were neglecting their responsibilities and were dissatisfied with the implementation of CSR initiatives. A recurrent theme in the responses was that it was perceived that the Port authorities were exploiting the host communities for their own gain, while offering cosmetic CSR activities such as the provision of electric generator sets rather than connection to the national grid and the construction of three school room blocks rather than a school.

The primary area of discontent was employment. It is felt that Port operations have forced the host communities to abandon traditional livelihoods and that the only recourse left to residents is to engage in hostile activity, e.g. the presence of young men on access roads to the port with sticks and nails to prevent employees and freight from entering the Port. This results in the loss of man hours and revenue. However, this has the unintended effect of increasing the security risk for investors, which reduces the possibility of further development and increased CSR activities.The Onne Oil and Gas Free Zone and the NPA (Onne Port) claim that they are prohibited from implementing specific activities by 'bureaucratic bottlenecks', and that it is not possible to meet the CSR demands of the host communities. The analysis shows that the Port companies operate under the assumption that they have no obligation to develop their host communities so long as their taxes are paid and the conditions of insurance of operational licence have been satisfied, implying that it is the Government that has a responsibility to develop the region. This

Table 1 Summary of unrest/protest and restiveness of host communities (extract)

DATE OF PROTEST	NATURE OF PROTEST	REASONS FOR PROTEST	DAMAGE/ HARM DONE	ACTION TAKEN FOR RESOLUTION
13/01/2016	ONNE YOUTHS BLOCKED THE ENTRANCE OF PORT	LACK OF EMPLOYMENT	LOSS OF MANHOUR	DISLODGED BY SECURITY AGENCIES
18/04/2016	ONNE YOUTHS BLOCKED THE GATE OF OIS INDORAMA COY	DEMAND FOR EMPLOYMENT, EXPOWERMENT, PROVISION OF SCHOLARSHIP SCHEME AND OTHER CSR	LOSS OF MANHOUR	SECURITY OPERATIVES CALMED IT
21/04/2016	OGU YOUTHS BLOCKED THE ENTRANCE TO TITAN TUBULAR COY	NON EMPLOYMENT OF THEIR YOUTHS	LOSS OF MANHOUR	DISLODGED BY SECURITY AGENCIES
13/06/2016	OGU/ONNE WORKERS BLOCKED THE GATE OF OIS INDORAMA COY	NPA APPOINTED THEM AS STEVEDORE TO OIS INDORAMA BUT THEY REFUSED AND APPOINTED ANOTHER COY	DISRUPTION OF OPERATION	PEACE AND RECONCILIATION MEETING
12/12/2016	BLOCKING THE ENTRANCE GATES OF COYS BY ONNE YOUTH	DEMAND FOR EMPLOYMENT, EMPOWERMENT, PROVISION OF SCHOLARSHIP SCHEME	LOSS OF MANHOUR	DESIGN OF CSR POLICY AND IT PLACEMENT

contradicts the assertion by the host communities that as the Port has annexed land previously utilized by the communities, it has the responsibility to provide alternative means of livelihood.

It has also been noted that there are perceptions in the Onne Port hinterland that there is uneven development, that one community is being privileged over the other. It should be ensured that both the Onne and the Ogu communities receive equal access to CSR initiatives.

Conclusion

This study concluded that the CSR activities of the Onne Oil and Gas Free Zone Authority and Onne Port (NPA) were reactive rather than proactive. Attention was only paid to the concerns of the communities when restiveness became an issue and resulted in the loss of investment. It has been ascertained that when CSR initiatives are implemented they are dependent on company policy rather than the needs of the community, that there are specific areas of community investment that they are willing to implement despite an incongruence with the needs of the community.

The summary conclusion of this dissertation is that without rural and human capital development, the disruption to Port Business will continue, and agitation by local communities will continue to jeopardize the

Table 2 Views of Stakeholders as regards Corporate Social Responsibility

VIEWS SOUGHT	RESPONSE BY OGU TRADITIONAL RULERS	RESPONSE BY ONNE TRADITIONAL RULERS
APPREICATION OF LOCATION OF PORT	Very well	Fairly
RELATIONSHIP BETWEEN COMMUNITY AND PORT	Cordial	Not cordial
THINGS DONE BY THE PORT/ OGFZA	• OGFZA has expanded secondary school • Installation of pipe-borne water • Intels built the king's palace, constructed 42 interlocking roads in Ogu, mini-stadium and youth secretariat • Intels; Brawals, Tonimas, WACT, Tidex, Seatruck have done some projects in the community	• Onne Civic Centre under construction • Intels built roads, drainages, street lights, mobile hospital services and skills acquisition programme
ADVERSE EFFECT OF PORT OPERATIONS	• Adverse effect on fishing business, marine pollution, no sea food • Adverse effect on ecosystem due to constant dredging and reclamation of water • Pollution and destruction of mangrove forest • Denial of access to coastal and satellite communities • Closure of natural creeks • Creation of waves/tides leading to boat mishaps	• Environment pollution • No proper development initiative • No maintenance of drainage system leading to flooding
CSR EXPECTATIONS	• Cleaning of the creeks occasionally • Adequate health care provision • Better school for children • Employment opportunities • Involvement management/decision making • Restoration of name as host community • NPA budget to include Ogu as host community • Projects and development • Non-recognition of indigenous contractors	• Provision of basic life infrastructure • Employment • Youth empowerment
REASONS FOR PROTEST	• Lack of employment • Negligence of community • Coys sidetrack Ogu youths to employ Onne youths	• None implementation of guidelines on employment • Impartial treatment by investors on Onne people

operation of the port, thereby losing revenue and investment. Oil is a vital component of the Nigerian economy. As Onne Port is the oil and gas hub for the region, the CSR agenda should reflect the need to have a positive and stable relationship with the host communities.

The dissertation has suggested two ways to counter this, taking into account the special circumstances of Onne Port's two communities.

1. Reduce negative environmental impact on traditional livelihoods
2. Provide alternative livelihoods through training programmes and education

Furthermore, it suggests that the Nigerian Ports Authority should adopt the CSR model implemented by the Sydney Ports Authority, namely

3. Hold quarterly consultative meetings with stakeholders in the host communities,
4. Foster relationships with Neighbourhood Liaison Groups by strengthening the remit of the NPA's Joint Free Zone Community Relation Initiative
5. Organize workshops in collaboration with community development agencies to educate host communities on the benefits of peaceful cooperation with port authorities.

2. Feasibility Study: Electrification of Yard Operation (Rubber Tyred Gantry) in TPKS Semarang, Indonesia

Mr. Mohamad Saiful Arifin

"This is the world port community programme. The programme is very valuable and helpful for improving port management."

Mr. Robby Dayoh, Mentor and Senior Manager, Port Equipment

Author: Mohamad Saiful Arifin, Senior Manager Assistant, Port Handling Equipment.[1]

Mr. Mohamad Saiful Arifin, PT. Pelabuhan Indonesia III (Persero)

Mr. Mohamad Saiful Arifin started his career with PELINDO in 1999 as a technician. In 2009, he was promoted to become the Assistant Manager of Equipment and Installation. Again, in 2011 he changed duties and served as the Assistant Project Manager in one of Pelindo 3's subsidiaries. In 2014, he was redeployed as the Assistant Senior Manager of Surveys before becoming the Supervisor of Equipment and Installation in 2015. In the same year, 2015, he became the Assistant Senior Manager of Equipment and Installation Maintenance. In 2016, he became the Assistant Senior Manager of Equipment and in 2017 he was promoted as Vice-President of Port Equipment.

Over the years, Mr. Arifin has found that his educational background as an electrical engineer has been sought after in the port, starting with the Container Terminal in his early days which at that time was already using a lot of heavy and modern equipment, such as Container Crane and Rubber Tired Gantry. His interest in skills development, technology and its uses have helped him to always rapidly acquire understanding in port equipment and its development as port technology has evolved. But through the years and experience, Mr. Arifin realized that being a port manager required more than just his skill set.

[1] Mr. Arifin is mentored by Robby Dayoh, Senior Manager, Port Equipment.

Motivated by the aim of having a global mindset in handling the port service, as well as his personal interests in continuous skill development, Mohamad signed up for the UNCTAD Port Management Programme. Now working as the Vice-President for Port Equipment, Mohamad believes that his exposure to the PMP broadened his views so that he can look at the entire port system when he plans the port's development, management and services. The programme has been very useful in supporting the port's development into a world class port and has contributed tremendously to the upgrading of human capacity and career growth as well.

Furthermore, there are many weekend activities which are also very useful and memorable to him. Such as visiting the Port of Singapore, visiting some nice places like Bali and snorkelling in Bunaken Makassar.

Nonetheless, while Mohamad felt that completing the course and that the final dissertation was extremely challenging in the midst of a busy work environment, he succeeded ("Thank goodness, it finished successfully."), with an excellent performance. He's also very happy that his recommendations from the final dissertation, which focused on electrification in yard operations, were adopted, and Yard Electrification is one of the key programmes of the company. The first phase is expected to be implemented at Banjarmasin Container Terminal in South Kalimantan and will be gradually expanded afterward.

Introduction

The Indonesia Port Corporation III was established in 1960 and is known as PT. Pelindo III (Persero). It oversees 43 ports in the following seven provinces: East Java, Central Java, South Kalimantan, Central Kalimantan, Bali, West Nusa Tenggara and East Nusa Tengarra. Its biggest port is Tanjung Perak in Surabaya. Recently, it has been pursuing green initiatives, and has already converted Terminal Teluk Lamong into a green port. It is equipped with semi-automatic and automatic port equipment. This study explores the feasibility of implementing a green initiative at another PT, namely, Pelindo III port, Terminal Petikemas Semarang (TPKS.) The project chosen involves the modification of rubber-tyred gantry cranes (RTGs), which are used for stacking containers, from diesel power to electricity.

In the absence of a reliable electrical power supply, diesel power is a cost-effective way of powering RTG equipment. However, as electricity is significantly cheaper per unit than diesel fuel, it is a preferred option, provided there is a consistently reliable supply. The question then becomes how the operation is converted from diesel to electric. Diesel wastes more resources than electricity. Diesel RTGs, for example, cannot return power during a break period. The remaining power must be discharged to the resistor bank and wasted as heat. Electric-powered RTGs, on the other hand, simply break the feed and return the power so that energy is not wasted.

TPKS has 6 container yards (CY) and construction of a new one is under way. The primary yard is CY01, which has nine blocks for storing containers. It has 12 RTGs: 6 Sumitomo, 2 ZPMC and 4 Kalmar (both variable speed generators and non-variable speed generators). CY01 has the biggest capacity and is the hub of terminal activity and operations. The nearest power substation is approximately 100 metres away. Therefore, this study will look at the feasibility of electrifying CY01's RTG operations. Data for this study were obtained through interviews with employees who are involved in the RTG electrification process in TPKS. Additional data were obtained through consultation with vendors that specialize in the conversion process.

Analysis

Through its electrical supplier, PLN (Public Electricity Company), TPKS receives an electric capacity of 5.45 mega volt amps (MVA). However, the total electricity consumption of the port is only 2.4 MVA. The remaining capacity is more than sufficient to supply the 12 RTGs with power. Assuming the maximum possible capacity of each RTG is about 320 kilo volt amps (KVA) and the load factor is 0.5, the total electric power for the RTG operation is 1.92 MVA.

Furthermore, TPKSA also has a medium-voltage double-feeder connection to PLN. This means that TPKS has two alternative electric power connections. If one connection fails, the other will continue to supply the port. Electrified RTGs can be equipped with a connection line to the central power supply that is also a high-speed communication data line such as fibre optic. This facility enables the semi-automation and automation of the RPG, as well as the possibility that it can be operated remotely.

It was noted that the working electrical frequency of all RTGs was the same, meaning that there is no need for modification. A sampling of the working voltage

indicates that the variance between the machines is negligible, at 400, 420 and 440 volts respectively.

Two systems of RTG electrification were considered for this study: Cable Reel System and Conductor Bar System.

Figure 3 Common type of Cable Reel RTG Electrification System

Source: Cavotec Innovative Technologies

In the cable reel system, electricity is delivered to the RTG through cable reels installed on each crane. There is a connection point in the ground of each block for plugging and unplugging the RTG connection to the power source.

Figure 4 Common type of Conductor Bar (or Bus Bar) RTG Electrification System

Source: Cavotec Innovative Technologies

In the conductor bar system, electricity is delivered to each RTG through a connection or bus bar built along the block beside the RTG pad.

The benefits of the cable reel system are significant. It will require less construction work to make it operational and will not require the yard to be out of operation for a long construction period. It will not require the installation of large steel platforms and is an easy system to maintain – only one RTG will be affected at a time meaning the others can continue operation. It is more efficient than the bus bar system and better utilizes the open space by placing a yard substation there instead of construction of a new substation. Finally, the implementation of auto-connection and disconnection facilitates flexibility and efficiency in RTG operations, particularly when crossing different aisles. A yard substation is a recent innovation and is a modified 40-foot container with transformers, panel and accessories inside. This means there is flexibility on where it can be placed in the yard.

One issue that was noted is that trucks moving through CY01 do not always follow the truck line nor travel in the correct direction. Many are using empty RTG pads as a means of passing through the yard. This kind of truck movement is dangerous and is a risk to both the vehicle itself and the yard equipment and personnel. If the RTG is electrified, there is the possibility that the truck will damage the power supply.

Another more significant issue noted was the surface level of CY01. In the Semarang area, especially near the port, there is a relatively high land subsidence rate, which is 7.7–11cm per year, depending on location. In CY01, the present condition of the surface level is +0.8 to 1.4 m low water at spring tide (LWS). This means there is a possibility that the sea level is higher than the CY surface level in some locations. TPKS is part of the Tanjung Emas port that has adopted the use of the polder system to mitigate land subsidence. A polder is an area of low-lying reclaimed land enclosed by dykes to help control flooding.

Figure 5 The level of CY 01 toward sea water level.

However, in several TPKS instances, the polder did not sufficiently remove the water inside the affected area, particularly during periods of high tide and heavy

rain. Extra pumps are required to overcome this. The presence of water in the yard is a significant obstacle to the electrification of RTGs.

Conclusion

The electrification of RTGs in CY01 in TPKS is financially feasible. Over a five-year period (approximately 4.6 years), the investment outlay of 45.4 billion rupiahs (approx. US$3.4million) required to complete the electrification of the yard equipment will result in a return of 79.9 billion rupiahs (approx. US$6million), a significant return on investment of 256.1%.

There will be additional cost savings through the elimination of diesel engines and generator set routine maintenance. This will save man power and spare parts. It is estimated that in general overhaul alone, the implementation of electric RTGs will save approximately 300 million rupiahs (approx. US$22,500.)

As TPKS is already connected to the electricity supply from PLN and is paying a tariff for more electricity than it is currently using, it can be assumed that the cost of electricity will not rise as a result of electrification. It is forecast that the tariff will increase annually by 2% according to currency and inflation fluctuations.

In order to meet the technical and operational requirements of TPKS, this feasibility study recommends the implementation of the cable reel system on RTGs. This will require the following:

1. The adoption of yard substations, as this allows mobile substations to be placed on the yard.
2. Installation of a ground trench for laying cable reels and simple cable ducting to deliver power to two other yard substations and connection panels. In CY01, this will require 3 yard-substations, with each supplying 3 blocks. Each block will have four connections.
3. It is recommended that medium-voltage electricity be delivered to the middle of the block via 2 cables which work redundantly before being distributed in low voltage. This provides a safety mechanism if one cable fails.
4. Utilization of auto-connection and disconnection. This will reduce the manpower required to operate the RTGs and facilitate flexibility.

Furthermore, with the adjustment of relevant details, this study has shown that there is the potential to implement the electrification of RTGs in other similar container terminals operated by PT. Pelindo III, such as Terminal Petikemas Banjarmasin and Terminal Petikemas Surabay.

Table 6 RTG Electrification in TPKS PT. Pelabuhan Indonesia III (Persoro)

TPKS RTG Electrification											
Cashflow											
No.	Description	Year									
		0	1	2	3	4	5	6	7	8	9
A	Beginning Balance	–	-45'358'950'000	-35'946'860'025	-26'335'328'250	-15'533'585'840	-6'534'788'581	3'663'984'622	14'066'733'290	20'101'540'366	30'924'560'080
B	Cash in										
	Earning	–	6'397'493'309	6'585'935'108	6'778'145'744	6'974'200'592	7'174'178'537	7'378'152'001	7'586'206'974	7'798'423'047	8'014'883'441
	Depreciation	–	3'024'596'667	3'024'596'667	3'024'596'667	3'024'596'667	3'024'596'667	3'024'596'667	3'024'596'667	3'024'596'667	3'024'596'667
	Sub Total	–	9'422'089'976	9'610'531'775	9'802'742'411	9'998'797'259	10'198'775'204	10'402'748'668	10'610'803'641	10'823'019'714	11'039'480'108
C	Cash out:										
	Investment	-45'368'950'000									
	Loan Ammortization	–	–	-	–	–	–	–	–	–	–
	Sub Total	-45'368'950'000	–	-	–	–	–	–	–	–	–
D	Ending Balance	-45'368'950'000	-35'936'860'024	-26'336'328'250	-16'532'585'839	-5'534'788'581	3'663'986'623	14'066'733'290	24'677'536'931	30'924'560'080	41'964'040'188
Total Cash		-45'368'950'000	9'422'089'976	9'610'531'775	9'802'742'411	9'998'797'259	10'198'775'204	10'402'748'668	10'610'803'641	10'823'019'714	11'039'480'108
Cummulative Chash-in		-45'368'950'000	-35'936'860'024	-26'336'328'250	-16'532'585'839	-5'534'788'581	3'663'986'623	14'066'733'290	24'677'536'931	30'924'560'080	41'964'040'188
Present Value (PV) Casg in 9.50%		-45'368'950'000	8'604'648'379	8'015'288'901	7'455'296'511	6'954'906'339	6'478'542'891	6'034'807'076	3'197'161'369	5'236'432'337	4'877'772'587
Payback period Payout Time (PBPPOT)							4.63	–	–	-	–

Financial feasibility

1	Pay back Period (PBP)		4.64 years
2	Net Present Value (NPV)		79'864'774'504
3	Internal Rate of Return (IRR)		21.65%
4	Return of Investment (ROI)		259.14%

Readers should note that while elements of the above analysis, e.g. treating depreciation as a benefit to the project may be questioned, the overall conclusion as to the feasibility of the project is not in doubt.

3. An Assessment of the Implementation of the National Standards for Training of Forklift Operators in the Port Industry

Ms. Marjorie Rola

"As a graduate of the programme, there are many added values: knowledge, confidence, possible career progress. But most importantly, PPATI will now be able to attain the international standards for training of forklift truck operators. The UNCTAD Training gives us that - the road map to excellence."

Ms. Lilian T. Javier, Mentor and Manager of Port Operations Services Department

Author: Marjorie R. Rola, Philippine Ports Authority Training Institute Participant.[1]

Ms. Marjorie Rola started her career with the Philippines Port Authority (PPA) in 1977 as a Clerk. Forty years later, she is now the Department Manager of the PPA Training Institute (PPATI). "It was during my stint with UNCTAD that I was promoted to my present position", Ms. Rola said.

When PPA joined the Port Management Programme in 2014, her then supervisor, Ms. Lilian Javier, recommended Ms. Rola to sign up. She was surprised to find out that the scope of the programme was much larger than what she anticipated and felt intimidated. However, Ms. Javier decided to dedicate her time as Ms. Rola's mentor, determining that Ms. Rola, as a person in charge of the training institute herself, should set a good example for others.

"I have to accept the challenge to do well since the PPATI is the training arm of PPA… It was a lot of pressure that I almost backed out two weeks before the dissertation final defence, but my mentor, UNCTAD experts, and my staff were very supportive." Ms. Rola's perseverance paid off. Not only was she one of the top three graduates from the first cycle of the programme, but the recommendations in her final dissertation were considered and acted on. PPATI is now adopting the UNCTAD TrainForTrade systematic approach to training in order to ensure the quality of training in forklift operations. Moreover, two in-house trainers will be attending the National Assessor's Course and will be preparing the process of accrediting graduates of the new Forklift Operations Course it plans to provide.

To date, not only is Ms. Rola running the PPA Training Institute, she also co-delivers lectures for Module 8 and acts as one of the mentors.

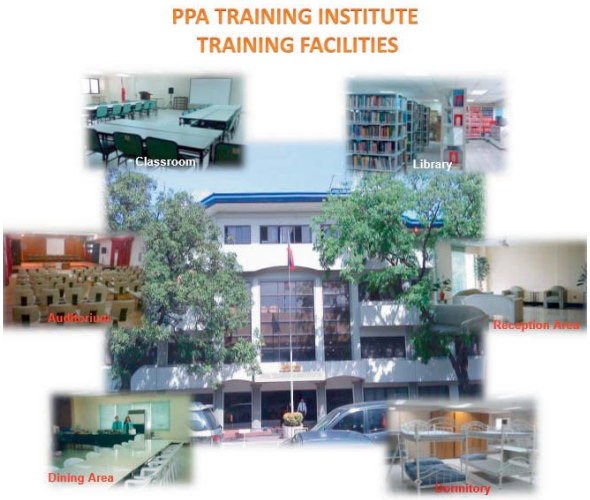
Introduction

The Philippines Port Authority (PPA) oversees the management and operations all ports and harbours in the Philippines. It also has responsibility for training the personnel of Cargo-Handling Operations (CHOs) through its training arm, the Philippine Ports Authority Training Institute (PPATI.) With a staff of 31, PPATI is committed to providing human resources development services to professionalize the port and maritime industries geared towards efficient delivery of quality port services and a more vibrant economy. It aims to be an internationally competitive training institution providing quality training programmes in port technologies.

The PPATI offers four curriculum programmes, namely social skills development, port technology, training technology and other specialized programmes. One of the training courses offered in the port technology programme is the Forklift Operations and Maintenance Course. Forklift operators comprise the bulk of equipment operators. Accidents involving forklifts are a concern for cargo-handling operators. In order to

[1] Ms. Rola was mentored by Lilian T. Javier, Manager, Human Resource Management Department.

Figure 7 PPA Training Institute Facilities



ensure the safety of port equipment operators, the PPATI has developed a competency-based curriculum programme on forklift operations. This programme is designed to further enhance the knowledge, skills and attitudes of forklift operators and to meet the requirements set by the Technical Education and Skills Development Authority (TESDA). Since 2012, the PPATI has run eight forklift training courses, with a total of 90 students.

This dissertation considered the UNCTAD TrainForTrade Systematic Approach to Training as its framework. UNCTAD (2015) states that training programme policies and plans must be established to strengthen and develop human resources. The port should conduct the training itself and should be governed by strict rules and regulation, targeting the needs of the port and its personnel, and avoiding topics that have no link with their current and future port functions. The efficiency of the ports lies in the skilled and committed personnel who carry out the task of providing high quality services to port customers. This study was a comparative analysis of the TESDA Training Regulations on Heavy Equipment Operation (Forklift Operation) and the PPATI Forklift Operations Course. Through qualitative analysis, it compared and contrasted the two courses in terms of curriculum design, training delivery, trainee entry requirements, list of tools, equipment and materials, training facilities and trainer qualifications.

This was a qualitative study in which data were collected through questionnaires. The respondents for this study were the 90 graduates of the PPATI Heavy Equipment (Forklift) Operations courses in the period 2012–2014. Additional information was obtained through unstructured interviews with available respondents and from published sources. A quantitative analysis was conducted based on the questionnaire responses. The CHOs were also interviewed to ascertain the impact of the course on forklift operations.

Analysis

There were similarities and differences noted between the TESDA and PPATI forklift courses. However, the overwhelming response from the questionnaires was that participants were very satisfied with their PPATI training course.

Analysis of the training regulations for both TESDA and the PPATI courses indicated that each course

Table 8 Comparison of the Curriculum design of TESDA and PPATI

Curriculum Design	TESDA	PPATI
Course Title	Heavy Equipment Operation Forklift	Forklift Operations Coure
Competencies	Basic, Common and Core	*no identified competency
Training Hours	Basic: 18 hours Common: 18 hours Core: 18 hours	Five (5) days
Recognition	NC Level II	Certificate of Training
Contents of the Course Design	Course Description Methodology Assessment Approach	Rationale Course Description Specific objectives Course content (course schedule, topics/modules, no. of hours/minutes) Target participants Methodology Recognition Schedule Venue Assessment is scheduled on Training Day 5

required a different level of training hours. TESDA's training course is designed to equip individuals with the basic, common and core competencies required in the construction sector, particularly heavy equipment operation. It stipulates that all units of competencies must be achieved for certification. The training for each competency requires a set number of training hours, e.g. basic and common competencies each require 18 hours, and 120 hours are required for core competencies. Graduates of this course are awarded the National Certificate Level II. PPATI's training course, on the other hand, provides participants with the necessary skills, knowledge and attitude to enable them to perform the tasks of a port forklift operator. It does not identify the competencies developed. Furthermore, in terms of training hours, PPATI offers only a five-day course, equivalent to 39 hours and 20 minutes of training.

This study also looked into the content of the training courses of the two agencies. TESDA has divided the course into three bands of competencies, with a total of twelve units of competencies. PPATI's course is divided into seven modules. Furthermore, each unit of competency indicated in TESDA's design has corresponding outcomes, methodology and assessment approach. PPATI's course design has eleven specific course objectives with topics divided into modules. There were three distinct competencies in the TESDA curriculum. An analysis of the PPATI curriculum has shown that although these competencies were not identified in the modules, the modules were reflective of the competencies in the TESDA course. 89% of respondents indicated that they were very satisfied with the course content. To the participants, the PPATI course had clear module objectives and had practical exercises/training activities that were relevant to their job requirements. However, the comparison between the two courses revealed that the PPATI course did not have any group discussion or interaction or any practical demonstrations.

The PPATI met the minimum requirements of the TESDA with regard to training facilities. 72.25% of respondents rated the training venue as very good, indicating that it was conducive to learning, that there was sufficient ventilation, lighting etc. and provided facilities for rests and breaks. However, it was noted that there is room for improvement in this area so that PPATI can become a TESDA-accredited assessment centre for the port industry.

The entry requirements for both courses were compared. It should be noted that PPATI's training participants were already employed by as forklift operators in PPA ports. TESDA participants were required to complete a written entrance exam and meet specified health and physical requirements.

The course facilitators at PPATI were not accredited by TESDA. However, the respondents indicated that they were very satisfied with their trainers. They were able to learn from mentors who facilitated the learning process and the successful completion of the course.

It was noted that PPATI assessed participants differently. In TESDA regulations, each unit of competency had a corresponding assessment approach (continuous assessment). PPATI assessment for the whole training course was conducted on the final day of the course. The respondents indicated that the duration of the training course was sufficient for them to develop the competencies needed.

Conclusion

The results of the evaluation show that the participants of the training programmes for forklift operators conducted by the PPATI since 2012 were very satisfied with their training. They were able to learn from mentors who facilitated the learning process. It has been noted that the course facilitators have not yet been accredited as TESDA trainers. However, the PPATI did arrange for 63 course participants to attend TESDA assessment centres in order to receive the National Certification II award.

Gaps were identified in the training design of PPATI. Nevertheless, participants felt that the training design was successfully implemented and carried out smoothly with all the necessary administrative support properly in place. The trainees were very satisfied with the training activities in terms of course content, resources, and logistics. The cargo-handling operators were also satisfied because of the corresponding decline in accidents from 2012–2014. In 2012, forklift accidents accounted for 9.76% of total accidents. This decreased to 7.58% in 2013 and, most significantly, to 2.35% in 2013.

The author recommends that the PPATI consider the following measures in order to comply with the standards of TESDA:

1. A team of course developers should be established to review and revise the curriculum, including the delivery of training.

2. In revising the course, it is suggested that the PPATI follow the systematic approach of the UNCTAD TrainForTrade initiative.
3. Training modalities suggested by TESDA should be adopted.
4. The Institute should formulate a new performance measurement for their participants with specific mention of the competencies developed.
5. Course facilitators should be encouraged to undergo TESDA or equivalent certification.
6. A memorandum of agreement/understanding should be established with a partner agency.

Once these recommendations are implemented, the PPATI will qualify to be accredited as a TESDA assessment centre for the port industry and conduct trade testing and accreditation of heavy equipment (forklift) operators.

ECONOMIC FOCUS

4. An Assessment of the Impact of Privatization on the Performance of Tin Can Island Port, Nigeria

Mr. Buba Tukur

"After graduation, there is no doubt to me that the UNCTAD Port Management Programme impacted positively on my knowledge and understanding of local and global port operations."

Mr. Aliyu Abdullahi Goje, General Manager Corporate and Strategic Division, NPA (Mentor)

Author: Buba Tukur[1]

Mr. Buba Tukur started his career with NPA in 2001 in the Procurement Department and worked in many ports across the country, such as Harcourt Port, Tin Can Island Port, the Headquarters, and presently at Lagos Port Complex Apapa. He graduated from the University of Maiduguri and Nigerian Institute of Transport Technology (NITT), where he obtained a BSc. in Agriculture and post-graduate diploma in Transport and Logistics.

Like many others who participated in the UNCTAD Port Management Programme, the quest for knowledge motivated Mr. Tukur to join the programme. His most memorable moments were the mock dissertation exercise and the actual final dissertation defence. "During the mock dissertation exercise, I really had a tough session. This helped me discover where I made mistakes and also made necessary corrections. This, I believed was the secret behind my success at the final dissertation panel", he said. Mr. Tukur also recalls the Graduation Ceremony with fondness: "I have never been more excited as I was on that day, graduating among the top three participants."

Introduction

This study has investigated the impact of privatization on the performance of Tin Can Island Port Complex (TCIPC). TCIPC is one of six major ports controlled by the Nigerian Port Authority (established 1954), which include the Lagos Port Complex, Calabar Port, Delta Ports, Warri, Rivers Port, Port Harcourt and Onne Port. It is located north-west of Lagos Port complex. It was established in 1977 and is an amalgamation of what used to be Tin Can Island Port and the RORO complex. It was seen as a solution to the problem of congestion in Nigerian Ports caused by the importation of goods required to rebuild the country after the Civil War (1967–69) and the oil boom of the 1970s.

The vision of the NPA is to be the leading Port in Africa. Under its original mandate, the NPA was responsible for developing, maintaining and operating ports and harbours, providing safe and navigable channels and ensuring safety and security for customers. However, this system hindered port development and curtailed operational efficiency. As a result, the NPA ports became less competitive and were a drain on Nigeria's meagre public resources. In an effort to reverse the trend, the major activities of the port were commercialized on the recommendation of the Technical Committee on Privatization and Commercialization (TCPC). Despite these attempts, there was little improvement and the reform initiatives were scaled back.

In 2003, the Federal Government took the decision to reform the maritime sector, and in 2006, all ports and terminals were privatized in order to promote efficiency through public–private partnership (PPP). Therefore, TCIPC was privatized so as to attract private expertise and investment in areas of cargo handling and the provision of adequate equipment. The NPA maintains ownership of the land and water within the port limits and is responsible for the development and

[1] Mr. Tukur was mentored by A.A. Goje, General Manager, Eastern Ports (at the time).

Table 9 Current Profile of Tin Can Island Port

Berths/Terminal	Quay Length	Area	Reform Status	Gestation Period	Operators
Terminal A Berth 1, 1A & 2	484M	5.6Ha	Privatized	10 Years	Josephdam Port Services Ltd
Terminal B Berth 3,4,4A & 5	764.6M	22.23Ha	Privatized	15 Years	Tin Can Island Container Terminal
Terminal C Berths 6,7,7A & 8	936.4M	5.6Ha	Privatized	10 Years	Port and Cargo Handling Services Ltd
Terminal D Berth 9 & 10	437.03M	18.67Ha	Privatized	10 Years	Five Star Logistics Ltd
Berth 11 & 12	500M	12.2Ha	BOT	25 Years	Port & Terminal Multiservices Ltd

administration of the port, port infrastructure, harbour operations, marine incidents and enforcing port regulations.

Five companies were issued leases for TCIP: Josephdam Ports Services Ltd (10 years), Tin Can Island Containers Ltd (15 years), Port and Cargo-Handling Services Ltd (10 years), Five-Star Logistics Ltd (10 years), Port and Terminal Multi-Services Ltd (25 years). Collectively these companies are responsible for cargo handling, stevedoring, warehousing/ delivery, acquisition of equipment, development and maintenance of the Port's superstructure, security and chandling/repairs.

Tin Can Island Port Complex (TCIPC) is a service port. It has three terminals (A, B and C) with a total quay length of 2,185 m and a depth of 10.5 m. Terminal D, the old RoRo port, has a total quay length of 437.03m and a depth of 10.5m. After the privatization of the port in 2006, a Green Field Terminal was developed in line with the Build Operate and Transfer (BOT) model. This terminal was built by PTML and has a quay length of 500 m. It opened for operation in 2007. The following is a table that outlines the current profile of TCIPC:

In order to assess the impact of privatization, the performance of the port was analysed in the five years prior to privatization (2001–2005) and in the five years following privatization (2007–2011), with particular attention paid to four key performance indicators: ship traffic at the port, annual cargo throughput, average vessel turnaround time and berth occupancy rates. The availability of cargo-handling plants and equipment was also assessed, as was the type of cargo handled by the port. A mixed method sampling technique was used to obtain the required data – physical observation of the port, questionnaires and interviews. Additional data were obtained from TCIPC annual reports.

Analysis

The analysis of the four key performance indicators shows that privatization had a positive impact across the board.

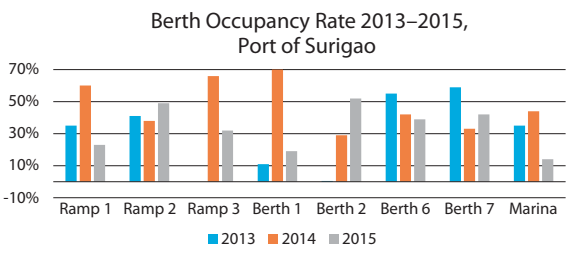
Table 10 Average Five-Year-Pre-and-Post-Privatization Performance

Performance Indicators	Pre-privatization	Post-privatization	Variance
Ship Traffic	712	1,512	+112.36%
Cargo Throughput (Tons)	5,255,605	13,149,625	+150.20%
Average Turn Around Time (Days)	8.50	5.97	(29.77%)
Bert Occupancy (%)	61.95	71.31	+15.11%

Source: TCICP Annual Report (2001-2011)

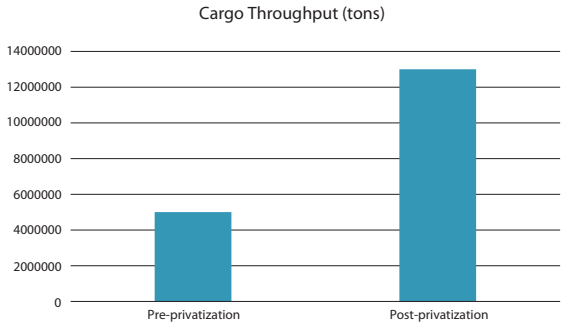
Average ship traffic to the port increased after privatization. Prior to 2006, approximately 712 ships were recorded. This increased by 112% to 1,512 ships in the five years after privatization.

Figure 11 Average Ship Traffic (Pre- and Post Privatization)



When the average cargo throughput was analysed, it revealed that there had been an increase of more than 150%, growing from 5.2 million tons to 13.1 million tons by 2011. This indicates that privatization has successfully increased the cargo throughput.

Figure 12 Average Caro Throughput (Pre- and Post Privatisation)



It was noted that the average vessel turnaround time improved after 2006. During pre-privatization, it took on average 8.5 days to turn around a vessel. By the end of the five-year post-privatization period, this had been reduced to 5.9 days. However, this is still too long as per International Maritime Organization (IMO) stipulations, which indicate that vessel turnaround should be completed in 2 days.

Figure 13 Average Vessel Turn Around Time (Pre- and Post Privatization)

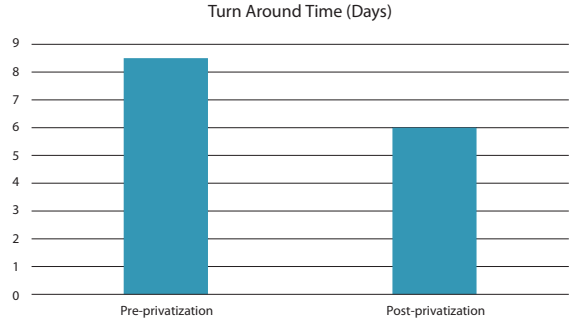


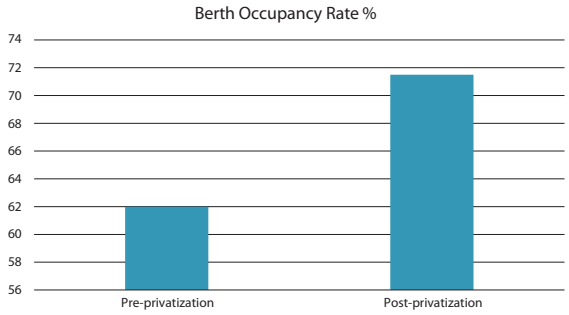
Table 14 Comparative Equipment Availability (Pre- and Post-privatisation)

		Nos. Available	
Equipment Type	Capacity (Tons)	Pre-privatization	Post-privatization
Mobile Crane	62-100T	1	9
RTG	45T 5H	-	25
Shore Crane	-	-	7
Reach Stacker	45T 5H	8	41
Top Loader	45T 4H	-	3
Empty Handlers	16T 5-7H	1	12
Forklift	3-45T 3H	38	35
Terminal Tractors	2WD, 40 Tons	4	107
Bromma Spread	25T	-	9
Trailers	60 Tons	-	57
Sling Nets	Various	-	30
Grabbers	Various	-	25
Bob Cats	Various	-	15
Total		52	345

Before the privatization of the Port in 2006, only 52 pieces of cargo- handling equipment were available. There are now approximately 345 pieces of equipment available. This clearly indicates that the Port has benefited from privatization in the areas of equipment purchase and maintenance.

Average berth occupancy rates, however, only experienced a 10% increase, from 61.9% to 71.3% after privatization.

Figure 15 Average Berth Occupancy Rate (Pre- and Post-privatization)



Conclusion

This study has concluded that privatization has improved activity and operations at TCIPC. This is illustrated by the significant increase in ship traffic and cargo throughput. Average vessel turnaround has also improved, although it is still falling short of the recommended turnaround time stipulated by the IMO.

Along with a significant investment in port equipment by the private terminal operators, the implementation of maintenance strategies for this hardware has yielded the desired result.

Based on his analysis, the author has made the following recommendations:

1. The method of privatization adopted in Tin Can Island Port should be strengthened and sustained.
2. The increase in cargo levels should be sustained in the post-privatization era.
3. If these levels are to be sustained, future development should be planned around the current, available data.
4. The Government should support future public and private sector ownership of the port system.
5. A regulatory body should be established to appraise the performance of the reform programme at a minimum of five-year intervals.
6. The increase in equipment levels at the port must be matched with increased utilization.

5. The Impact of Axle Load Control on Transit Trade Through Ghana's Ports: A Case Study of the Tema Port

Ms. Solace Aseye Nyadroh

"I believe that my journey up the professional ladder would in no small way serve as an inspiration to other women – in particular, girls – to equally strive for greater laurels."

Mr. Michael A. Luguje, Mentor and Secretary General of Port Management Association of West and Central Africa (PMAWCA)

Author: Solace Aseye Nyadroh, Ghana Ports and Harbours Authority, Ghana.[1]

Ms. Solace Aseye Nyadroh started her career with GPHA in 2002 as a Statistician and Business Planner. Through efforts and constantly challenging herself, she was promoted time and again. "I never lost my sense of personal development and achievement', she said. According to Ms. Nyadroh, her spirit was stirred up to study and to reach the top to inspire other women. She obtained her BSc in Economics in 2007 and an MBA Finance in 2011.

"I intend to be an agent of change and share the enormous knowledge acquired under this programme with colleagues, as we together use it to improve our performances for the advancement of the Ghana Ports and Harbours Authority, in our quest to be the preferred port in the region".

Ms. Nyadroh was transferred to Port Operations Department in 2014. Later that year, she was nominated by the company to join the UNCTAD Port Management Programme with the goal of updating her knowledge and strengthening her skills in Port Operations. She graduated in 2015 in the top three of her class, by which time she had also been promoted to Senior Terminal Officer in charge of the Transit Yard, an important delivery platform which serves the landlocked countries of Burkina Faso, Mali, the Niger and others.

"Participating in the UNCTAD programme gave me a better understanding, exposed me to contemporary issues in the Maritime Industry, and enhanced my efficiency and thus the productivity of my department as well as the organization as a whole", she added.

Some of the recommendations of her dissertation have been implemented and some are ongoing, such as partnering with stakeholders to reduce bribery on the transit corridor, monitoring and enforcement of axle load limits on the arterial roads, among others.

After graduating from the UNCTAD programme, Ms. Nyadroh was nominated by the Management for further studies and pursued a Master of Science Degree programme in Maritime Affairs, specializing in Port Management, at the World Maritime University in Malmö, Sweden.

Introduction

Tema is one of two seaports owned by the Ghana Ports and Harbours Authority (GPHA). This study has investigated the impact of axle load control on the port of Tema to determine if this regulation has brought about a decline in transit volumes and made Tema less attractive to transit shippers.

Ghana has made an effort to entice transit trade from the landlocked countries of Burkina Faso, Mali and the Niger. Since 1999, the transit trade from Burkina Faso has significantly increased from a throughput of 26,000 tons to almost 500,000 tons in 2006. After 2006, the levels of throughput from Burkina Faso have been in decline. It has been noted that this trade corresponds to the crisis in Côte d'Ivoire – there is

[1] Ms. Nyadroh's mentor was Mr. Michael Luguje, Secretary General, Port Management Association of West and Central Africa (PMAWCA).

Table 16 Transit Traffic (Tons) by Country of Destination

COUNTRY	2000	2001	2002	2003	2004	2005	2006	2007
B. FASO	42'140	78'063	208'948	311'367	363'712	334'534	497'584	489'320
MALI	256	38'279	144'276	416'883	276'794	274'104	243'430	227'787
NIGER	76'303	116'151	159'680	77'891	87'110	150'987	141'203	118'112
OTHERS	26'274	28'758	114'869	42'321	36'512	7'856	5'373	8'437
TOTAL	**144'973**	**261'251**	**627'773**	**848'462**	**764'128**	**767'481**	**887'590**	**843'656**

Source: Ghana Ports and Harbours Authority Port Monitoring and Control Section

COUNTRY	2008	2009	2010	2011	2012	2013	2014
B. FASO	372'719	258'829	257'552	426'502	370'325	464'104	463'339
MALI	207'092	124'346	55'153	53'155	44'550	49'606	26'449
NIGER	241'417	45'697	76'036	65'727	51'722	47'974	50'217
OTHERS	42'124	80'252	58'329	68'694	63'860	58'984	37'222
TOTAL	**863'352**	**509'124**	**447'070**	**614'078**	**530'457**	**620'668**	**577'227**

Source: Ghana Ports and Harbours Authority Port Monitoring and Control Section

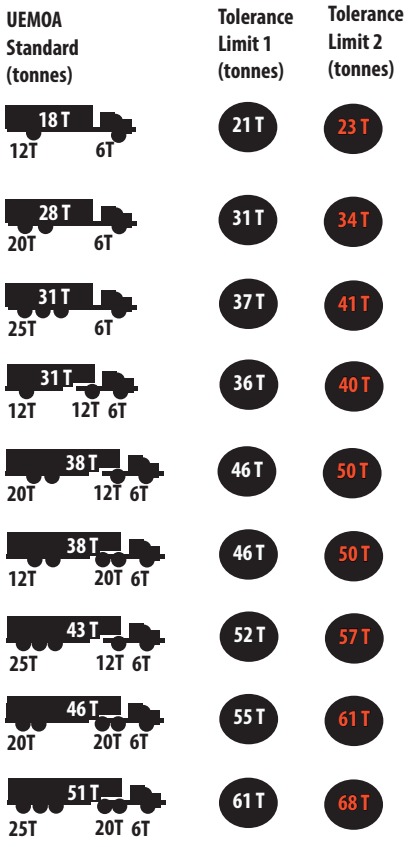
increased transit trade with Burkina Faso when there is an escalation in the Ivorian crisis and a decrease in transit trade when the trouble has abated. This begs the questions of whether Ghana is doing enough to attract transit trade on its own strength or is merely benefiting from the crisis in Côte d'Ivoire.

The United Nations Convention on the Law of the Sea (UNCLOS) stipulates that landlocked countries should have lawful, unimpeded access to the use of the sea for imports and exports. There are no railways connecting Ghanaian ports to these countries. Therefore, the only means of transporting goods to and from them is via road. In 2003, the Economic Community of West African States (ECOWAS) placed priority on the development of the Trans West African Highway corridor, a road which runs through Ghana from Lagos, Nigeria to Nouakchott, Mauritania. In order to mitigate the cost of constructing and maintaining the Highway, ECOWAS and its francophone sub-body, l'Union Economique et Monétaire d'Afrique de l'Ouest (UEMOA), which represents the French-speaking countries in the region, stipulated that there would be an axle load limitation for all transit vehicles. This aimed to standardize measures facilitating transit trade to landlocked countries while protecting the roads of the port countries from undue degradation due to overloading.

Ghana implemented this protocol in May/June 2009. Under the protocol, a three-axle truck, for example, is only permitted to carry a 30-ton load or up to a tolerance level of 36 tons. While a six-axle truck is allowed to carry 51 tons or up to a tolerance level of 61 tons, depending on tyre placement. However, neighbouring countries did not follow suit and transit shippers have often cited the strict axle load controls in Ghana as a reason for the fall in traffic, although there are other mitigating factors, such as delays in releasing containers from the port and harassment from security personnel along the transit corridor.

The purpose of this study is to provide, for the first time, empirical evidence for the claim that the axle load

Figure 17 Axle Load Limitation



protocol is inhibiting trade moving through Tema. This investigation has employed an evaluative research design, adopting a mixed approach by using both qualitative and quantitative surveys. A sample of 100 respondents were issued questionnaires, comprising 35 clearing agents, 35 transit shippers, 20 haulage transport drivers and 10 GPHA staff. The author has noted that there was an unwillingness among some respondents to volunteer information.

Analysis

Each respondent was asked 10 questions regarding the impact of axle load control. An overwhelming majority (98%) expressed the view that this implementation had been detrimental to the throughput of transit trade in Tema. Significantly, 60% of respondents thought that it was solely responsible, with 30% suggesting that it was only partially responsible.

In regard to transit costs, 70% suggested that the increase in transit transport costs was as a result of the protocol, while the remaining 30% suggested transit shippers now incurred higher rent costs as a result of having to store excess cargo.

95% believed that Port revenue had been affected. Company documents from some freight forwarders and their importers revealed that about 39% of monies previously paid to GHPA were now being sent to neighbouring countries.

Harassment was seen as a problem for transiting trucks, 15% believed that bribery and corruption by axle-weighing officials caused delays along the transit corridor, as did harassment and extortion by security services. Sometimes drivers are held for up to 11 hours over very minor offences in an attempt to extort the driver. This leads to costly delays. When businesses are unable to plan their transactional time and the cost of the transactions, it is a disincentive for businesses to use Ghanaian ports.

Conclusion

Although the axle-load regime was a region-wide initiative of ECOWAS, Ghana has been the only country to strictly enforce it. This research showed clearly that axle-load implementation in Ghana has brought about a significant drop in transit volumes. It has demonstrated that the strict enforcement of the axle-load limit has increased clearance/transport costs by 41.4%. This has made the port of Tema less attractive to transit shippers from Burkina Faso, Mali and the Niger, who are now using the neighbouring West African ports of Abidjan, Lomé, Dakar and Cotonou. This has resulted in the loss of jobs for dockworkers and clearing agents, for example, and the Port Authority has lost both jobs and revenue.

However, the research has also noted that there are other factors such as damaged road infrastructure from overloaded vehicles that have contributed to the decline in transit shipping. Damaged roads require costly maintenance and can cause accidents. Ultimately, the implementation of the axle-load regime will benefit the Ghanaian economy. It will help keep the roads in good working order, which will attract more freight over time as less breakdowns occur and faster transit times are achieved. Already there are signs that truck drivers are complying with vehicle weight limits and that the number of overloaded trucks exiting the port is declining.

The following are recommendations for ensuring the sustainable development and attractiveness of the Ghana Transit Trade Corridors:

1. Ghana should lobby the ECOWAS regarding the uniform implementation of the axle-load regime in all member countries.
2. The Ghanaian Highway Authority should continue to monitor and enforce vehicle weights on all major arterial roads and expand this to all major trunk roads.
3. The Port Authority should enforce weight limits on freight containers to facilitate industry-wide compliance with load limits for transport equipment, as well as ensure that all weigh stations are calibrated regularly.
4. Roads should be funded internally, limiting the reliance on donors to construct high quality roads that allow for higher axle-load limits.
5. Steps should be taken to improve port efficiency and customs procedures/practices, thereby reducing transit costs and delays.
6. The campaign by GPHA to crack down on harassment should be joined by other stakeholders such as the GHA to reduce bribery, extortion and harassment by customs officials and security operatives on the transit route.
7. Ghana should establish a statutory, inter-agency body tasked with the management and promotion of the Ghana Transit Trade Corridors.
8. In the long term, Ghana needs to refurbish and extend its rail system to enable transporters and haulage companies to have access to multimodal systems of transport.

6. An evaluation of the Impact of the Oil and Gas Discovery on the Port of Takoradi

Mr. John Atsu Dzene

"I happened to be in the Port Monitoring Department when Ghana started the exploration of crude oil in commercial quantities, and after checking to see that no one had undertaken any research in this line, I was motivated to take up this research."

Mr. Richard Acquah, Mentor and Port-monitoring Manager

Author: John Atsu Dzene[1]

Mr. John Atsu Dzene joined GPHA in 2013 as Office Assistant/Messenger. He currently holds the position of Oil and Gas Officer at the Marine Operations Department. Mr. Dzene's background is Information Technology. After working at the Harbour Master's Office as Office Assistant for 3 years, he developed interests in computers hence the decision to further pursue his study in Computer Science at the University of Cape Coast. But along the line, he worked in various capacities and has also developed interest the oil and gas field. He plans on taking further studies in the Oil and Gas field, Safety and IT.

His pursuits in further education and self-development never stop. Mr. Dzene joined the Port Management Programme, as he wished to acquire more knowledge in port operations and the interlinking responsibilities between departments. "With the UNCTAD Programme, I am able to relate to the changing environment and competition", he said.

Mr. Dzene explained that the dissertation defence was personally the most memorable experience: "The mock defence really brought out my shortfalls and made me able to deliver a better presentation on the day of defence. Questions from Mr. Nii Komieteh; Mr. Richard Acquah, my mentor; Mr. Bortey and Ms. Rejoice Anane, who comprised the mock panel, really helped all of those who appeared before the panel."

In his dissertation, Mr. Dzene focused on the impact of oil and gas discovery on the Port of Takoradi. His hard work paid off – the recommendations from Mr. Dzene were a huge success and have been broadcast on a television programme, "Eye on the Port", on various national stations. After the broadcast, reminders were also sent by GPHA to its staff to watch the programme.

Mr. Dzene continues to be involved with training in a different capacity even after his graduation from the UNCTAD programme. With his encouragement, seminars are being organized to educate the port community on various issues and he himself is enrolling yet again in the ISO implementation training programme at his port.

Introduction

In 2007, Ghana announced its commercial discovery of oil. The port of Takoradi is the main point of onshore operations for the Ghanaian oil and gas industry, as it is 45 minutes by air/6 hours by boat from the Jubilee Field. This study has sought to critically evaluate the impact of the oil and gas discovery on Takoradi.

The port of Takoradi opened in 1928. It is one of two main ports operated by Ghana Ports and Harbours Authority (GPHA). According to the author, Takoradi port has a channel entrance width of 150 m, with a maximum of 10.5 m quay depth and 11 m buoy depth. It has four multipurpose berths (wharves 2, 3, 4 and 6) and two dedicated berths for manganese and oil. The port has a storage capacity of over 250,000 m2 in addition to the capacity provided by private warehousing and open storage areas. The port is currently undergoing a redevelopment programme to become the hub for oil services in Ghana and West Africa. This has resulted in the demolition of several

[1] Mr. Dzene was mentored by Mr. Richard Acquah, Port-monitoring Manager, Ghana Ports and Harbours Authority, Takoradi.

old structures and land reclamation. A commercial loan of €193million facilitated the extension of the main breakwater by 1.08 km and the dredging of the port access channel to a depth of 16 m. It is hoped that in the near future the port will secure a loan of US$150million to invest in the road infrastructure leading to and from the port.

Ghana has two oil and gas fields. The Jubilee Field, announced 2007, and the Tweneboa-Enyenra-Ntomme (TEN) field, announced 2013. The reserves of the Jubilee Field are estimated to be between 800 million and 1 billion barrels of oil and 120 million standard cubic feet of gas per day (mmscf/day.) The projected production span is 20 years. Current production at the field is 104,000 barrels of oil per day. The TEN field has a floating production storage and offloading (FPSO) vessel and a production capacity of 80,000 barrels of oil per day.

In order to ascertain the impact of the oil and gas industry on Takoradi, a quantitative methodology was used. Seventy questionnaires were distribution to GPHA employees and port stakeholders; the response rate was 63%. It was noted that some stakeholders (customers) were unwilling to return the questionnaire or did not met the deadline.

Analysis

A total of 44 questionnaires (30 from staff, 14 from customers) were returned, and their responses formed the basis of this study. 38.4% of respondents were employed at the level of supervisor, and 43.2% had been working in their industry for 11–15 years.

Table 18 Demographic information of respondents

	Frequency	Percentage (%)
Ranks in the Organization		
Managers	7	15.91
Officers	15	34.09
Supervisor	17	38.64
Clerk	5	11.36
Total	44	100
How long have you been working with your organization?		
Less than 5 years	6	13.6
Between 6-10 years	10	22.7
11-15 years	19	43.2
16-20 years	1	2.3
Above 20 years	9	20.5
Total	44	100

Source: Field Data, 2015

This study has established that the majority of respondents (86.4%) believed the discovery of oil and gas resulted in changes to facilities, finances and attitudes in Takoradi. Since 2007, changes had been noticed in berthing facilities, storage terminals, waste reception facilities and safety and security policies. For example, the investigation revealed that Berth No. 3, previously a general-purpose berth, was now dedicated solely to Tullow Ghana oil and gas vessel operations. Another example is the former shed 4 at wharf 4, which has been demolished and the land leased to BajFreight Logistics as storage for offshore pipes and other equipment, and the former Sawn Timber shed has been demolished and the land leased to Subsea 7 for the storage and fabrication of suction pipes. Furthermore, Viking Offshore has now leased the former launch wharf and has created a water desalination plant with silos for bulk cargoes.

84.1% of respondents believed that the oil and gas discovery had brought about financial changes in the port, with 75% of respondents indicating that the port was now in a better financial position. This reflects both the huge investment associated with the discovery and the associated up-stream, down-stream businesses.

The following areas were identified as revenue earners: vessel handling, cargo storage, rental of port facilities and the supply of bulk products. The analysis of GPHA financial statements from 2011 to 2014 indicate that cargo handling has been the main contributor to port revenue, comprising 64% of port revenue annually. This was followed by vessel handling, which contributed 21%. Additional

Figure 19 Former Shed 4, now BajFreight yard

Figure 20 Annual revenue analysis for Takoradi Port (2006–2014)

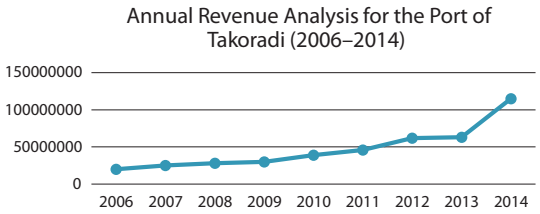
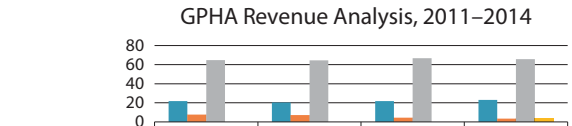


Figure 21 GPHA Revenue Analysis (2011–2014)



	2011	2012	2013	2014
Vessel Handling	21.74	20.2	21.73	22.94
Storage of Cargo	7.64	7.23	4.38	3.46
Cargo Handling	64.86	64.38	66.73	65.84
Bulk Cargo				3.57

analysis revealed that GPHA introduced a separate oil and gas tariff in 2014, which contributed 15.75% to revenue that year. Customer respondents, however, reveal that they believe that the tariff was not competitive and did not measure up to the services provided by the port.

Although port revenues have increased, 97.7% of respondents indicated that they had not seen any increase in their salaries after the discovery. An analysis of the remuneration of Takoradi port staff from 2009 to 2014 reveals that salaries did actually increase but follow-up interviews with staff suggest that this was because of standard annual pay rises and was not affected by the oil and gas revenue.

Interestingly, 75% of respondents felt that GPHA staff were not adequately trained to handle the demands of the oil and gas sector. Of the customer respondents, 78.6% felt that GHPA staff could be trained better. This has impacted on customer satisfaction levels, which was ranked "Fair to below average" by the customer respondents.

This study identified the challenges facing Takoradi as a result of the discovery of oil and gas. The respondents suggested that infrastructure constraints were the biggest issue, followed by a lack of skilled labour, inadequate logistics and space limitations. There was also a concern among customer respondents that there were issues with equipment availability – the mobile crane, for example, was underutilized due to policy and regulatory constraints such as certification. In order to combat issues of equipment availability, the port has increased its inventory. The study found that the port had 10 reach-stackers of varying capacities, 9 Mafi trucks, 12 track trailers, 12 low-capacity forklifts, 8 high-capacity forklifts and a number of mobile cranes of varying capacities. However, the staff of the logistics and engineering departments indicated that the port did not have the right equipment to handle specialized cargo such as pipes and drums.

From the point of view of customers (oil companies), the level of satisfaction with the services being provided by the port was below average, and it was indicated that staff training would enhance satisfaction. Only 14.3% of respondents felt that there was a good handling of complaints and that this was an area of service delivery that could be improved. It was also indicated that the issues of equipment availability contributed to this poor rating.

Conclusion

This study has concluded that the Ghanaian oil and gas discovery has influenced changes in the port facilities at Takoradi. The analysis has revealed that there have been changes in berthing facilities, storage terminals and safety and security. Some respondents also noted that they had observed changes in waste reception facilities.

Although there has been a slight change in the attitude of employees, it can be shown that port workers were not specially trained to handle the specific demands of the oil and gas sector. The training section of GPHA could not provide data on the special training of port staff in the needs of the oil and gas industry but it indicated that the section was satisfied with the impact of the training programmes it was currently running. Management is planning some additional staff training in this sector in the future but at the time of writing, it is not known when this will commence.

The study also concluded that the port workforce had not seen any significant benefits in remuneration as a result of the oil and gas discovery, although salaries had increased across the period. As a result, the following recommendations can be made:

1. Takoradi Port should embark on training programmes for staff, for example, seminars, workshops and conferences. This will improve customer service delivery, making the port more efficient and competitive.
2. The port should increase its number of low-capacity forklifts and associated machinery and equipment to handle specific cargo, such as pipes and oil drums.
3. Port management should review its tariffs and policy on the hire of mobile cranes in order to compete with private mobile crane companies.
4. The salaries of port workers should be reviewed to reflect the financial benefits realized by the Port.
5. GPHA should regularly update its customers and stakeholders on its projects and initiatives so that they can appreciate what the Port is doing to improve business opportunities in the port.

FINANCIAL FOCUS

7. Establishment of Finance Shared Services in IPC II

Ms. Dewi Fitriyani

"This programme enhanced my knowledge of port management, especially in operations. It gives added values to my job as an employee in the port industry…The programme also involved participants from all of the four branches in Indonesia and helped strengthen the network of our ports."

Mr. Ilham Leman, Assistant Senior Manager, Asset Management, Pelindo 2 (mentor)

Author: Dewi Fitriyani, Assistant Corporate Secretary, Management Administration[1]

Ms. Dewi Fitriyani is the Corporate Secretary and External Relations Manager in Port of Tanjung Priok, one of IPC subsidiaries. She joined IPC in 2001 in the Port of Ciwandan. With her background as an economist, she became interested in the port industry. Ms. Fitriyani admitted that it was quite difficult at times to acquaint herself with new knowledge on port operations. When offered an opportunity to join the UNCTAD Port Management Programme in 2014, she decided to take up the challenge.

In her dissertation, Ms. Fitriyani pointed out that the establishment of the Finance Shared Service in IPC would have a long-term and strategic impact for her company. Her recommendations have been reviewed by the management and the financial function she suggested is now being implemented, supporting the business and its stakeholders. Furthermore, in line with one of IPC corporate values, "customer centric", the finance shared service organization in IPC is now named "Customer Service Centre" (CSC), which reflects what Ms. Fitriyani wrote.

"The UNCTAD Port Management Programme was really useful. It taught me a lot of lessons and I also learned from shared experiences. I applied what I have learned during this programme in order to improve my performance in my port. I hope this programme keeps on going", she said.

After graduating from the UNCTAD Port Management Programme as one of the top three performers in 2015, her company awarded her an opportunity to pursue the Executive Master of Business Administration (EMBA) at Kühne Logistics University in Hamburg, Germany. "I hope with my study in Kühne, I can further enhance my company performance on how to manage logistics", added Ms. Fitriyani.

Introduction

PT. Pelabuhan II (Pesaro), known as IPC II, is a State-owned enterprise that is engaged in port and logistic services in Indonesia. Its operational area covers 10 provinces and manages 12 ports: Port of Taluka Babur (West Sumatra), Port of Jambi (Jambi), Port of Palembang Boom Bara (South Sumatra), Port of Bengkulu (Bengkulu), Port of Panging (Lampung), Port of Tantung Pandean (Banka Belitung), Port of Pangea Balam (Banka Belitung), Port of Banten (Banten), Port of Tanjun Priok (DKI Jakarta), Port of Sunda Kelapa (DKI Jakarta), Port of Cirebon (West Java), and Port of Pontianak (West Kalimantan).

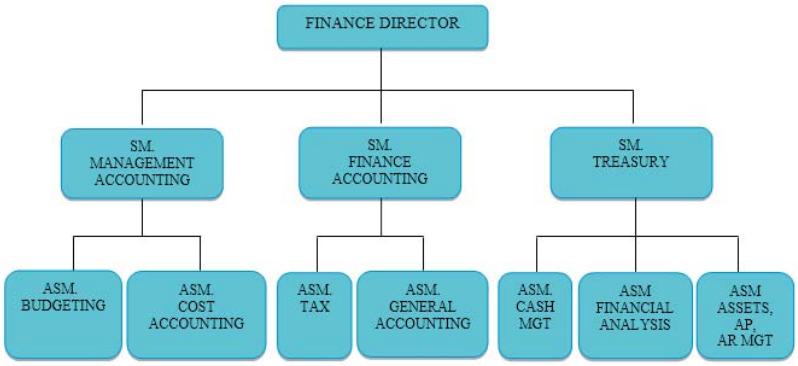
It also operates 16 subsidiary terminals ranging from major port terminals such as TPK Koja and Jakarta International Container Terminal (JICT), to energy companies such as PT Energi. It also operates a maritime university, PMLI.

The author notes that as a significant player in the Indonesian logistics chain, IPC II is striving to provide faster, more effective and efficient services to meet the needs of its customers and port services users. By reducing delays and overall time of goods in the port costs are reduced, which is passed on in lower prices for end users, thereby stimulating economic growth.

IPC II is embarking on a major expansion and investment plan for port services in Indonesia. Part of IPC II's strategy involves the creation of new business entities and subsidiaries that will focus on core commercial and operational services. IPC II is

[1] Ms. Fitriyani was mentored by Mr. Ilham Leman, Assistant Senior Manager, Asset Management.

Figure 22 Existing organizational structure of the finance department



lagging behind global standards in finance functions. As part of this business transformation plan, the finance function has been asked to look at how it will support the business and stakeholders. It is hoped that significant improvement will be achieved through changes in the following key areas: finance strategy, organization structure, underlying processes, finance systems and employees.

The finance departments are geographically diverse, and structured based on the local branch model. This means there is a duplication of roles, and processes have not been standardized across the branches – there are different Oracle platforms utilized, for example. This limits the ability for internal control and achieving value for money for customers.

There are currently 330 employees across the ICT finance functions. The following table shows the breakdown of employees across the decentralized departments.

Table 23 Employee distribution in IPC finance departments

Data Employee Finance Department		
Number	Branch	Number of persons
1	Head Office	55
2	Tanjung Priok	67
3	Panjang	29
4	Palembang	30
5	Teluk Bayur	25
6	Pontianak	29
7	Bengkulu	14
8	Jambi	16
9	Tanjung Pandan	6
10	Pangkal Balam	8
11	Cirebon	20
12	Banten	19
13	Sunda Kelapa	12
	Total	330

Increasing automation and establishing a centralized finance department will facilitate a standardization of policies and operation processes, as well as maintain the integrity and consistency of information. This will eliminate waste and offer cost efficiency through increased customer responsiveness, shared resources and the streamlining/optimization of process flows. Furthermore, combining the departments will create a pool of shared expertise and offer employees a clear and long-term path for career development.

The purpose of this study was to evaluate the proposed establishment of a shared financial service in IPC II. This study employed a qualitative method to obtain the required data. A map of finance employees with an analysis of their workload was created. Interviews were conducted with relevant IPC II employees, who had indicated their willingness to participate by returning a completed questionnaire.

Shared services will consolidate administrative and support processes in a centralized department that will provide financial services to the entire company.

Analysis

This study has shown that there are inefficiencies in the provision of financial services operations. Overall, there is a lack of transparency. A lot of the processes are manual and time consuming. For example, there are often 200 invoices that need to be physically signed daily. The financial departments in 12 ports do not have unified, standard processes and the

Table 24 Workload distribution in IPC finance departments

Branch	AR	AP	FA	Budgeting	Costing	Others
Head Office	40%	30%	20%	30%	20%	10%
Tanjung Priok	60%	40%	30%	30%	20%	10%
Panjang	50%	30%	20%	30%	20%	10%
Palembang	50%	30%	20%	30%	20%	10%
Teluk Bayur	50%	30%	20%	30%	20%	10%
Pontianak	50%	30%	20%	30%	20%	10%
Bengkulu	50%	30%	20%	30%	20%	10%
Jambi	40%	30%	20%	30%	20%	10%
Tanjung Pandan	40%	20%	10%	20%	20%	10%
Pangkal Balam	40%	20%	10%	20%	20%	10%
Cirebon	50%	30%	20%	30%	20%	10%
Banten	50%	30%	20%	30%	20%	10%
Sunda Kelapa	40%	20%	10%	20%	20%	10%

role and responsibilities of employees is often not clear. There is no interface between the operation system and oracle, which means that time must be spent reconciling data. There are often delays in the system – invoices, for example, are received by users instead of finance and are not tracked. This can result in penalties for late payment. There is no system for sharing data between the various functions of financial services operations, which results in unreconcilable bank accounts. Finally, there is no widescale utilization of technology. There is no mechanism for internet banking, which means customers have to manually process payments in the bank.

The analysis has revealed that currently, each local department allocates these workloads according to the following table:

IPC II intends to move some of the common transaction-based functions such as Accounts Receivable (AR), Accounts Payable (AP) and Fixed Assets (FA) to this new shared services organization.

AR refers to the accounting transactions required when a customer has ordered services. For AR, this will mean changes in the process of integrating and maintaining customer master data, thereby increasing accuracy and efficiency in processes such as pre-billing. Investment in a new Oracle module, Lock Box, will enable efficient and accurate automated payment-to-invoice matching.

AP deals with payment to vendors after invoices have been received. As part of the shared financial services division, AP will have access to customer master data, which will reduce inefficient processes. Hierarchical changes will reduce the time required to process orders. A centralized invoice receipt system will aid in invoice processing. Finally, it will provide an online and scheduled payment system.

FA is the process of recording and controlling the physical records and financial activities related to the assets of the company. FA will benefit from the automation of all processes including tracking asset creation and modification, depreciation and consistent reporting procedures. The adoption of the Oracle fixed assets module will significantly reduce the number of processes performed by IPC II employees, and will centralize transactional processes.

By centralizing these transactional processes, IPC II will provide more efficient and cost-effective services to its customers. It is hoped that this will create an exciting enterprise that will contribute to national growth.

Conclusion

Establishing a shared finance service in IPC II by transferring transactional job processes in accounts receivable, accounts payable and fixed assets to a new department, the Customer Services Centre (CSC), will have a long-term strategic impact. This will ensure that IPC II is customer-centric.

The analysis has shown the establishment of a shared financial services division will have a positive impact in the following areas:

People: It will increase customer focus and service quality by allowing local financial functions to spend more time on value added activities such as analytical work, with less time spent on repetitive and duplicated transactional processes. It will reduce operational costs through changes in personnel and the increasing of finance employee skills. Furthermore, it will allow greater control on finance processes.

Processes: There will be an increased focus on business partnering, which helps to drive corporate level strategic initiatives through best practice sharing. There will be increased productivity of personnel through the automation of financial processes. Financial processes will be standardized across accounting locations, allowing a reduction in the complexity of IT systems. This will enable cost reduction, as work practices will be refocused. Finally, it will increase the ability of the financial services providers to adapt quickly.

Technology: There will be improved access to management information such as key performance indicator reports. Implementing a uniform system of financial processes will require the use of company-wide software, which will reduce costs.

This study suggests that the new CSC be established with the following organizational structure:

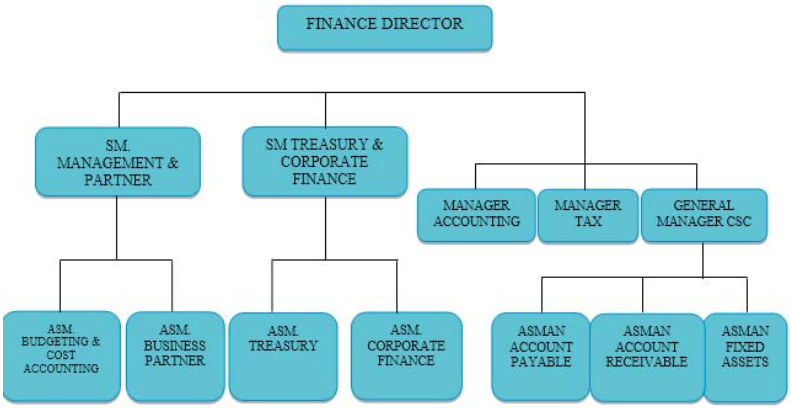
Furthermore, there will need to be investment in high-speed communications software and hardware requirements to support reliable real-time processing of financial transactions.

A system of centralized fixed asset accounting and reporting should be implemented to reduce the the number of processes to be performed by IPC employees by utilizing the Oracle fixed assets module and centralizing transactional processes to a customer service centre.

Significant automation of all processes, including tracking asset creation, modification, depreciation and monthly/annual reporting, will help drive reliability, consistency and visibility

In future, the CSC will handle the financial services operations of IPC II subsidiaries and will, it is hoped, eventually provide these services to other port companies in Indonesia and become a profitable subsidiary in its own right with a sustainable revenue stream through shared services provision.

Figure 25 Proposed structure of Customer Services Centre (CSC)



8. Review of Implementation of JICT Online Billing and Payment System (JOBPAYS)

Mr. Max Suswendi (left) and his mentor, Mr. Sawidji Kurniawan Sawidji Kurniawan, Senior Manager, ICT Services (right).

"We started the programme as strangers and finished the programme as a family that is ready to make more contributions to our country."

Author: Max Suswendi, Senior Manager, Financial Accounting and Services, PT. Jakarta International Container Terminal[1]

Mr. Max Suswendi started his career in the port industry in 2002. Port industry is not a new thing for him. His father spent almost his entire career in the same field for more than 30 years. Mr. Suswendi follows in his father's footsteps because he believes in the importance of the port sector to Indonesian economic growth and wants to take part in the development of the port industry in his home country. He joined the UNCTAD programme with the objective of gaining knowledge that will allow him to be a part of the industry's development in Indonesia. After graduating from the programme, he was promoted to Senior Manager of Financial Accounting and Services, and in 2016 he was then assigned as Senior Manager of Corporate Finance and Compliance responsible for managing billing, treasury and compliance at JICT.

"The content of the programme is highly relevant to our daily work... [the programme] provides me with insight and knowledge necessary for coordinating with other departments in the company that I work for", he said.

The recommendations that Mr. Suswendi proposed in his final dissertation, which focused on the implementation of a new billing and payment system, were taken into account, reviewed and further innovated to enhance the process. In 2014, 95% of payment transaction was done manually through the billing counter. However, putting Mr. Suswendi's recommendations into use, by the end of 2016, the number was reduced to 50% while the other 50% of transaction is now done through JOBPAYS. This helps increase the efficiency of the company through the reduction of employees in billing section and at the same time speed up the billing payment process which ultimately increase customer satisfaction.

Mr. Suswendi pointed out that since the programme involves participants from all four of the port companies of PELINDO right across the country, it also enhances networking and cooperation. After graduation, he and his colleagues created a Whatsapp group to keep in touch with each other.

Introduction

PT. Jakarta International Container Terminal (JICT) is the biggest container terminal in Indonesia and is located in Port of Tanjung Priok Jakarta. It does not handle the domestic market, and JICT is considered a leader in international container shipping. To maintain this position, JICT has to keep innovating so it can continue to provide the best service to its customers. The most recent innovation is the implementation of the JICT Online Billing and Payment System (JOBPAYS). This system was created to provide the customer with an easy method of paying for landside services without physically being in the JICT billing office. Payment can now be made through eChannels such as internet banking and ATMs, which are much more flexible methods of payment than customers enjoy with payment counters. This system is also more secure, as it means that personnel do not need to

[1] Mr. Suswendi was mentored by Sawidji Kurniawan, Senior Manager, ICT Services, PT. Jakarta International Container Terminal.

carry large sums of cash on their person. This is relevant because there have been instances in the past where personnel have been robbed.

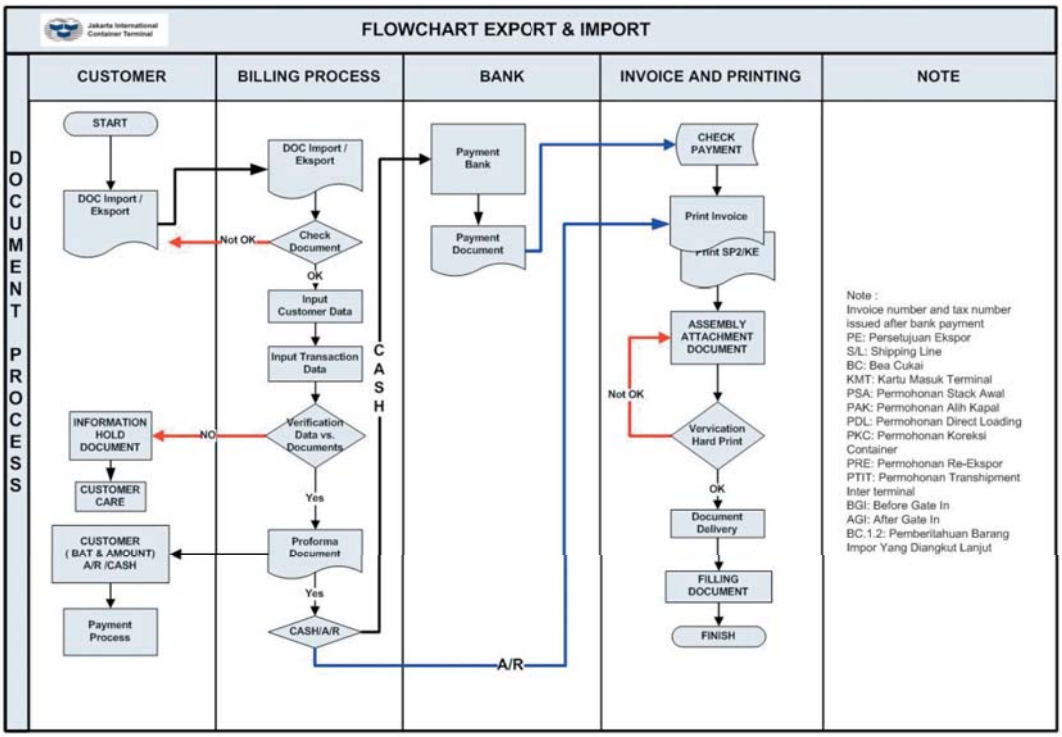
For the initial implementation of JOBPAYS, JICT partnered with Bank Mandiri, which had been involved in landside billing services for the previous 14 years. The bank has a counter in JICT that is open all year round, 24 hours a day, 7 days a week. By utilizing JOBPAYS, Bank Mandiri aims to increase the use of electronic payment and eventually limit the opening hours of its counter in JICT. JOBPAYS consists of five products: ebilling, electronic data capture (EDC), empty containers (Repo Empty), container movement tracking and Gen 2 Billing One Stop Services (GBOSS, self-service kiosks.)

EDC is a product introduced by Bank Mandiri that allows JICT clients to make payments to JICT using Bank Mandiri-issued debit cards. This removes the need for employees to carry large cash sums. However, it does require companies to open an account with Bank Mandiri.

The current system of billing is complicated and labour intensive, requiring JICT billing counter personnel to enter the data required to generate a proforma invoice. The following flowchart illustrates the billing procedure for both imports and exports:

The aim of this study is to investigate why customers have been slow to adopt the JOBPAYS systems. The system was launched in January 2014, and it was anticipated that the uptake would be 60% by the end of the year. However, by November 2014, only 5% of customers were using the system. The data for this study were obtained through discussion with customers and the relevant departments in JICT. The Force Field Analysis method was used to interrogate the data. This method provides a framework to analyse the pressures for and against the changes that occur as a result of the introduction of JOBPAYS.

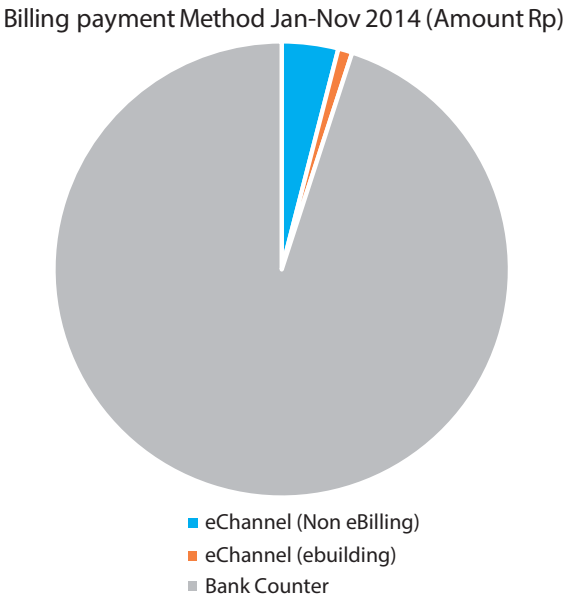
Figure 26 Current Billing Flowchart (Export and Import)



Analysis

The data revealed that across 2014 there had been no significant progress in the implementation of JOBPAYS. The analysis showed also that in November 2014, 91.92% of billing payments were still being made at the bank counter in JICT.

Figure 27 Utilization of JOBPAYS, January – November 2014 (amount reported)



Most customers showed interest in using the system, particularly the e-billing system, as it will improve the efficiency and effectiveness of their daily operations. It also reduces the risk that staff will be robbed on the way to the JICT office.

The REPO Empty system was introduced so shipping lines could solve the issue of payment for empty container repositioning. Prior to the introduction of this system, shipping lines had to estimate and pay for container slots in advance. If the number of containers is less than estimated, the shipping lines have to claim back the difference. The REPO Empty component of JOBPAYS payment will be based on the actual number of empty boxes that pass into JICT.

However, there were several areas of concern that militated against the use of JOBPAYS. The following issues with JOBPAYS were identified based on the information collected from discussions with major customers and internal departments.

Fear of redundancy: It was found that although customers welcome increased efficiency, there is concern that some JICT personnel will be made redundant because they will no longer be required to be physically present in JICT to make payments.

Bank limitations: Currently, the only banking partner is Bank Mandiri. With the existing counter system, customers are not required to have an account with this bank. However, JOBPAYS requires customers to have an account in order to make eChannel payments. This was found to be a significant obstacle to the implementation of the JOBPAYS system, as some customers who are not with Bank Mandiri are reluctant to open another account solely for the purposes of using JOBPAYS.

Data exchange with customs and shipping lines: JOBPAYS requires a reliable and efficient data exchange between JICT and the other stakeholders (bank, customs and shipping lines). Currently there is a satisfactory host-to-host connection with Bank Mandiri, allowing JICT seamless data exchange with the bank. The data exchange with customs is already established; however, at the moment customs can only provide data for imports. JICT also requires shipping lines to provide electronic delivery orders (eDOs) for import transactions and container pre-arrival notices (COPARN) for export transactions. At the moment, not all shipping lines provide JICT with this data, and this is a major obstacle to the full implementation of JOBPAYs. Without the support of all stakeholders, JICT will not achieve its aims.

Internet access: Some JICT clients, particularly small forwarding companies, do not have access to the Internet and are therefore not familiar with Internet banking. This makes using the bank counter in JICT their preferred method of billing and payment.

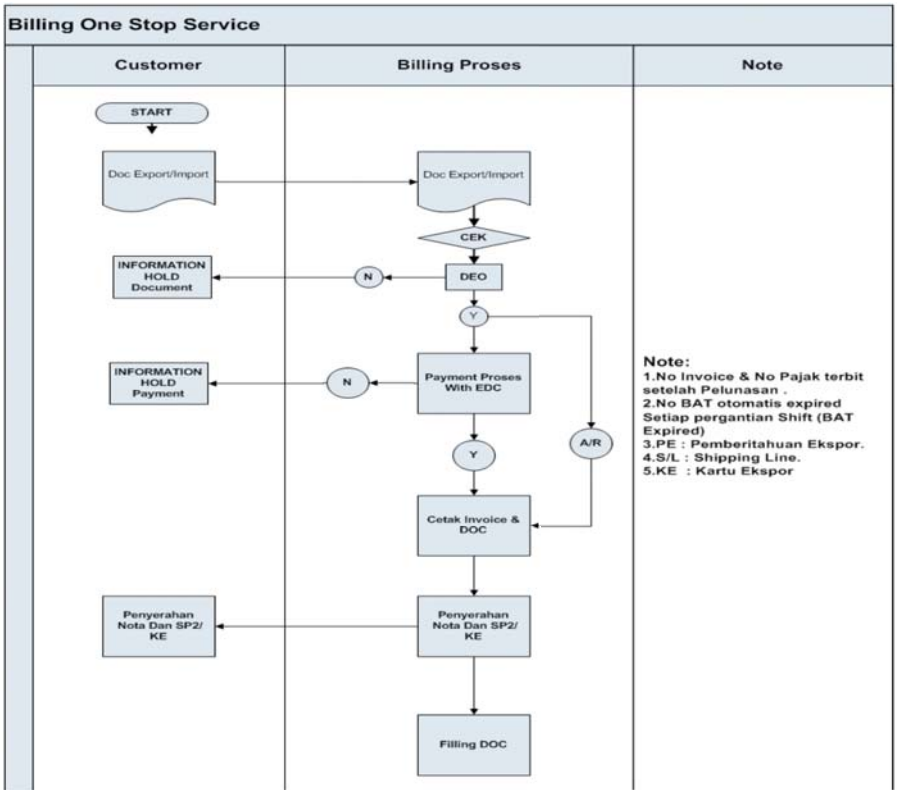
Technical issues: There is always the risk that the JOBPAYS system will go down. If customers begin to depend on the online system, they are then forced to change their operations flow back to manual procedures, then personnel and cash have to be physically present at JICT payment counters. It may not be possible for smaller operators to do this so they are unwilling to take the risk.

Conclusion

It is recommended that JICT implement the following measures to increase the success of the JOBPAYS system:

1. Increase the number of banks: The number of banks has been shown to be one of the major obstacles for customers using the JOBPAYS systems. In response to this, customers should be surveyed in order to identify the banks that are most frequently used, which will justify cooperation with other banks.
2. Self-service kiosks: It has been identified that some customers do not have internet access and/or are not familiar with Internet banking. To cater for this type of customer, JICT should implement self-service kiosks. The kiosks will replace the billing counter and all required data will be entered by the customer to generate the proforma invoice needed for payment. JICT will provide training for customers in using the kiosk. This will improve the billing system, as indicated in the following flowchart:
3. Roadshow: Visiting customers has proven to be a very effective way to encourage them to use JOBPAYS. The JICT team will introduce the system, as well as provide the customer with registration forms so that they can expedite the assignment of usernames and passwords. This will also enable the collection of feedback from the customer.
4. Bank cooperation: JICT should encourage banking partners to inform their customers about JOBPAYS, as this will increase the likelihood that they will use it. The bank can limit the opening hours of its counter or can even close the counter. Consequently, this will increase the use of eChannel banking.
5. Prepare a back-up plan: JICT should have a contingency plan in place in case the JOBPAYS system goes offline. In anticipation of this risk, JICT will need to have a dedicated group of ICT personnel to maintain the system. This team will also need to regularly stress-test JOBPAYS to ensure it is stable. Furthermore, the JICT billing team will need to have a system in place when the system is unavoidably down so that transactions can still be processed.

Figure 28 GBOSS (Gen2 Billing One Stop Service) Flowchart



9. Proposed Concession Fee Structure for Philippine Ports Authority (PPA) Tier 3 Terminal Concession Agreements

Ms. Jasmin A. Pararuan

"Port management is very technical, and the expertise in this field can't be learned from any existing school in the Philippines. As I continue on my journey in the organization, I can see that as an UNCTAD graduate, much is expected of you, and you are viewed with high regard."

Ms. Hiyasmin H. de los Santos, Mentor and Manager of Legal Services Department

Author: Jasmin A. Pararuan, Acting Deputy Corporate Board Secretary, PPA.[1]

Ms. Jasmin A. Pararuan has been working with PPA on legal issues since 2005 with her background as a corporate lawyer. With determination to acclaim competence in port management, Ms. Pararuan applied for the UNCTAD Port Management Programme. She almost got rejected by the Scholarship Committee, but thanks to the efforts and insistence from her mentor, Atty. M. A. Hiyasmin H. De Los Santos, the issue was resolved in her favour. Grateful for her mentor's efforts, Ms. Pararuan challenged herself and graduated as one of the top three performers of the class. In January 2016, she was promoted to the position of Corporate Board Secretary. "I was asked by the Chairman how is my competence on the technical side of port management. When I informed the committee that I am part of the UNCTAD training programme, they accepted", she said. Apart from her daily work, Ms. Pararuan is also now a member of the technical working group for the terminal management of PPA.

PPA took the recommendations from Ms. Pararuan's dissertation into consideration and did a further study on the model. Although the result did not go as smoothly as originally expected, Ms. Pararuan and her team found a new way to reduce future capital investment, based on her original hypothesis on the concession fee structure and terminal concession agreements. This will play a big part in the future of PPA, as the organization is now moving away from service management contracts per port to terminal management.

[1] Ms. Pararuan is mentored by Hector E. Miole, Acting Corporate Board Secretary, PPA and Atty. Hiyasmin H. Delos Santos, Manager, Legal Services Department, PPA.

Mr. Hector Miole, Mentor and Assistant General Manager of PPA

With the positive experience she enjoyed alongside her cohorts, Ms. Pararuan will continue engaging with the programme and delivered part of Module 7 dealing with concession agreement for the subsequent cycle of the UNCTAD PMP in the Philippines.

Introduction

The Philippines Ports Authority (PPA) is a statutory body with responsibility for implementing an integrated programme for the planning, developing, financing and operation of ports and port districts in the Philippines. It oversees 108 ports, 26 of which are classified as base ports, with the remainder classified as terminal management offices. As an operator, PPA has responsibility for the movement of vessels within port bounds (e.g. berthing, mooring, towing, docking), the loading and discharge of vessels, and the warehousing/handling of goods.

PPA embarked on its first privatization initiative when it offered the Manila International Container Terminal (MICT) contract through public bidding. A 25-year concession agreement was granted to International

Figure 29 Investment type of the PPA and its Terminal Operators

Investment Type	Sample Capital Investment	Tier 1 Full Terminal Concession	Tier 2	Tier 3	Tier 4	Tier 5 Pure O&M	Tier 6 PPA-STU Port
Physical undersea infra	Capital, maintenance dredging	Port Operator	PPA	PPA	PPA	PPA	PPA
Physical landslide infra	Wharf, piers, land reclamation	Port Operator	Port Operator	PPA	PPA	PPA	PPA
Above ground semi-fixtures	Quay cranes, gantry cranes	Port Operator	Port Operator	Port Operator	PPA	PPA	PPA
Above ground fixtures	Passenger terminal building, fence	Port Operator	Port Operator	Port Operator	Port Operator	PPA	PPA
Mobile handling equipment	Forklifts, trucks	Port Operator	Port Operator	Port Operator	Port Operator	Port Operator	PPA

Container Terminal Inc. (ICTSI), making it the first successful landlord port model in the country. This was replicated in four other terminals: Manila South Harbour (Asian Terminals Inc. Batangas (ATI)), Batangas Phase 1 (Asian Terminals Inc. Bantagas (ATIB)), Batangas Container Terminal (ATI), and Manila North Harbour (Manilla North Harbour Post Terminal Inc. (MNHPI).

Every port or terminal is different according to location and port activities. This is why there has been no consistent one-size-fits-all concession agreement template. In order to integrate port operations into a single entity, the PPA adopted a new policy on terminal management. This measure will upgrade PPA's private partners from a purely cargo-handling service provider to a terminal operator. Ports are to be classified using a tier system which prescribes a capital investment sharing scheme between the PPA and the terminal operator, depending on the cluster a terminal belongs to. The policy on terminal management will be implemented in 2016, with the gateway ports as a priority. This is to catch up with expiring cargo-handling contracts.

Prior to the privatization of terminal management, it was the general policy of the PPA that all cargo-handling operations were provided by private operators. In order to undertake cargo-handling services, the provider pays a government share (a financial obligation comprised of a percentage of gross revenue equivalent to approximately 10%). This differs from terminal management providers, who are obliged to pay a concession fee in the form of a fixed and variable fee, or fixed fee only. Considering that the concession agreements for the terminal management of MICT, Manila South Harbour, Manila North Harbour and Batangas Port are still valid until 2025 at the earliest. But concessioning for the terminal management of the following four gateway ports, Iloilo, Cagayan De Oro (CDO), Zamboanga and General Santos (GenSan), are the pilot projects for privatization under this new policy.

This study aimed to identify and propose a concession fee structure for PPA Tier 3 Terminal Concession Agreements in relation to the perceived conflict of interest where the PPA has the dual function of both operator and tariff regulator. PPA's concession fee structures both terminal management and cargo-handling service contracts is revenue based. This is in contrast to Europe, where the preferred concession fee structure is asset based. This is thought to be more straightforward and transparent. Where possible, the author has analysed concession agreements but it was noted that confidentiality arrangements prevented this in a number of cases.

Analysis

Under the new terminal management policy, the integration of passenger services, cargo handling and mooring operations will increase efficiency and reduce the administrative burden on the PPA. Terminal management will be afforded the opportunity to build stronger and more sophisticated private sector terminals. It will also mean that the PPA will have a

Figure 30 PPA Terminal Management Concessoin Fee Structure

TERMINAL OPERATOR	FIXED FEE	VARIABLE FEE	ADJUNCT FEE	LUMPSUM FEE
INTERNATIONAL CONTAINER TERMINAL SERVICES, INC (MICT)				
a) Original Terminal Management Contract (May 19, 1988 - May 18, 2013)	✓	✓		
b) Renewal/Extension Contract (May 19, 2013 - May 18,2038)	✓	✓	✓	✓
c) Original Contract of Lease for Storage Area	✓	✓		
d) Renewal/Extension Contract of Lease for Storage Area	✓	✓		
ASIAN TERMINAL, INC. (MANILA SOUTH HARBOR)				
a) Original Terminal Management Contract (May 13, 1992 - March 18, 2013)	✓	✓		
b) Renewal/Extension Contract (May 19, 2013 - May 18,2038)	✓	✓	✓	✓
c) Original Contract of Lease for Storage Area	✓	✓		
d) Renewal/Extension Contract of Lease for Storage Area	✓	✓		
ASIAN TERMINAL, INC. BATANGAS (BATANGAS PHASE I)				
a) Original Terminal Management Contract (October 20, 2005 - October 19, 2015)	✓	✓		
b) Renewal/Extension Contract (October 1, 2015 - September 30, 2015)	✓	✓		
ASIAN TERMINAL, INC. BATANGAS (BCT)				
Terminal Management Contract (March 25, 2010 - March 24, 2035)	✓	✓		
MANILA NORTH HARBOR PORT, INC. (MANILA NORTH HARBOR)				
Terminal Management Contract (November 19, 2009 - November 18, 2034)	✓			✓

clearer accountability and performance measurement. However, this means the fee structure previously used in the cargo handling contracts will need to be revisited.

At the time of the first renewal of the 10-year lease, Bantagas Port Phase 1 will be classified as a Tier 3 terminal. Tier 3 terminal management will have the following arrangement: undersea infrastructures (capital and maintenance dredging) and landside infrastructures (wharf, piers, and land reclamation) will remain the responsibility of the PPA, while the above-ground fixtures (quay cranes, gantry cranes, passenger terminal buildings and fence) and mobile handling equipment (forklifts and trucks) shall be the responsibility of the concessionaire. Although the initial contract awarded to the Bantaga Port Phase 1 operator, ATIB, was termed a cargo-handling agreement, the scope of the contract and two subsequent contracts that referred to the Phase 1 contract reveal that it is a terminal management contract. In the renewed contract, it was stipulated that ATIB is bound to provide a world class passenger terminal building, as well as the commission and installation of quay and gantry cranes

The analysis of the private terminal management contracts for other privatized ports revealed the following:

Per the terms of the original terminal management contract for MICT, ICTSI was obliged to pay the PPA a fixed and variable fee. When the contract was renewed for another twenty-five years to 2038, a lump sum fee and an adjunct fee were added to the fixed and variable fee.

ATI's terminal management contract for Manila South Harbour was renewed for twenty-five years in 2013. The only difference observed between the original and new contract was the amounts for the fixed fees and lump sum fees, rate per TEU, volume threshold as a basis for the adjunct fees, and the percentage in the variable fee.

After the completion of Batangas Port Phase 2 in 2009, the Batangas Container Terminal was put out to public tender. ATI won the contract again by committing to

pay the PPA an annual fixed fee with period fixed percentage escalation on the third, fourth and eighth year of the contract. In addition, ATI is to pay the PPA an annual variable fee of 2% to 8% spread throughout the twenty-five-year period multiplied by the projected gross revenue or actual gross revenue, whichever is higher.

Manilla North Harbour was tendered in 2007/2008. This process had some legal difficulties but was successfully awarded to the MNHP. This was different to the other terminal management agreements in that the bid parameter for the award was the lowest tariff to be imposed to the port users.

Conclusion

This study has revealed there is no standard concession fee structure used by the PPA in terminal management contracts, although it has been ascertained that cargo-handling contracts do have a prescribed fee structure.

The government share derived from cargo handling and port-related services is determined to be a percentage of the gross income earned by the service providers. With regard to terminal management contracts, the minimum fixed fee imposed is determined by the highest remittance to the PPA for the three years prior to the award or renewal of the contract and is based on a percentage of the gross revenue of the contractor. In order to mitigate inflation risk, PPA requires a volume-triggered variable fee, also based on the gross revenue of the contractor. This confirms that although the PPA has a varying concession fee structure, it is revenue based, rather than the asset-based structure favoured in European ports. The benefit of this for the PPA, however, is that it is assured of a minimum fixed revenue whatever happens to the economy or the business situation in the port.

However, this means that there is a conflict of interest. Since the concession fee received by the PPA from its operators is based on the gross revenue earned by the latter, any upward adjustment in the tariff, which must be approved by the PPA, proportionately increases the concession fee paid to the PPA and raises concern about the PPA's power to regulate the tariff. Perhaps the optimal system to determine concession fees should be a mixed combination of opportunity costs and risk allocation objectives, as this is more reflective of the relationship between the parties.

With regard to the Tier 3 Terminal Management contracts, the author would like to recommend that the PPA adopt a concession fee structure with the following:

1. A fixed fee based on the value of the port asset under concession.
2. A variable fee per ton after a set threshold has been reached.

This structure will be advantageous for the PPA as it

- Protects from inflation risks.
- Facilitates the recovery of its investment costs such as undersea and landside infrastructures.
- Affords high transparency as it is based on the value of the asset rather than the revenue accrued. This addresses the conflict of interest criticisms.
- Keeps the playing field level, as the fixed fee is based on local asset rates bidders can ascertain the level of the concession fee.

OPERATIONAL FOCUS

10. Causes and Effects of Scour in Front of Tin Can Island Port Quay Walls [From Josephdam Terminal to Five Star Logistics Terminal], Tin Can Island Port Complex, Apapa Lagos

Mr. Sadiq Abubakar Lamuwa

"The values of this programme are many – exposure to international and regional trade, planning and development, port operational infrastructure and others. The programme helps me in decision-making and offers guidance on how to facilitate my work in the port."

Captain Jerome B. Angyunwe

Author: Sadiq Abubakar Lamuwa[1]

Mr. Sadiq Abubakar Lamuwa started his career with NPA in 2013 but has decades of experience as a civil and coastal engineer and a Master of Science in Coastal Engineering. He started his career with Gombe State Government as Water Engineer and later joined Nigerian Ports Authority as Civil Engineer. He is now responsible for the management and preparation of engineering measurement for new and rehabilitations works at the port.

When asked what motivated him in joining the programme, Mr. Lamuwa explained that wanted to acquire new knowledge and help drive his organization and country forward.

Some of Mr. Lamuwa's recommendations in the dissertation were considered and implemented in the 2017 Budget Plan. The port took his advice and a consultant has been commissioned to model the causes of scour in front of Apapa Port Quay Wall. The new result will be further studied, alongside what Mr. Lamuwa has modelled in his dissertation. Furthermore, another recommendation, the Infrastructure Inspection and Maintenance Committee, was also set up for physical walkover and boat inspection of NPA Quay Wall.

Apart from his day-to-day work, Mr. Lamuwa also dedicates his time in a committee for reviewing NPA 25-Year Master Plan and training his junior staff in the office using knowledge gained from the UNCTAD Port Management Programme. He also actively participates in the social media group set up after graduation by his cohorts to continue sharing knowledge and suggest solutions to challenges in the port.

Introduction

This study looked at the causes and effects of scour on Tin Can Island Port Complex (TCIPC) quay walls in relation to dredging activities, ship propeller and bow thruster actions and tidal movement. Scour is the washing away of soil near the quay wall. This can affect the height of the quay wall as the scour depth increases over time. This study has focused on the quay wall from Josephdam Terminal to Fiver Star Logistics Terminal in the period 2010 – 2016. It was necessary to research this area as there were inadequate efforts to rehabilitate the quay wall during this period with 3.6 billion naira (approx. $10bn) being spent on maintenance.

Figure 31 Damaged portion of TCIPC quay wall (2006) before rehabilitation

[1] Mr Lamuwa was mentored by Captain Jerome B. Angyunwe.

TCIPC was established in 1977 to reduce waiting time in the Nations Sea Port, thereby encouraging economic growth. It is located on the Lagos Channel, approximately 11 km from the coast. The Port takes its name from the original use of the location as a dumping ground for disposing tins, refuse and peat materials. However, the land was not prepared adequately for construction and was not allowed to settle. TCIPC encompasses an area of 580 hectares and has nine berths along a quay wall length of 2.6 km. There is a turning basin for vessels approximately 1 km from the port entrance. The port reception facility is a quay wall that borders the channel wall and quay apron, which is a quay wall combined with a sheet wall, supportive piles for the concrete deck and a capping beam with a depth of 13.5 m.

Five companies have concessions at the Port: Josephdam Shipping Company (berths 1 and 2), Tin Can Island Container Terminal Company (berths 3 and 4), Port and Caro Handling Company (berths 5, 6 and 7), Five Star Logistics Company (berths 8 and 9), and Ports and Terminal Multipurpose Ltd.

TCIPC has a vertical quay wall with sheet piling and a depth of 13.5 m but the seabed has no protection against scour. Rehabilitation of the quay wall began in 2009 and was completed in 2015. However, in 2016, one terminal operator, Tin Can Island Container Terminal Company, complained that the quay wall was caving in in some parts. TCIPC is a tidal port (high tide is 1.3 m and low tide is 0.6 m). The sheet pile of the quay is unprotected and has been corroded by tidal movements. Furthermore, dredging contributes to the destabilization of the quay wall through a reduction of vertical stress in the soil layer in front of the quay.

There have been incidents such as the collapse of the concrete quay structure, the failure of rubber fenders and the appearance of holes in the steel sheet pile. So far, the NPA has failed to address these problems, which makes it difficult for the terminal concessionaries to bring in sufficient vessels to attain the guaranteed minimum tonnage required in the operator concession agreements.

The difficulty in obtaining data on quay wall scour was noted, as many Ports are reluctant to publish this information. The author met with Lagos Channel Management (LCM), NPA Hydro and CS&P to obtain data. Additional data were gleaned from published reports. LCM provided dredging survey data for the period 2010–2016. Statistical analysis was used to estimate the scour depth. The impact of tidal action on the quay structure was investigated. Finally, berth occupancy and cargo throughput were analysed to establish port efficiency before and after rehabilitation of the quay. A physical inspection of quay infrastructure in all terminals of the TCIP was carried out to ascertain the current condition of the quay wall.

Figure 32 Damaged portion of TCIPC quay apron (2017) after rehabilitation

Analysis

The physical inspection of the quay infrastructure, both on the quay apron and from the water side, revealed signs of cracks, a collapse of the quay apron and perforations in the steel sheet pile in the zone of low- and high-water levels.

Terminal A (Berths 1 and 2) was found to have a scour depth for this period of 0.4 m. It was determined that there was little or negligible increase in draft because this terminal does not accommodate vessels with bow thrusters. Therefore, it is projected that there will only be minimal damage caused by scour.

Terminal B (Berths 3 and 4) was found to have an increased draft of 1.3 m across this period, caused by the use of propellers and bow thrusters, and dredging activities. These berths experienced a scour depth of 1.9 m, and it is anticipated that the gradual washing away of the sand beneath the quay apron will ultimately lead to the failure of the quay structure.

Terminal C (Berths 5, 6 and 7) was found to have a gradual increase in the draft for each berth, with 1.9 m, 1.3 m and 1.2 m noted, respectively. This was due to a lowering of the seabed as a result of dredging activities and the impact of container ships on the berths.

Terminal D (Berths 8 and 9) is used for roll-on-roll-off cargoes, and these ships use propellers and bow thrusters that scour the seabed and has experienced an increase in the draft in front of the quay.

The impact of bow thruster and propeller actions (ship manoeuvrability) was considered, as there has been an appreciable increase in ship size. This increased power of the installed propellers and bow thrusters means that there is a greater flow velocity during manoeuvres. Using sample data of a ship with a dead weight tonnage of 65,000 DWT and beam of 31 m, which is representative of the vessels that use TCIP, it can be shown that the erosion experienced by the quay walls when a ship is manoeuvring with a propeller is 4.5 m/s bed velocity and a scour depth of 3.7 m. These figures rise to 7.2 m/s and 4.5 m, respectively when a bow thruster is used.

Using survey maps, it was possible to deduce the impact of dredging in the period 2010–2016. The scour hole caused by dredging in this period was calculated to be 1.9 m. This represents a scour depth of 0.27 m annually.

The berth occupancy rate of TCIP improved over the period, although there was a sharp drop in 2014 and 2015. This is attributed to the increase in liquid cargo and the import/export of dry bulk cargoes from Terminal A. However, there was a decrease in containerized cargos between 2012 and 2015 as a result of inefficient operations caused by the impact of scour on the terminal infrastructure.

Conclusion

This research has shown that over the period 2010–2016, the quay wall (depth: 13.5 m) experienced a scour hole of 1.9 m. Going forward, it has been estimated that there will be an annual scour depth of 0.27m.

Natural and artificial causes of scour were identified in the TCIPC during this period, namely tidal movement, maintenance dredging, and ship propeller and bow thruster actions during channel manoeuvring.

Accelerated Low Water Corrosion, caused by the seepage of water under and through perforations in the sheet pile, leads to the loss of sand under the quay apron, undermining the berthing structures.

This study recommends the following action points in order to reduce scour in the TCIPC:

1. Use an open asphalt mattress bed protection mechanism to prevent the failure of the quay wall in the coming five-year period. This is a cost-effective method of reducing the impact of scour.
2. An infrastructure inspection and maintenance committee should be established to oversee regular physical walk-overs and boat inspections of the quay wall.
3. Finally, Port Management should issue operational berthing guidance for manoeuvring ships in and around the channel and berthing structures in order to reduce scour.

11. Causes of Downtime on Cargo Handling Equipment and its Effects on Operational Productivity: A Case Study of Ghana Ports and Harbours Authority – Takoradi

Mr. Frank Prah

"UNCTAD's programme helped me to the point where the operations of the mobile habour cranes, vehicle-tracking systems and the maintenance software at my department in the port has been entrusted in my care. The programme made me understand the procedures involved in transacting business in the port. My confidence level has also been boosted and thereby I am able to handle higher obligations and tasks."

Mr. Romeo T. Bortey, Mentor and Personnel Administrative Manager

Author: Frank Prah, Mechanical Engineer, Ghana Ports and Harbours Authority - Takoradi[1]

October 2017 marked Mr. Frank Prah's 15th anniversary at Ghana Ports and Harbours Authority. He first started as a technician to maintain and repair cargo handling equipment. Mr. Prah's determination and dedicated efforts in continuous education brought him promotions. He is now working as Mechanical Engineer, responsible for maintenance planning for all the vehicles and equipment, as well as overseeing the mobile harbour cranes in the port of Takoradi.

Due to his daily work, Mr. Prah decided to systematically investigate the causes of downtime on cargo handling equipment with the aim to improve his port's productivity. He found out that workshop, equipment and worker-related factors contributed most to the high rate of downtime. The majority of the recommendations from his dissertations were made into GPHA's policy especially on equipment and spares purchases. Workers are also now obligated to attend compulsory training that supports good working culture.

"My most memorable moment during the course was sitting in a classroom with other workers outside my organization, tapping ideas and knowledge from them, as well as sharing rich experiences from their disciplines of work.", he said. After graduating from the UNCTAD Port Management Programme, Mr. Prah continues to equip himself with knowledge and skills and is also responsible for the training of mobile harbour crane operators.

Introduction

Cargo downtime, whether planned or unplanned, is very costly to the Ghana Ports and Harbours Authority (GPHA). Aside from the obvious cost of idle machinery, the cost of downtime extends to the other resources within the Ports and Harbours facility, including customers. This study sought to assess downtime in cargo-handling equipment and its subsequent impact on GPHA operations.

The GPHA is the national ports authority in Ghana and is responsible for the governance, maintenance and operation of the principal seaports Sekondi-Takoradi (Takoradi) and Tema. The Port of Takoradi, established in 1928, is Ghana's premier commercial port. It is located 225 km west of the capital Accra, and 300 km east of Abidjan, the capital of Côte d'Ivoire. It also has excellent connections to northern and west Ghana, as well as the landlocked countries of Burkina Faso, Mali and the Niger. In 2012, Takoradi handled 66% of national exports and 19% of national imports, as well as 31% of Ghana's seaborne traffic. Furthermore, given its proximity to oil and gas fields in Ghana, the port is vital in the support of oil and gas exploration

[1] Mr. Prah is mentored by Romeo T. Bortey, Personnel Administrative Manager, Ghana Ports and Harbours Authority-Takoradi.

and production activities. The majority of the oil supply vessels use Takoradi to load and discharge equipment, cargo and other supplies.

Through private vendors, GHPA offers a full range of equipment for stevedoring services, and there has been heavy investment in this sector. Increased downtime through the intermittent breakdown of cargo-handling equipment at peak times has been identified as a challenging problem by GPHA. Port customers are affected when downtime occurs. It can be considered that GHPA has not procured sufficient amount of equipment or that the staff are not competent enough to handle it. As GHPA deals with the vast majority of merchandise trade in Ghana, it is necessary to determine which scenario is correct.

A quantitative research approach was adopted for this study. The primary data were collected using survey questionnaires. The questionnaire was pre-tested on 20 respondents in the mechanical engineering department to ensure that all questions were clear and fit for purpose. Open-ended questions were asked to allow for answers from different departments.

Secondary data on plant and equipment availability was collected from the Mechanical Engineering department of GPHA. This data covered the twelve-month period from February 2014 to January 2015, including the planned preventative maintenance programme and field equipment breakdown data.

Analysis

As GPHA handles close to 90% of Ghana's trade, unscheduled machine failure costs the Authority and damages its reputation as the preferred hub in the West African Region. The equipment surveyed was forklifts (3–5 tons), reach stackers (10–45 tons), tractor units and cranes (80–220 tons).

A total of 97 questionnaires were administered in face-to-face interviews. The respondents were drawn from the following GPHA departments: logistics, mechanical engineering, operations and management. 84 respondents were male. 36.1% of respondents were aged between 36–45 years of age and 40.1% had worked with the Authority for 6–10 years. Most respondents were classified as technicians (29.9%), while only 8.2% of respondents were mechanical engineers.

Respondents ranked the most prominent causes of equipment downtime as follows:

Table 33 Demographic information of respondents

	Frequency	Percentage (%)
GENDER		
Male	84	86.6
Female	13	13.4
Total	97	100
AGE RANGE		
18-25	10	10.3
26-35	29	29.9
36-45	35	36.1
46-55	20	20.6
>66	2	2.1
Total	97	100
EDUCATIONAL LEVEL		
JHS	3	3.1
SHS/Tech	26	26.8
Tertiary	68	70.1
Total	97	100
CURRENT POSITION		
Maintenance Manager	9	9.2
Operator	17	17.5
Supervisor	25	25.8
Technician	29	29.9
Mechanical Engineer	17	17.5
Total	97	100
WORKING EXPERIENCE		
>1 year	8	8.2
Between 1-5 years	28	28.9
6-10 years	40	41.2
>10 years	21	21.6
Total	97	100

Source: Questionnaire, 2015

Maintenance procedures and policies

Planned preventative maintenance should be viewed as an investment rather than a liability. However, despite the application of a maintenance plan, this is often neglected, and the current operating practice sees equipment to be maintained removed from the schedule. This leads to oversights and the downtime of equipment due to lack of maintenance. All respondents agreed that there was a system of planned maintenance in place to take care of the equipment. However, the majority also believed that this maintenance plan was a factor in downtime, and only 38% believed there was an adequate emergency repair system

Employee factors

This referred to staff skill, motivation and fatigue. Downtime is decreased when well-trained trained staff are operating and maintaining the equipment.

The majority of respondents agreed that employees were a significant contributor to downtime, although 63.4% of respondents stated that employees received regular training.

Equipment factors

This factor relates to the age, type, quality and complexity of the equipment. 57.6% of respondents stated that the equipment was of high quality and 54.5% stated that they were not too complex to operate. They all agreed that equipment factors contributed to downtime.

Workshop factors

This indicated that a lot of the workshop equipment, hand tools and software needed for maintenance were not procured and were not available on demand. It was also found that the majority of respondents were indifferent to the safety of the working environment and that it did not influence performance.

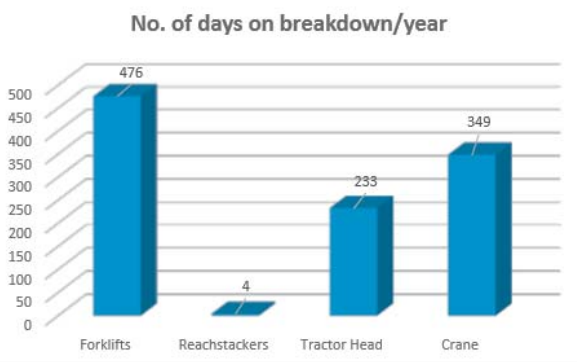
Company policies on maintenance

Satisfactory maintenance procedures and policies as recommended by the original equipment manufacturers have not been adopted and practised by the maintenance department.

Interestingly, this study revealed that it was routine for most supervisors/operators to wait a few days for broken equipment to be repaired. This could be attributed to an insufficient inventory of spare parts and an inadequate availability of tools in the workshops.

A serious consequence of equipment downtime in 2014 was the loss of significant operational revenue. An analysis was conducted of each type of equipment and how much revenue was lost as a result of downtime in 2014.

Figure 34 Equipment breakdown (days per year)



Forklifts: There are 29 forklifts. The rate per day for each forklift was $960. There was a loss of 476 days' revenue, totalling $456,960

Reach stackers: There are 10 reach stackers. The rate per day for each reach stacker was $1,448. There was a loss of 4 days' revenue, totalling $5,792.

Tractor units: There are 9 tractors. The rate per day for each tractor was $2,064. There was a loss of 233 days' revenue, totalling $480,912.

Cranes: There are 5 cranes. The rate per day for each crane was $8,976. There was a loss of 349 days' revenue, totalling $3,132,624. This figure is almost equal to the income expected from a single crane in a given year ($3,276,240).

The total loss of revenue as a result of downtime in 2014 was $4,076,288. Furthermore, this analysis shows that the breakdown of crane equipment caused the greatest loss of revenue.

Conclusion

This study has revealed that equipment downtime is caused by several factors, namely, workshop issues and equipment- and worker-level-related factors, the duration and severity of which are influenced by a combination of maintenance programmes and company-operating procedures/policy factors. In 2014, this resulted in an operating loss of $4million.

Furthermore, it was observed that getting genuine spares parts continues to be a challenge and that this contributes to delays in repairing equipment.

The following recommendations have been made to combat the issue of equipment downtime:

1. Spare parts should be purchased at the same time as new equipment, and a sufficient stock of fast-wearing and easily broken parts should be maintained.
2. Operators and supervisors should be adequately trained in equipment use so that they have a full knowledge of their equipment's capabilities, capacity and functionality.
3. GPHA staff should be educated on the importance of company-operating procedures and their benefits for both employees and the company.

12. Implementing Port Performance Measures in Private Sector Participation Initiatives of the Philippine Ports Authority.

Ms. Mildred J. Padilla

"Continuous learning is a must – not just for port managers but for everyone working on the waterfront."

Mr. Hector Miole, Mentor and Assistant General Manager of PPA

Author: Mildred J. Padilla, Port Manager, Philippine Ports Authority.[1]

Ms. Mildred J. Padilla has been part of PPA for more than 30 years. Although coming from a province with no sea access, Ms. Padilla got curious about working at a port when a friend of her elder sister spoke about PPA. Freshly graduated from college, she was determined to work for the Government and contribute positively to her country. She began her work as a Clerk and later became a Market Researcher and Business Development/Marketing Chief for 25 years until 2014, when she was selected as one of the 18 employees to be enrolled in the UNCTAD Port Management Programme. Upon her graduation, Ms. Padilla was promoted to Acting Port Manager and is now a full-fledged Port Manager. "The programme added values to my credentials and confidence", she said.

Juggling work and the training course was challenging but the experience brought more devotedness among herself and her cohorts. "It made us classmates strongly united – mutually motivating, inspiring and pushing one another with one common goal – that is, for the whole class to pass the course and it did happen!", added Ms. Padilla.

PPA took some recommendations from Ms. Padilla's dissertation, which focused on Port Performance Measures and include a number of performance measures she suggested in the contractual agreements. Ms. Padilla is assigned to take a lead herself as soon as the implementation comes into place and is excited about this progress.

Despite already having a PhD., Ms. Padilla strongly believes in keeping up with new knowledge. Ms. Padilla expressed her interests in participating as an instructor or a mentor in the next cycle of the course: "I would love to contribute to the programme. I love sharing what I have learned, and I'm also encouraging my staff to apply for the second cycle," she said in conclusion.

Introduction

The aim of this study was to identify the performance measures used by the public–private partnership scheme of port management and how they might be applicable to and adopted for inclusion in private sector agreements issued by the Philippine Ports Authority (PPA). The Port Management Office of Surigao (PMO Surigao) was established in 1977 and has jurisdiction over the ports in the provinces of Surigao Del Norte, Surigao del Sur, and Dinagat Islands, as well as oversight and regulation of private ports. Most of the private ports were built and are operated by mining companies that export mineral products, most notably nickel ore.

The port of Surigao has a total area of 32,352 m^2, of which 25,846 m^2 is designated as operational area, with the remainder reserved for commercial purposes. It has a total berth length of 644 m, with a controlling

[1] Mrs Padilla was mentored by Hector E. Miole, Assistant to the General Manager for Special Projects, Philippine Ports Authority.

depth of 8 m alongside. It is between 9–10 m deep at 4 m from the quay wall. The port has a passenger terminal with capacity for 1,000 people and two cargo sheds with storage capacity of 414 m² and 800 m², respectively. On average, the port handles 300,000 tons of cargo per annum.

Immediately after it was established in 1974, the PPA adopted the policy of private sector participation, outsourcing port services such as cargo handling, porterage and ancillary services. Service providers were issued with permits to operate in the port and pay the PPA a fee not less than 10% of their gross income. While the contractual agreements have the overarching objective of achieving operational efficiency and productivity, they also define performance measures, which are tools that enable the PPA to regulate the performance of terminal operators. Failure to maintain these set performance goals can result in additional payments to the PPA, while consistent failure over three years may result in the termination of the contract. In determining what parameters should be included in the performance measures, the port authority prefer to overregulate performance by imposing very detailed and strict parameters that not only restrict the operator's flexibility but also affects their ability to pay the concession fee. This is a particular problem in ports with low levels of throughput.

The PPA privatization strategy, first implemented in 1988, has the objective of generating funds to sustain the port development programme, while ensuring that spending on infrastructure is reduced and that there is maximum utilization of port equipment. It also ensures that there is an efficient delivery of port services. In 2015, the PPA approved the Port Terminal Management Policy to promote further private sector participation in the management and operation of ports, which saw the classification of ports into tiers based on the nature of port operations.

The performance measures were identified using available operational data from the Port of Surigao and the Port of Lipata, both under the auspices of PMO Surigao for the period 2013–2015. Both ports cater to vessels primarily engaged in domestic trade: Surigao services passenger and cargo vessels, handling an average of 300,000 tons of cargo per annum. Lipata is primarily a ferry port and caters solely to Roll-On/ Roll-Off (RoRo) vessels. It has one RoRo berth and three RoRo ramps.

Figure 35 Investment Scope under port terminal management policy

PPA-Private Operator Investment Provision

Investment	Sample Capital Investments	Tier 1 (Full Terminal Concession)	Tier 2	Tier 3	Tier 4	Tier 5 (Pure Operation & Management)	Tier 6 (PPA-STU Managed Port)
Physical Undersea Infrastructure	Capital, Maintenance Dredging	Private Port Operator	PPA	PPA	PPA	PPA	PPA
Physical Landside Infrastructure	Wharf, Piers, Land Reclamation	Private Port Operator	Private Port Operator	PPA	PPA	PPA	PPA
Above-Ground Semi-Fixtures	Quay Cranes, Gantry Cranes	Private Port Operator	Private Port Operator	Private Port Operator	PPA	PPA	PPA
Above-Ground Fixtures	Passenger Terminal Bldg., Pavement, Fence	Private Port Operator	Private Port Operator	Private Port Operator	Private Port Operator	PPA	PPA
Mobile Handling Equipment Only	Forklifts, Trucks	Private Port Operator	Private Port Operator	Private Port Operator	Private Port Operator	Private Port Operator	PPA

Analysis

This study identified the performance measures that provide an accurate reflection of the port's performance, namely cargo throughput, tonnage handled under the following metrics: per hour of work, per hour at port, per hour at berth, berth occupancy and ship turnaround time.

The only productivity measure included in the management contracts issued by the PPA is tonnage handled per hour of work. This is the most significant productivity indicator, as it reflects the efficiency of cargo-handling operations. As no waiting time is recorded at either port, the recorded time in port is considered as tonnage per hour at berth. If the gap between per hour of work and per hour of berth is

Figure 36 RoRo units handled per hour at berth vs per hour of work per shipping company, Port of Lipata

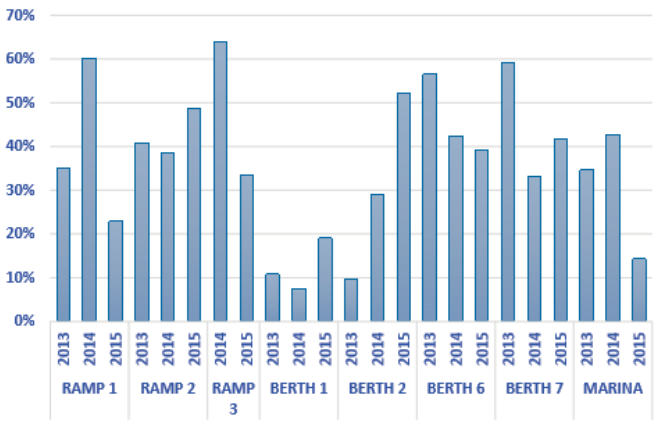
considered too wide, port managers will need to analyse the reasons for this non-operational time. It was noted that RoRo vessels observe a fixed sailing schedule. The vessels depart at a scheduled time and the loading operations occur just before the scheduled departure. This explains the difference between tonnage handed per hour at berth and tonnage handled per hour of work in Lipata.

A minimum cargo throughput should be specified in the contractual agreement, especially for ports in Tiers 3 to 5. This will encourage the operator to market the port services to attract maritime trade and to optimize terminal and land usage.

The calculation of the berth occupancy rate will show the relative percent of utilization of each berth area. This will help the terminal operator ensure optimum utilization of the total berth facilities. Berth occupancy is an important consideration when making decisions regarding investment in the extension of berths and the construction of new ones. However, care must be taken when interpreting the occupancy percentages, as rates of 70% and upwards could be indicative of congestion and therefore of higher waiting times. In Lipata, for example, the RoRo berth and Ramp 2 are utilized 80%, while Ramp 1 is used less than 10%.

Ship turnaround time is the time from arrival at the berth to departure, including waiting time and berth time. The turnaround time is influenced by the volume of cargo, facilities and available equipment. Surigao and Lipata do not record waiting time, therefore for these ports, it is equal to berth time.

Figure 37 Berth occupancy rate, 2013–2015, Port of Surigao



Conclusion

Performance indicators are used to measure the performance of a port and to ensure that a certain level of service quality is maintained. Performance measures are considered mandatory elements of private sector participation initiatives because they help to ensure that the private contractor makes optimum use of the government facility and delivers a quality service. As this study has shown, the performance measures that provide an accurate reflection of the port's performance are as follows: cargo throughput, tonnage handled under three metrics: per hour of work, per hour at port, per hour at berth, berth occupancy and ship turnaround time. Under the Port Terminal Management Policy, these identified performance measures need to be included in contractual agreements.

This study recommends that the following performance measure steps be implemented in private sector participation initiatives with the Philippine Ports Authority:

1. The contractual agreement should include the above performance measures to ensure that the private contractor is operating successfully and adequately managing the port facilities and services.
2. Performance targets should be calculated from data on past operations, as well as information on the port's external environment.
3. These performance measures must be monitored throughout the duration of the contract, and private sector partners must ensure that the relevant data are made available.
4. Failure of the private operator to achieve or maintain the contractually specified performance measures in any given year should warrant a mandatory review of the contract and should result in fines and/or contract termination.

Some policy lessons from the dissertations.

Ports are not only facilitators of economic growth and development – they can also play an important role in a whole range of issues linked to the Sustainable Development Goals derived from the 2030 Agenda for Sustainable Development of the United Nations.

Most ports in developed countries produce sustainability reports on an annual basis For more information in the European context see

www.espo.be/media/newseuropeanportindustrysustrep2016.pdf

Statements of policy in this regard can be found in Dublin Port Company's Sustainability Report,

www.dublinport.ie/sustainabilityreport_2017

> "In keeping with the Sustainable Development Goals officially known as Transforming our World: the 2030 Agenda for Sustainable Development, Dublin Port Company and the Sustainable Energy Authority of Ireland (SEAI) signed a joint energy efficiency agreement in 2014. As a member of the Public-Sector Energy Partnership Programme, the agreement means that Dublin Port Company and SEAI will work in partnership to achieve a target of 33% energy efficiency savings and improvements by 2020. DPC also obtained certification for ISO 50001, the international energy management standard, in December 2016."

Where the Sustainable Development Goals relating to social issues are concerned, DPC sets out its policy as follows:

> "DPC's Corporate Social Responsibility activities allow us to integrate social and environmental concerns into our business operations. DPC is committed to not only considering the environment, but also the anthropogenic impact of the environment, ecology and preservation of the environment. Integration of the Port with Dublin City is one of our main objectives."

The authors of every dissertation have produced several recommendations that are grounded in the framework of the Sustainable Development Goals. Interested readers will find many more examples in the summaries contained in this publication. It is clear that the dissertations which focus of social and environmental issues in ports are likely to produce recommendations that are more closely allied to individual Goals. Nevertheless, it also holds true that recommendations emanating from financial or operational reviews may lead to improvements in efficiency in ports and less waste of resources such as time delays. These improvements will, in turn, bring about faster turnaround of ships and cargo. The elimination of bottlenecks and similar savings will result in reduced costs to port users and ultimately, workers and consumers will benefit through lower prices and greater access to markets for exports, which will help fuel economic growth.

The table below cites only one or two examples of policy recommendations or impacts from each dissertation, referenced 1 to 12 in accordance with the table of contents page, and links them with clearly identifiable Sustainable Development Goals.

Dissertation reference	Recommendation	Sustainable Development Goals
1	Reduce negative environmental impact on traditional livelihoods. Provide alternative livelihoods through training programmes and education.	3, 8, 10, 11, 4
2	Replacing diesel powered RTGs with electricity reduces carbon emissions. There will be additional cost savings through the elimination of diesel engines and generator set routine maintenance. This will save manpower and spare parts. It is estimated that in general overhaul alone, the implementation of electric RTGs will save approximately 300 million rupiahs (approx. US$22,500.)	7, 8, 9, 12, 13
3	A team of course developers should be established to review and revise the curriculum, including the delivery of training. In revising the course, it is suggested that the PPATI follow the systematic approach of the UNCTDAD TrainForTrade initiative.	4, 8
4	The method of privatization adopted in Tin Can Island Port should be strengthened and sustained. The increase in equipment levels at the port must be matched with increased utilization	8,9,
5	The Ghanaian Highway Authority should continue to monitor and enforce vehicle weights on all major arterial roads and expand this to all major trunk roads. Steps should be taken to improve port efficiency and customs procedures/practices, thereby reducing transit costs and delays.	9, 10, 12, 13,
6	Takoradi Port should embark on training programmes for staff such as seminars, workshops and conferences. This will improve customer-service delivery, making the port more efficient and competitive. The salaries of port workers should be reviewed to reflect the financial benefits realized by the Port. GPHA should regularly update its customers and stakeholders on its projects and initiatives so that they can appreciate what the Port is doing to improve business opportunities in the port.	4, 8, 9
7	There will need to be investment in high-speed communications software and hardware requirements to support reliable real-time processing of financial transactions. A system of centralized fixed asset accounting and reporting should be implemented to reduce the the number of processes to be performed by IPC employees. Significant automation of all processes, including tracking asset creation, modification, depreciation and monthly/annual reporting will help drive reliability, consistency and visibility.	8, 9
8	Increase the number of banks. The number of banks has been shown to be one of the major obstacles for customers using the JOBPAYS systems. In response to this, customers should be surveyed in order to identify the banks that are most frequently used, which will justify cooperation with other banks. Self-service kiosks. It has been identified that some customers do not have Internet access and/or are not familiar with Internet banking.	9, 10
9	A fixed fee based on the value of the port asset under concession. A variable fee per ton after a set threshold has been reached.	9
10	Use an open asphalt mattress bed protection mechanism to prevent the failure of the quay wall in the coming five-year period. This is a cost-effective method of reducing the impact of scour. Port Management should issue operational berthing guidance for manoeuvring ships in and around the channel and berthing structures in order to reduce scour.	9, 14
11	Spare parts should be purchased at the same time as new equipment, and a sufficient stock of fast-wearing and easily broken parts should be maintained. Operators and supervisors should be adequately trained in equipment use so that they have a full knowledge of their equipment's capabilities, capacity and functionality. GPHA staff should be educated on the importance of company-operating procedures and its benefits for both employees and the company.	8, 9
12	The contractual agreement should include performance measures to ensure that the private contractor is operating successfully and adequately managing the port facilities and services. Performance targets should be calculated from data on past operations, as well as information on the port's external environment. These performance measures must be monitored throughout the duration of the contract, and private sector partners must ensure that the relevant data are made available. The failure of the private operator to achieve or maintain the contractually specified performance measures in any given year should warrant a mandatory review of the contract and should result in fines and/or contract termination.	8, 9

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