

Determining the Stevedoring Industry Structure in the Tema Port of Ghana and its Implications

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Abstract: The purpose of this paper was to explore the unique features of the stevedoring industry at the Tema Port and in particular, examine their characteristics and implications. The purpose was furthermore to determine the type of market structure the stevedoring industry in Ghana operates with regards to changes in market share distribution of the ten major stevedoring companies at the Tema Port. **Method:** The concentration measure known as the 4-firm Concentration ratio was used to test the type of market structure of the stevedoring industry in Ghana. The calculations were performed using data on the annual throughput of the ten major stevedoring companies operating at the Tema Port between the years 2013 to 2015. **Results:** The percentages of the first four companies with the highest throughput were 57.48%; 66.54% and 65.94% in 2013, 2014 and 2015 respectively.

Conclusion: The 4-firm ratio result proved to be an oligopolistic market structure.

Keywords: Market, Oligopoly, Port, Stevedoring, Stevedores, Terminal, Vessel, 4-firm concentration ratio

1. Introduction

Stevedores are mainly dockworkers involved in loading and offloading cargo on and off a vessel. Stevedoring in current port operations is very vital in ensuring the safe delivery of cargoes that are transported by sea. Due to the demands of the liberalized shipping market, stevedoring has evolved from their core activity of loading, stowing and discharging of cargo to include storage facilities and other cargo handling services like packaging and repackaging (ashore handling).

Modern stevedoring operations can be divided into two main forms namely, the container terminal operations and the automotive & general stevedoring. The container terminal operations deal with the loading and offloading of container vessels at terminal ports, largely using advanced technology such as the use gantry cranes, reach stackers etc. Automotive and general stevedoring on the other hand, includes receiving, storing, loading, offloading and or delivering general and specialized cargo such as motor vehicles, specialized containers, steel, paper, forest products and bulk cargo. To promote efficiency through competition there are currently ten (10) private stevedoring companies aside Tema Port stevedoring. The companies include Golden Gate Stevedoring Ltd, Port Future Ltd, Speed line stevedore Service Ltd,

Advance Stevedoring Company Ltd., Atlantic Port Services Ltd, Keyport Management Services, Agulet Marine Services, Germini Maritime Services Ltd, Kayab Marine Services, Sir Lab Stevedoring Company. (GPHA, Website).

Stevedoring operations at the port have been carried out by the then Ghana Cargo Handling Company, Ghana Ports Authority and Takoradi Lighterage Company Limited. (Ghana Ports Handbook, 2005-6).

Stevedoring operations at Tema port was a responsibility of GPHA before 1999. This was mandated by the PNDC Law 160 Part III, Section 5(1) which states that the GPHA shall “carry on all of the business of stevedoring, master portorage and Lighterage service”. This notwithstanding, GPHA competed with two other private stevedoring companies namely Atlantic Port Services (APS) and Speedline Stevedoring Limited. Before 1999, the percentages of work allotted to these stevedore operators in the port were: GPHA 75%; Atlantic Port Services 15% and Speedline Stevedore Company Limited 10%.

Around 1999, GPHA made an initiative to increase private involvement in stevedoring by reducing GPHA’s role as a step towards a landlord port system under the Ghana Gateway Project. Only one company, Express Maritime Services (EMS) was selected and licensed by GPHA out of over ten (10) applicants to take over 20% of GPHA’s operational share of 75%. Between 2002 and 2009, GPHA licensed six (6) additional Private Stevedoring Companies out of over twenty (20) applicants, thus bringing the number to nine. All the nine (9) Private Stevedoring Companies operated in the port of Tema subject to yearly renewal of their license by GPHA.

The respective percentages of stevedoring companies currently operating at Tema Port is shown in the table 1.

GPHA’s percentage dropped to 25% and all other operators were put at the same level of 7.5% irrespective of the equipment or staff strength of the companies. The effect of the reduction on especially, GPHA, APS and Speedline naturally affected their financial and labor position.

In economics, market structure is the number of firms producing identical products which are homogenous. The main criteria by which one can distinguish between different market structures are: the number and size of producers and consumers in the market, the type of goods and services being traded and the degree to which information can flow freely.

The various types of market structures include; monopolistic competition, oligopoly, monopsony, oligopsony, monopoly, natural monopoly and perfect competition.

Table 1
Stevedore Operators in Ghana

No.	Stevedores Operators	Current %
1	GPHA	25
2	Advance Stevedore Company	7.5
3	Atlantic Port Services (APS)	7.5
4	Speed line Stevedoring Company	7.5
5	Golden Gate Services	7.5
6	Gemini Maritime Services	7.5
7	Sir Lab Stevedoring	7.5
8	Key Port Management Company	7.5
9	Port Future Limited	7.5
10	Aglete Marine Services	7.5
11	Kayab Marine Services	7.5
	Total	100

Table 2
Market structure characteristics

Market Structure	Seller Entry Barriers	Seller Number	Buyer Entry Barriers
Perfect Competition	No	Many	No
Monopolistic Competition	No	Many	No
Oligopsony	No	Many	Yes
Monopoly	Yes	One	No

The correct sequence of the market structure from most to least competitive is perfect competition, imperfect competition, oligopoly and pure monopoly.

The purpose of this paper is to determine the market structure of the stevedoring industry at the Tema Port of Ghana using the 4- firm Concentration ratio as a model and in particular, examine its characteristics and implications.

2. Methodology

The methodology in which the researcher of this article used is the 4-firm Concentration model. This model will be used to determine the market structure of the country's stevedoring industry using the various throughputs of the major stevedoring companies at the Tema port.

Secondary data collection method was used and they comprise of already documented information. These sources were derived from desk research by examining existing bibliography and publication of relevant information. The sources of this data include newspapers, journals, the internet, articles, reports and books written by shipping experts and writers.

This process focuses primarily on the analysis of documented data in the last few years. The acquired data will be analyzed using the 4-firm model to calculate the market shares of the stevedoring industry in Ghana.

3. Results

To calculate using the 4-firm model, you find the percentages of the first four largest firms in the industry within a particular

period of time and sum them up.

According to the U.S. Department of Justice and Federal Trade Commission, a 4-firm concentration ratio with a value close to zero is considered a perfect competition market, one ranging between zero to 60% is considered a monopolistic market, ranging between 61% to 99% is an oligopolistic market and finally the one that has a 100% value is considered a pure monopoly market.

Ghana Port and Harbours Authority (GPHA) had the highest cumulative throughput (4,221,967) for the years 2013-2015, Advance Stevedoring Company had the lowest cumulative throughput of 580,444 for the same period

The total percentages of the first four companies with the highest throughput were 57.48%, 66.54%, 65.94% in 2013, 2014 and 2015 respectively. From the results, it is seen that in the year 2013, the stevedoring industry operated a monopolistic competition market whilst in the years 2014 and 2015, the stevedoring industry operated an oligopolistic market. Therefore, the stevedoring industry structure in Ghana generally operates an oligopolistic market.

4. Discussion

In an oligopoly market, a small number of firms is responsible for the majority of the sales. The three most important characteristics of oligopoly include the following;

1. An industry dominated by a small number of large firms.
2. The firms all sell either identical or differentiated products.
3. The industry has significant barriers to entry.

These three characteristics underlie common oligopolistic behavior, including interdependent actions and decision making, the inclination to keep prices rigid, the pursuit of non-price competition rather than price competition, the tendency for firms to merge and the incentive to form collusive arrangements.

Looking at some implications of an oligopolistic market on the stevedoring industry, it is realized that, an oligopolistic market allows a small number of firms entry in an industry or allows a small number of firms to take responsible for the majority of the sales in an industry and this is similar to the quota allocation system.

Considering entry barriers, the quota allocation system first of all, refers to a limit on the quantity of firms that are allowed entry into an industry. Therefore, it can be clearly stated that the stevedoring industry in Ghana operates an oligopolistic market or the quota allocation system.

The quota allocation is a system the GPHA uses to allocate vessels to particular stevedores. Every operator is given a targeted quota at the beginning of the business year and vessels are then allocated during the year. The port authority on its part indicates that this system would ensure that every operator gets a share of the cargo throughput coming to the ports enabling all to still be in business. The disturbing part according to the private operators is that, GPHA which used to be a part of this quota system has now taken itself out which means that, it no

Table 3
 Cargo Traffic (in Tonnes) By Stevedores (2013-2015)

Name of company	2013		2014		2015		CUMM
	Throughput	%	Throughput	%	Throughput	%	
Ghana ports and harbours authority	1,144,816	33.86	1,347,570	46.48	1,729,581	46.20	4,221,967
Speedline stevedoring co. Ltd.	247,100	7.31	175,841	6.06	258,971	6.92	681,912
Port futures limited	271,198	8.02	165,583	5.71	239,813	6.41	676,594
Gemini maritime services Ltd	257,614	7.62	185,796	6.41	233,131	6.23	676,541
Golden gate services Ltd.	263,910	7.81	182,719	6.30	229,118	6.12	675,747
Atlantic port services Ltd.	235,783	6.97	202,358	6.98	220,274	5.88	658,415
Kayab maritime services	263,349	7.79	193,570	6.68	186,286	4.98	643,205
Key-port management co. Ltd	207,923	6.15	164,624	5.68	240,240	6.42	612,787
Agilent maritime	250,345	7.41	134,500	4.64	211,599	5.65	596,444
Advance stevedoring company	238,499	7.06	146,845	5.06	194,714	5.20	580,058
Cumm	3,380,537	100	2,899,406	100	3,743,727	100	10,023,670

more has a limitation on the number of vessels and can at its own discretion decide on which vessel to work on. The authority however mentions that, its involvement in stevedoring activities is for strategic reasons especially to provide capacity back up for private stevedores and they (private operators) on the other hand, say the current practice leaves no room for competition and does not serve as an incentive enough for further investments and capacity building.

The Government introduced the Free-For-All system in January, 2004 after three postponements, as part of efforts to encourage competition for increased efficiency in the provision of services at the ports. However, the system was suspended following protests from some stevedoring companies whose performance and equipment position prevented them from getting vessels.

Whereas some stevedoring companies advocate for the maintenance of the quota system for fear of being edged out of business in the event of the implementation of the competitive system, ship owners and their agents who use their services prefer the latter saying that would ensure quality service and efficiency.

Under the current quota system, stable jobs are guaranteed for the stevedoring companies, including GPHA, as they are allocated specific percentages of port traffic irrespective of their performance ratings. It is against this backdrop that the Ship Owners and Agents Association of Ghana (SOAG) hailed the move to reintroduce the free market system hopeful that the competition would promote an efficient and quality service delivery.

5. Conclusion

In as much as this study is conducted for academic purposes, it has brought out issues and ideas that may be useful to policy makers and stakeholders in the shipping industry.

In summary, there has been an increase in cargo throughputs over the years and the stevedoring companies in one way or the other have been effective despite the challenges they face in their operations. To enhance a more effective and efficient stevedoring industry in Ghana, bottlenecks hindering the

industry's growth have to be removed and one way this could be done is by expanding the industry and allowing more firms entry into the industry. This will increase competition and in turn, ensure the industry's growth. Also with regards to the topic, further research could be carried out, taking price areas into consideration and perhaps applying other or additional structural measures.

The GPHA should consult the stevedoring companies in its decision making with respect to their operations and not take decisions at their own discretion. Also, GPHA should install an Electronic Data Interchange (EDI) system to capture discharging and loading of cargo electronically and transmit data to shipping lines system.

It will also be very helpful if the stevedoring companies could make efforts in acquiring modern cargo handling equipment and new stevedoring gears to enhance cargo operations so as to meet the benchmark of the port and the shipping industry. Stevedores should perform regular checks and maintenance on stevedore equipment and gears before and after operations in order to detect any fault and ensure proper maintenance.

I would also recommend that the private stevedoring companies should revamp the Ghana Association of Stevedoring Companies (GASCO) which will be a very good platform for the expression of their grievances with regards to their operations at the port.

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