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# RES 420 - Completed Dissertation

*by* Kwesi SAFORO

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**WORLD MARITIME UNIVERSITY**  
Malmö, Sweden

**CONSOLIDATION IN LINER SHIPPING**  
**AN ANALYSIS OF MARKET CONCENTRATION OF  
LINER SHIPPING IN GHANA**

By  
**KWESI SAFORO**  
Ghana

A dissertation submitted to the World Maritime University in partial  
fulfilment of the requirements for the reward of the degree of

**MASTER OF SCIENCE**  
in  
**MARITIME AFFAIRS**  
**(SHIPPING MANAGEMENT AND LOGISTICS)**

2020

## Declaration

I certify that all the material in this dissertation that is not my own work has been identified and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views and are not necessarily endorsed by the University.

(Signature):

.....

(Date):

.....

Supervised by: Professor Dong-Wook Song

Supervisor's affiliation: **Shipping Management & Logistics**

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## Abstract

Title of Dissertation: **Consolidation in Liner Shipping – An analysis of market concentration in liner shipping in Ghana**

Degree: **Master of Science**

This dissertation analyses market concentration in the liner-shipping sector in Ghana given the increase in consolidation of carriers in the global liner shipping industry. This objective is achieved by assessing the trend of market concentration in liner shipping in Ghana and analysing the relationship between the market concentration in liner shipping in Ghana and the concentration index of the global liner shipping industry using measures of concentration, such as Concentration Ratio (CR) and the Herfindahl-Hirschman Index (HHI) and a simple linear regression. The findings of the study indicate that liner shipping in Ghana is more concentrated than the global liner industry with the top 5 firms controlling about 75.1 per cent of the total liner market in Ghana compared to 65.6 per cent in the global liner industry as at the end of 2019. Also, it further establishes a positive linear relationship between the global concentration index and market concentration in liner shipping in Ghana with market concentration in liner shipping in Ghana progressively increasing over the period from an unconcentrated market to a moderately concentrated market using the Guidelines for Horizontal Mergers of the US DOJ/FTC. These findings imply the diminishing bargaining power and options of shippers as well as ports and that policymakers and regulatory agencies in Ghana need to take a proactive stance against collusive and anti-competitive practices by carriers as users of liners shipping services in Ghana are easily susceptible to abuse of market dominance by few large carriers.

**KEYWORDS:** Consolidation, Liner Shipping, Market Concentration, Herfindahl-Hirschman Index (HHI), Concentration Ratio (CR<sub>4</sub>)

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## List of Abbreviations

AfDB	-	African Development Bank
AGI	-	Association of Ghana Industries
CR	-	Concentration Ratio
CIQ	-	Container Intelligence Quarterly
GDP	-	Gross Domestic Product
GMA	-	Ghana Maritime Authority
GPHA	-	Ghana Ports & Harbors Authority
GSA	-	Ghana Shippers' Authority
HHI	-	Herfindahl-Hirshman Index
ITF	-	International Transport Forum
LSI	-	Liner Shipping Industry
M&A	-	Mergers and Acquisitions
OECD	-	Organization for Economic Cooperation and Development
OEM	-	Original Equipment Manufacturer
SSA	-	Sub-Saharan Africa
SOAAG	-	Ship Owners and Agents Association of Ghana
TEU	-	Twenty Equivalent Units
US DOJ/FTC	-	US Department of Justice and the Federal Trade Commission
UN	-	United Nations
UNCTAD	-	United Nations Conference on Trade and Development
UNESCAP	-	United Nations Economic and Social Commission for Asia and the Pacific
WMU	-	World Maritime University
WTO	-	World Trade Organization

## CHAPTER ONE

### INTRODUCTION

#### 1.0 RESEARCH BACKGROUND

International trade has over the last century grown exponentially, with exports recorded today, four thousand (4,000) times more than the values in 1913 (Ortiz-Ospina et al., 2014). This has mainly been driven by diminishing trade barriers resulting in the integration of national economies into a global economic system (globalization) as well as advancements in telecommunication technology and transportation (Ma, 2017). The above factors have resulted in improved productivity, created new markets and modified supply chains, allowing the separation of production and consumption zones.

Transport is indispensable to global trade and it is a key element to economic growth and competitiveness. Maritime Transport continues to be a very important contributor and facilitator of international trade and critical to the achievement of the 2030 Agenda for Sustainable Development. The United Nations Conference on Trade and Development (UNCTAD) estimates that 80 per cent of world-merchandise trade by volume and over 70 per cent by value is carried by sea and handled by seaports worldwide (UNCTAD, 2017). This relationship between trade and maritime transport is further highlighted by the UN Secretary-General, Ban Ki-moon's message on World Maritime Day 2016 under the theme "Shipping: Indispensable to the World" (United Nations, 2016).

The shipping industry, particularly the liner-shipping sector has witnessed spectacular growth fuelled by globalization and the large-scale adoption of the container (Notteboom, 2004). Liner Shipping emerged in the middle of the nineteenth (19<sup>th</sup>) century to offer better, faster and more reliable transport of cargoes preferably high-value cargoes in containers. According to the Organization for Economic Co-operation and Development (OECD), it is a crucial sector of global trade and one of the

keystones of globalization (OECD, 2015). World Trade Organization (WTO) estimates that containerized cargo accounts for more than half of total value of global seaborne trade with exports of manufactured goods growing at an average annual rate of 2.3 per cent since 2008 (WTO, 2019). The 2019 edition of the Review of Maritime Transport also projects international maritime trade to expand at an average annual rate of 3.5 per cent over the 2019-2024 period, driven in particular by growth in containerized shipments and followed by gas and dry bulk commodities (UNCTAD, 2019).

The liner-shipping sector, described by Panayides and Cullinane (2002), is a unique and idiosyncratic sector of the shipping industry which has undergone several significant developments over the last few decades. A summary of these changes includes improved regulation, weakening of the conference system, the tendency towards bigger vessels, the search for economies of scale and scope through horizontal and vertical integration, and the increasing relevance of strategic alliances among others (OECD, 2015). One of the most significant developments in the liner-shipping sector over the last decade has been consolidation. This has been done through various forms although prominent ones are the formation of strategic alliances and mergers and acquisitions (M&A). Literature has attributed the above phenomenon of consolidation to globalization, increase in competition and rising costs in global service provision with larger and more costly vessels (Slack et al., 2002). Liner-shipping companies are combining the deployment of bigger vessels with an organizational scale increase through consolidation to achieve a lower unit cost per twenty equivalent units (TEU) -mile without enhancing destructive competition (Chinnery, 1999).

### **1.1 PROBLEM STATEMENT AND OBJECTIVES**

Globalization, deregulation, logistics integration and containerization have reshaped the ports and the shipping industry (Notteboom, 2004). The new international economic order has called for new strategies in dealing with global challenges and

global competition. This has resulted in companies in all sectors of the global economy seeking growth and profits through co-operations, cross-shareholding agreements, and mergers and acquisitions.

The shipping industry has been no stranger to the trends of consolidation through integration, mergers and acquisitions (Hoffmann, 1998). The liner-shipping sector has undergone considerable structural changes over the years due to technological advancement, depressed market conditions and poor financial returns for shipping companies. Liner shipping companies have pursued economies of scale in terms of vessel size and operations (Ha & Seo, 2013; UNESCAP, 1999; UNCTAD, 2011), as well as consolidated through mergers & acquisitions and formation/joining of strategic alliances to remain efficient and profitable.

The formation of strategic alliances, mergers and acquisitions has been a prominent feature of liner shipping sector since the 1990s, which has prompted several scientific research and investigation by industry, academia and regulatory bodies. Fossey (1994), Gardiner (1997) Midoro and Pitto (2000) as cited by Panayides & Cullinane (2002) list the following objectives as the rationale for the implementation of strategies such as strategic alliances, mergers and acquisitions:

- Financial: profit maximization, increase in shareholder wealth, capital investment sharing and financial risk reduction;
- Economic: cost reduction, economies of scale;
- Strategic: entry into new markets, wider geographical scope, increase in purchasing power;
- Marketing: satisfy customer requirements through higher frequency, flexibility, reliability;
- Operational: increase in the frequency of services, vessel planning and coordination on a global scale.

Notwithstanding the advantages of these strategies, the ongoing trend in the liner-shipping sector has resulted in the shrinking number of shipping companies participating in the trade with ‘the big getting bigger’. According to the 2019 edition of the Review of Maritime Trade, “Owing to further consolidation in the container-shipping segment, the combined market share of the top 10 container shipping lines increased from 68 per cent in 2014 to 90 per cent in 2019” (UNCTAD, 2019).

This phenomenon has raised concerns among some industry observers that successive waves of industry consolidation would likely have an impact on the degree of market concentration (Sys, 2007). This could have an adverse effect on consumers of liner shipping services (ports and shippers) with weak bargaining power, such as the reduction in competition in the market as well as services to shippers, constrained supply and market power abuse in regions most affected by market concentration (Welsh, 2018). According to UNCTAD (2018), between 2017 and 2018, small island developing States and developing economies recorded a decrease in the number of liner operators.

Several studies have been undertaken on the increasing market concentration in the liner shipping which is attributed to the continued consolidation of the industry. Key amongst them are; Sys (2007) on Measuring the degree of concentration in the container liner shipping industry, Hoffmann (1998) on Concentration in liner shipping: its causes and impacts for ports and shipping services in developing regions and Ha and Seo (2013) also analysing the market concentration in the Korean Liner Shipping Industry (LSI). Most of these studies focused on European, Asian and Latin American markets, with no evidence of analysing the market concentration of the Liner Shipping Industry in a country within Sub-Saharan Africa (SSA).

Most SSA countries have import-dependent economies although most of which do not own container vessels. According to PricewaterhouseCoopers (PwC), the value of SSA merchandise trade is estimated to have increased by about three hundred (300)

per cent over the last three (3) decades although it contributed less than one (1) per cent to the growth of world trade value within this same period (PwC, 2018). Dry cargoes (dry bulks and containerized goods) accounts for about two-thirds of imports to SSA (UNCTAD, 2018b). It is also estimated that Africa accounts for four (4) per cent of global containerized trade volume, mostly imports of manufactured goods (UNCTAD, 2018b).

Hoffmann (1998) and Stopford (2009) agree that the pace of consolidation through M&As and strategic alliances among shipping companies has increased in recent years resulting in supply chain implications for ports and shippers in developing countries with weak bargaining power and an increased level of liner market concentration. It is quite obvious that SSA represents a region which would be highly affected by constrained supply, market abuse and market power of global liner operators. Consequently, analysing the market concentration of the liner shipping of a country in sub-Saharan Africa is of great interest.

The main objective of this research was to analyse the market concentration of liner shipping in Ghana, a sub-Saharan African country, within the context of increased consolidation among global liner operators in the liner shipping industry.

## **1.2 RESEARCH QUESTIONS**

To address the research objective outlined above, this research focused on answering the following questions:

1. What is the trend of market concentration in the liner shipping in Ghana over the past 7 years?
2. How concentrated is Liner Shipping in Ghana compared to the concentration index of the global liner shipping industry?
3. What is the relationship between market concentration in liner shipping in Ghana and the concentration index of the global liner shipping industry?



### 1.3 SCOPE AND SIGNIFICANCE OF STUDY

According to the World Development Indicators database hosted by the World Bank, total merchandized trade for Ghana in 2018 amounted to \$27.95 billion accounting for 42.5 per cent of the Gross Domestic Product (GDP) (UNCTADstat, 2019). The importance of the shipping industry to the economy of Ghana is undeniable as about eighty-five (85) per cent of total trade flows through the ports of Tema and Takoradi (GPHA, 2020).

In 2018, liner shipping accounted for 8.1 million metric tons out of 21.9 million metric tons of the total volume of seaborne trade to and from Ghana representing about 36.9 per cent of Ghana's total trade (GSA, 2019). The focus of the study was the liner-shipping sector of Maritime Transport industry in Ghana which is the second largest contributor to total maritime trade of Ghana.

Literature on the effects of consolidation on market concentration in liner shipping in developing economies and non-vessel owning countries is scarce. This study is expected to highlight the ongoing trend of consolidation among global shipping companies and its effect on the market concentration of the liner shipping in Ghana to policymakers, regulators, shipper associations and port authorities.

Secondly, the study would contribute to the existing empirical and conceptual literature on liner shipping consolidation and market concentration as well as serve as a basis for further research.

### 1.4 DISSERTATION STRUCTURE

The final report of the study is organized into six (6) Chapters:

Chapter 1 – Introduction. This chapter provided the background to the research by discussing the Liner Shipping Sector and its importance to world trade. It also discusses the research problem and objectives and its significance.

Chapter 2 – Literature Review on Liner Shipping Consolidation. This chapter reviewed existing literature on liner shipping, consolidation, the impact of consolidation in liner shipping on consumers of liner services such as the port and shippers and market concentration in liner shipping.

Chapter 3 – Ghana’s Maritime Transport Industry. This chapter provided an overview of the maritime transport industry in Ghana and liner shipping in Ghana.

Chapter 4 – Research Method. This chapter detailed the methodology used in the study by highlighting the reasons for the chosen methodology, data sources and method of data analysis.

Chapter 5 – Findings and Interpretation. This chapter provided an analysis of the market concentration in liner shipping in Ghana in comparison to the global concentration index. The findings of the study are presented, analysed and discussed.

Chapter 6 – Conclusion. This final section summarises the findings of the study and its implications, highlight limitations and proffers recommendations of areas for further research.

## CHAPTER TWO

### REVIEW ON LINER SHIPPING CONSOLIDATION

This Chapter would provide a brief overview of liner shipping and review existing literature on the subject Consolidation. A broad overview of industry consolidation is undertaken before the review narrows down to consolidation in liner shipping, its impact on users such as the port and shippers and conclude by discussing market concentration.

#### 2.1 OVERVIEW OF LINER SHIPPING

Maritime transport, including liner shipping, remains the linchpin of international trade and the global economy moving about eighty (80) per cent of global trade by volume (UNCTAD, 2017). The critical role of liner shipping is not only limited to the physical transport of cargoes but also evident in the economic and marketing aspects of global trade (Panayides & Wiedmer., 2011).

Shipping markets are generally regarded as a single economic entity with two major subdivisions; tramp and liner shipping (Stopford, 2004). According to Branch (2001), tramp shipping trades mainly bulk cargo and operates without a fixed sailing schedule. A liner shipping service as defined by Fayle (2005) refers to a commonly owned and operated fleet of fixed-service ships for cargoes between named ports at regular intervals by their sailing dates.

Stopford extends this definition of liner shipping to include: "... a fixed itinerary, inclusion in a regular service, and the obligation to accept cargo from all comers and to sail, whether filled or not, on the date fixed by a published schedule are what distinguish the liner from the tramp" (Stopford, 2009, p. 512). von Schirach-Szmigiel (1979) highlights the offering of regular and scheduled departures on firm routes within a system of base ports to all potential consignors as one of the major differences between liner shipping and other forms of sea transport. The focus of liner shipping is

the provision of regular transport services for small parcels of cargo which do not fill the hold of a ship (Clarkson Research Studies, 2004).

Liner shipping dates back to the 19<sup>th</sup> century when reliable steamships with regular transport services were introduced. Liner shipping traditionally transported general cargo in geared versatile vessels supported by labour-intensive loading and off-loading operations resulting in long times spent in ports (Talley, 2009). The adoption of containers in 1956 was the breakthrough in liner shipping which resulted in the rapid expansion of the cellular fleet (OECD, 2015). This allowed mechanization of the loading and off-loading operations, thus minimizing the time spent in ports and also allowing for intermodal transport. Records available from the Lloyd's Register of Shipping indicate that in 1966, there were 20 container ships compared to 11,807 general ships, and 10 years after its adoption, container ships were 443 (+2,115 per cent) against 12,062 general carriers (+2.16 per cent).

Liner shipping is made up of three segments; containerships, roro (car carriers) and other (multipurpose and tweendeeker ships). According to Sys (2007), the liner shipping had a market share of 16.94% of the world fleet in 1990. This was made up of 11.72% being the segment 'other', followed by the 'containership' with about 4% and roro with 1.20%. After 19 years (2009), with a market share of 25.58%, the 'containership' segment expanded to 18.24% while the shares of 'roro' and 'other' segments shrunk to 0.58% and 6.76% respectively. Clarkson Research's data indicate that since 1990, the container trade has increased by more than 600% accounting for 16.7% of the total seaborne trade in volume and more than 60% in value (Kutin et al., 2018).

Over the years, the containerized liner shipping has expanded tremendously to dominate the liner segment and according to ISL (2019), it accounted for 71.1% of world general cargo fleet in 2019. The focus of this research is the containerized transport aspect of liner shipping.

## 2.2 CONSOLIDATION

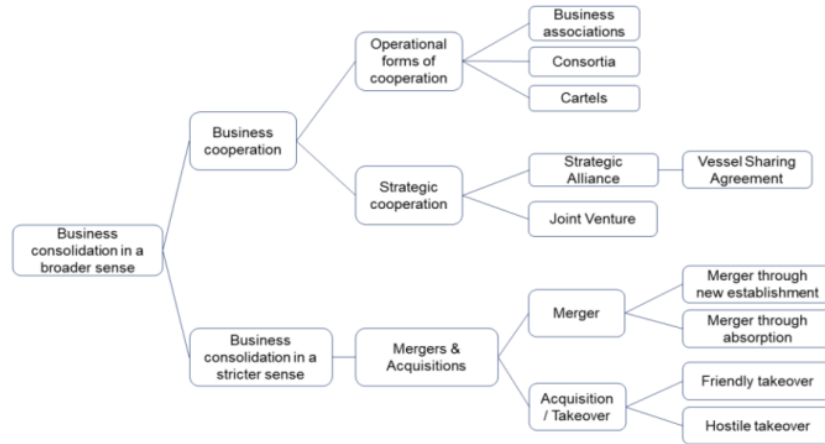
According to Aggarwal and Singh (2015), businesses grow in two ways; organic growth which relates to increased turnover or inorganic growth through restructuring and business combinations. Consolidation is not a new phenomenon in international business and its impact varies from one sector of the economy/industry to another.

Consolidation occurs in the mature phase of the life cycle of an industry. It is characterized by the aggregation of smaller operators into larger firms resulting in fewer but more dominant industry participants (IBISWorld, 2015). Li et al. (2016) identify profitability as a major driver of business consolidation as two companies combine to be more profitable than two independent companies.

In the broader sense, consolidation can happen in two main ways, either through cooperation in the form of strategic alliances or strict consolidation by mergers and acquisitions (M&As). According to Glaum and Hutzschenreuter (2010), the main difference between these two forms of business consolidation is that the business entities involved retain their economic and legal independence in the case of cooperation, while in the case of M&As, there are superordinate and subordinate relationships within the scope of the corporate consolidation.

The various forms of business consolidation are illustrated in figure 1.

Figure 1: Forms of Business Consolidation



SOURCE: Voß (2018)

The focus of this dissertation would be mergers and acquisitions (M&As).

### 2.2.1 Theories of Business Consolidation/Mergers & Acquisitions (M&As)

Mergers and Acquisitions (M&As) have become integral in international business which occurs horizontally or vertically. A merger involves the fusion of two business entities under one ownership, while an acquisition refers to the takeover by another of one business entity. Both activities result in two independent business entities being one under common ownership to achieve the benefits of rational resource allocation, increase in scope and scale of production, minimize operating costs, build synergy and maximize shareholder value.

Mahesh and Prasad (2012) list some competing theories on M&As which includes; empire-building, the advancement of anti-competitive practices such as market control, management entrenchment and an overestimation of the ability of managers to improve performance of an underperforming target.

Leepsa and Mishra (2016) summarize the theories of M&As and their motives in their paper “Theory and Practice of Mergers and Acquisitions: Empirical Evidence from Indian Cases” in the table below.

Table 1: Summary of Theories of M&As

<b>Theories of M&amp;A</b>	<b>Motives behind the M&amp;A</b>
Differential efficiency theory	Management of a more efficient acquiring firm can bring up the level of efficiency of the acquired firm, providing both social and private gain
Inefficient management theory	Mergers serve as a means of providing discipline to the managerial markets where the only way to get rid of inept management is through taking over the company
Synergy gain theory	Achieve economies of scale and scope through operating synergy. Financial synergy reduces the cost of capital, benefit from coinsurance effect, lower flotation and transaction costs
Pure diversification	Position the firm in high growth products or markets through new product/current market, new product/ current market, current product/new market
Strategic realignment	Acquire capabilities to adapt more rapidly to environmental changes than could be achieved if developed internally
Undervaluation	Acquire assets more cheaply when the equity of existing companies is less than the cost of buying and building the assets
Information and signalling	The tender offer sends a signal to the market that the target company’s shares are undervalued and hence, signal information to the target management to become more efficient
Agency problems	Replace managers not acting in the best interest of the owners
Managerialism	Increase the size of the company to increase the power and the pay of the managers
Free cash flow hypothesis	When the agency cost is large, while deciding on the choice of strategy over the free cash flow, takeovers helps to reduce them

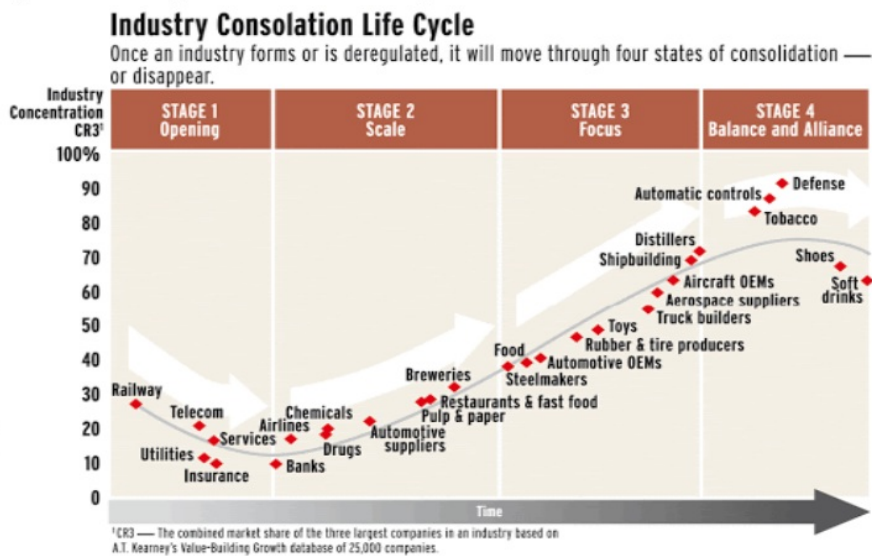
Market power	Increase market share to improve the ability to set prices above competitive levels
Tax consideration	Obtain unused net operating losses and tax credits, asset write-ups, and substitute tax gains for ordinary income
Redistribution	Gains are redistributed to shareholders from all other stakeholders
Hubris hypothesis	Acquirer believe their valuation of target more accurately than the market's causing them to overpay by estimating synergy

SOURCE: ADOPTED FROM LEEPSA AND MISHRA (2016)

### 2.2.2 Industry Consolidation Life Cycle

Deans et al. (2002) in their study of 1,345 large mergers over 13 years, concluded that an industry evolves through four (4) stages of consolidation referred to as the Industry Consolidation Life Cycle. This is depicted in Figure 2.

Figure 2: Industry Consolidation Life Cycle



SOURCE: DEANS ET AL. (2002).



**Stage 1: Opening** This first stage occurs in a deregulated or privatized industry characterized by start-ups or firms with a monopoly. The initial monopoly is short-lived as competitors rapidly emerge reducing the combined market share of the three largest companies to between 30 per cent and 10 per cent. This is apparent in the energy, telecommunications, railroads, banking, and insurance industries which are newly deregulated or privatized.

**Stage 2: Scale** This second stage is about building scale. Companies which can defend their first-mover advantages and create a global footprint begin to stand out from the pack. They build scale by buying up competitors (Palmer & Barber, 2001) with the aim of lowering their cost (Porter, 2008) since firms with larger production bases are typically in a stronger position to spread the fixed cost. As the industry consolidates rapidly in stage 2, the top three players will own 15 to 45 per cent of their market. The recent acquisition of Pharmacia and Warner-Lambert by Pfizer is an example of a stage 2 company successfully positioning itself for the later consolidation rounds that will produce the giants of the industry. Airlines, hotel chains, automotive suppliers, banks, and pharmaceuticals are some examples of stage 2 industries.

**Stage 3: Focus** Stage 3 companies are concentrating on expanding the core business and continuing to actively outgrow competition. At this stage, there are usually five to 12 major players however the three dominant industry players control between 35 per cent and 70 per cent of the market. This stage is rife with megadeals and large-scale consolidation plays with the ultimate objective of emerging as one of a limited number of power-houses in the global industry. Typical industries at this stage are steel manufacturers, automotive OEMs, shipyards, and distillers.

**Stage 4: Balance and Alliance** In the final stage, the industry is matured as the concentration rate reaches its apex and begins to fall. At this stage, the top three companies control about 70 per cent to 90 per cent of the market. Industry giants protect their leadership through the formation of alliances with their peers as growing

organically becomes a challenge. New ways are developed to spur a new wave of growth by spinning off new businesses into industries in the early stages of consolidation. Industries in the matured stage of consolidation include tobacco, soft drinks and defence.

### **2.3 CONSOLIDATION IN LINER SHIPPING**

Liner shipping has been a key facilitator of international trade and the adoption of containerization has accelerated globalization. Slack and Fremont (2009) note that while technical innovation and advancement, growing vessel capacity, growth in traffic, improved financial performance and competitiveness has defined the growth of container shipping, it has also shaped organizational transformations. The growth in liner shipping has resulted in key strategic challenges for organizations leading to consolidation through M&As and the formation of alliances to achieve varying levels of competitive advantage.

The liner shipping industry has undergone major consolidation and an equally critical integration phase between upstream and downstream transportation firms (Van de Voorde & Vanelslander, 2010). From the first large consolidation wave which occurred in 1995, the container liner shipping industry has been redesigned by consecutive waves of consolidation (Sys, 2009). A notable example of consolidation in the container liner shipping was the acquisition of Royal P&O Nedlloyd by Maersk Sealand (Maersk Line) in 2006 which prompted other takeovers and mergers in the liner shipping industry (e.g. CMA CGM, Hapag-Lloyd, COSCO).

Luo et al. (2012) attest that an increasingly small number of Liner Shipping Companies have managed and controlled a greater portion of production capacity, served a larger market share and covered a broader geographical area. While the capacity of liner shipping industry increased from 3.04 million to 12.89 million TEUs between 1996 and 2010, the share of the top 20 firms also increased from 68 per cent to 84 per cent (Luo et al., 2012). UNCTAD in its 2019 edition of the Review of Maritime Transport

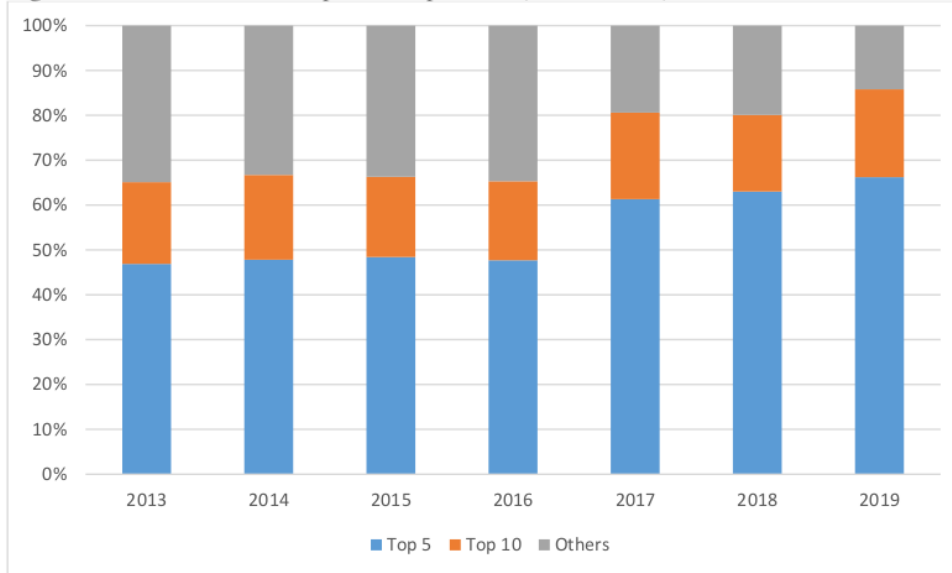
reports that due to continuous consolidation in the container-shipping segment, the market share of the top 10 container shipping lines increased from 68 per cent in 2014 to 90 per cent in 2019 (UNCTAD, 2019).

Lun et al. (2010) noted that over the past 20 years, global competition, the worsening of the global financial crisis and pressure for higher profitability have necessitated significant changes in the liner shipping industry. In adjusting to the changes, liner shipping companies have employed strategies by integrating horizontally and vertically which has resulted in further consolidation in liner shipping.

Since 2013, the following consolidation events have occurred in liner shipping: the merger between COSCO and China Shipping to form China COSCO Shipping and subsequent acquisition of OOCL; the acquisition of CSAV and United Arab Shipping by Hapag Lloyd; the acquisition of CCNI by Hamburg Sud which was subsequently bought by Maersk; CMA CGM acquisition of NOL; the formation of Ocean Network Express (ONE) by three Japanese conglomerates (K-line, MOL and NYK); Maersk and MSC formed the 2M alliance; the Ocean Alliance by CMA CGM, China COSCO Shipping and Evergreen; and The Alliance between Hapag Lloyd, ONE, Yang-Ming and HMM (American Shipper, n.d.).

Figure 3 illustrates the continuing increase in the market shares of the top operators in container liner shipping based on their share of total capacity.

Figure 3: Market Share of Top Liner Operators (2013 – 2019)



SOURCE: AUTHOR, COMPILED FROM ISL DATA

### 2.3.1 Mergers and Acquisitions in Liner Shipping Industry

Panayides and Gong (2002) describe mergers and acquisitions (M&A) as an important phenomenon of modern economic life which occurs in any industry for a variety of reasons. They have played a vital role in shaping global industries and shipping has an active record of M&A transactions (Kavussanos & Visvikis, 2016). In Liner Shipping, Alexandrou et al. (2014); Fusillo (2009); Van de Voorde and Vanelslander (2010) agree that mergers and acquisitions provide the opportunity for carriers to rationalize supply, achieve economies of scale and scope as well as diversify their portfolio with respect to vessel sizes. According to Cariou (2008), it is a strategy which can be employed by carriers to break into new markets and widen their geographic coverage. For liner shipping carriers, it also serves the purpose of strengthening their bargaining powers with their customers, mainly shippers and ports.

A merger as described by Panayides and Gong (2002), is the union of two or more companies resulting in the formation of a new entity to achieve common goals through

the combination and sharing resources. They further describe an acquisition as the purchase of a firm's assets or shares, resulting in the shareholders of the acquired firm ceasing to be owners. Panayides and Gong (2002) categorize the motives for mergers and acquisitions under value-maximization motives and strategic and marketing motives.

M&A activity in the Liner Shipping was predominant in the early 1990s (Kim, 2017). Between 1995 and 2001, seven (7) principal mergers and thirty (30) acquisitions in the occurred in the liner shipping industry (Federal Maritime Commission, 2001). They have been an important mechanism used by shipping firms for fast growth leading to increased levels of consolidation and integration (Cariou, 2008; Frémont, 2009).

In a study of mergers, Alexandrou et al. (2014) concluded that between the period of 1984 to 2011, the rapid growth of liner shipping was possible due to mergers and acquisitions. Using the current global market leader in container shipping Maersk Line as an example. The Danish liner shipping carrier attributes its growth to several mergers and acquisitions and it accounts for 16.8 per cent of the global market share in the deployed capacity as at June 2020 (Alphaliner, 2020). The M&A undertaken by Maersk between 1999 to 2017 is represented in Table 2 below.

Table 2: Maersk Line Mergers & Acquisitions, 1999 to 2017

<b>Year</b>	<b>M &amp; A Activity</b>
2017	Maersk Line on June 13 announces the sale of Brazilian cabotage carrier Mercosul Line to CMA CGM to gain regulatory approval for its purchase of Hamburg Süd. The deal closed Dec. 1, 2017.
2016	Maersk Line on Dec. 1 announced it will acquire Hamburg Süd and retain its brand. Maersk Line anticipates closing the deal (subject to regulatory approvals) by year-end 2017.
2005	A.P. Moller-Maersk acquires P&O Nedlloyd Container Line. The Maersk Sealand and P&O Nedlloyd names were changed to Maersk

	Line in February 2006. P&O's Farrell Lines subsidiary becomes part of the U.S.-flag Maersk Line Ltd. Business unit.
2002	A.P. Moller Group acquires the liner division of the Danish Torm Lines and integrates it into both Maersk Sealand and Safmarine.
1999	A.P. Moller acquires Safmarine Container Lines, marketed as Safmarine, SCL, CMBT and Safbank.
1999	A.P. Moller Group acquires Sea-Land Service international container business from CSX Corp

SOURCE. ADOPTED FROM JOC.COM (2016)

UNCTAD estimates that the top 15 container lines controlled just over 70 per cent of all container ship capacity at the beginning of 2018. However, in June within the same year (2018), almost 70 per cent of capacity was controlled by the top 10 liner operators, reflecting the completed operational integration of new mergers (UNCTAD, 2018a). The same report highlights that the number of companies providing services per country between 2004 and 2018 declined by 38 per cent on average.

### **2.3.2 Strategic Alliances in Liner Shipping Industry**

One of the significant developments in the container shipping industry has been Strategic alliances (Slack et al., 2002). Since the adoption of containerization, container shipping companies have been active in cooperative enterprises (Brooks, 2000). According to OECD/ITF, alliances have become a key aspect of container shipping. It is formed when two or more shipping lines to achieve economies of scale and scope cooperate for mutual benefit. According to Lun et al. (2010), through operational strategies such as service network integration, vessel sharing, slot chartering and exchange, joint ownership and utilization of equipment and terminals, an alliance facilitates the provision of extensive liner shipping services to the market.

According to Slack et al. (2002), vessel sharing within strategic alliances allows established carriers serve existing markets with lesser capacity commitment while

redirecting capacity to introduce new services and potentially exploit new markets. Also, alliances create uniformity in the provision of service among alliance members and extend their global reach while allowing newer and smaller carriers to access markets, geographical areas and routes that have been difficult to penetrate independently.

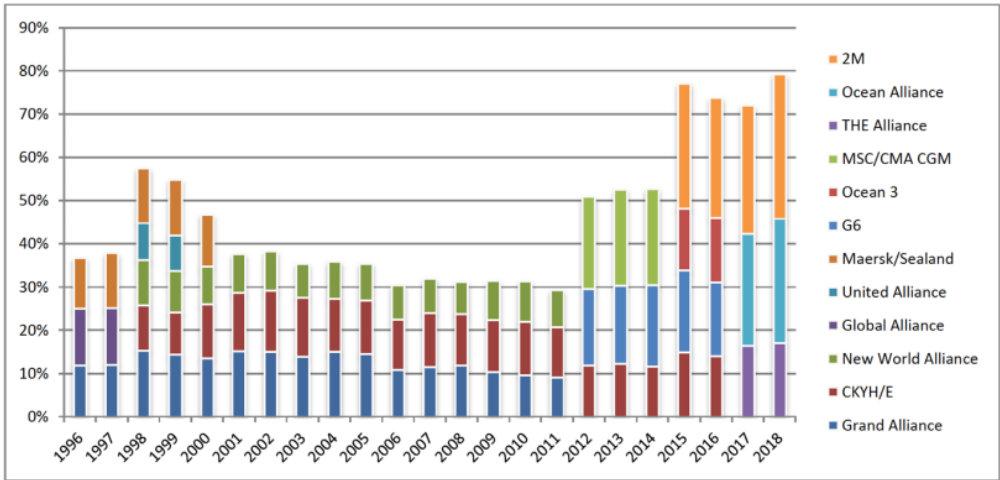
Alliances are not unique to Liner Shipping as it exists in other industries, particularly, the aviation industry (OECD/ITF, 2018). Since the end of the 1990s, airlines have used alliances to share planes and landing slots at airports. Strategic alliances typically provide the opportunity to; expand a single firm's operational borders, achieve the scale to compete in global markets, and rapidly penetrate new markets by optimizing the return (output) of each partner's resources (input) (Ryoo & Thanopoulou, 1999).

Over the last three decades, the composition of global alliances in the liner shipping industry has evolved severally. In the early years of the 20<sup>th</sup> century, the first generation of alliances increased shipping options as it acted as a medium for collaboration between smaller carriers on the basis of complementarity (OECD/ITF, 2018). Five of the most important alliances that existed during that period were: SeaLand-Maersk, the Grand Alliance (Hapag-Lloyd, P&O-Nedlloyd, MISC, OOCL), the United Alliance (Hanjin, DSR-Senator, Cho Yang), the New World Alliance (HMM, APL, MOL), and the grouping of COSCO, Yangming and K-Line (Slack et al., 2002).

However, in recent times, alliances have become cooperation tools used by large container lines. According to OECD/ITF (2018), the combined market share of the three alliances (CKHY, Grand Alliance and New World Alliance) that existed in 2011 was 29 per cent, whereas the market share of the current three alliances (2M, Ocean, THE Alliance) is around 80 per cent of the global ship capacity. However, this is even higher on some trade lanes with the three alliances accounting for around 95 per cent of capacity on East-West trade lanes.

Figure 4 presents the evolution of alliances from 1996 – 2018 and their share of global ship capacity.

Figure 4. Evolution of alliances and their global market share (1996 – 2018)



SOURCE: OECD/ITF (2018).

#### 2.4 M&A AS A MEASURE FOR LINER SHIPPING CONSOLIDATION

Consolidation in liner shipping as previously highlighted occurs mainly through M&A and Strategic Alliances. According to Van de Voorde & Vanelander (2010), there has been significant consolidation in the shipping industry through M&As. Thus, the number of M&As that has occurred within the industry over the period among existing shipping companies is an appropriate indicator for measuring consolidation. JOC.com catalogues about eighty (80) M&A activities among container carriers that have occurred over the last 40 years (1977 to 2017) (Appendix I).

Table 3 also shows data sourced from ALPHALINER Top 100 League which provides a summary of consolidated subsidiaries of container shipping companies. Individual container shipping companies numbering over sixty (60) have been consolidated through mergers and acquisitions to about twenty-four (24).



Table 3: Consolidated Subsidiaries of Container Shipping Companies

<b>No.</b>	<b>GROUP</b>	<b>SUBSIDIARIES</b>
1	APM-Maersk	Maersk Line, Hamburg Sud (incl. Alianca and CCNI), Safmarine, Sealand Asia, Sealand Americas and Europe & Med
2	MSC	WEC Lines
3	CMA CGM Group	CMA CGM, APL, ANL, Cheng Lie Navigation Co, CoMaNav, Containerships PLC, Feeder Associate System, MacAndrews, Mercosul Line and SoFraNa
4	COSCO Group	COSCO Shipping Co Ltd, OOCL, Shanghai Pan Asia Shipping, New Golden Sea Shipping (GSS) and Coheung
5	Evergreen Group	Evergreen Line and Italia Marittima
6	Hapag-Lloyd	UASC fleet
7	Zim (ZISS)	Gold Star Line
8	PIL (Pacific International Lines)	Advance Container Line (ACL) and Mariana Express Lines Ltd (MELL)
9	IRISL Group	RISL, HDS Lines, Valfajre Eight Shg Co and Khazar Shipping Co
10	Crowley Liner Services	former Seafreight fleet

11	X-Press Feeders Group	Sea Consortium, X-Press Container Line and Rederi TransAtlantic
12	Sinokor Merchant Marine	Heung-A Line
13	Transworld Group	includes Transworld Feeders, Balaji Shipping and Shreyas Shipping
14	Transworld Group Singapore	includes OEL (Pte) Ltd and BLPL Singapore Pte Ltd
15	Grimaldi (Napoli)	includes Atlantic Container Line (ACL) and Finnlines
16	Swire Shipping	includes China Navigation Co, Polynesia Line and Pacifica Shipping
17	DAL (Deutsche Afrika Linien)	includes UAFL (United Africa Feeder Line)
18	FESCO	includes FESCO ESF
19	Unifeeder	includes Unimed Feeder Services (UFS)
20	Borchard Lines	includes Gracechurch Lines
21	Peel Ports	includes BG Freight and Coastal C.L.
22	Boluda Lines	includes Paraguay affiliate Naviera del Mercosur
23	Grupo Sousa	includes Portusline Containers International (PCI) and GS Lines
24	Vinalines	includes associated company Bien Dong Shipping

SOURCE: ADOPTED FROM ALPHALINER TOP 100 LEAGUE

## 2.5 IMPACT OF CONSOLIDATION IN LINER SHIPPING ON USERS

### 2.5.1 Impact of Consolidation in Liner Shipping on Ports

The growing spate of consolidation through strategic alliances and mergers and acquisitions has several implications to ports and terminals.

To begin with, shipping companies are growing bigger through mergers and acquisitions to remain competitive. This has resulted in the operation of larger vessels to cater for the corresponding growth in cargo volumes while reducing running costs through economies of scale. Bigger ships achieve higher economies of scale with fewer port calls leading to the growth of transshipment/feeder concepts. According to Hoffmann (1998), this situation has led to the classification of ports into layers according to vessels calling and increasing the pressure on ports to expand and improve their infrastructure to attract and handle these mega-vessels. Ports that can position themselves appropriately stand to benefit from an increased number of containers handled due to transshipment. Transshipment ports like Algeciras and Malta have emerged and benefitted from transshipment.

Also, consolidation among carriers will reduce the number of lines calling at particular ports thus increasing the market share of port throughput for remaining carriers. Ports become heavily dependent on a few big clients which make carriers very powerful. According to Lloyds List (2000), the port of Singapore is estimated to have lost a staggering 10% (1.8 Million TEU's) volume of business as a result of Maersk Sealand decision to change main-haul service calls from Singapore to the Port of Tanjung Pelepas in Malaysia. The consolidated market makes carriers a powerful force with more market clout and bargaining powers than individual shipping lines in negotiations with ports about preferential treatment, port services and port charges.

The growing commoditization of container shipping has increased the need for container lines invest in ports and terminals to differentiate themselves from competitors (OECD/ITF, 2018). Carriers like MSC, COSCO and APM (Maersk) to improve their competitiveness have been actively acquiring container terminals, hence

increasing the share of carrier operated terminals from 18 per cent in 2001 to 38 per cent in 2017. With container lines increasingly requiring less but larger terminals in ports, consolidation in terms of port calls and terminal control through vertical integration is likely to increase further (UNCTAD, 2018a). This development introduces some complexities to the relationship between container lines and ports with some implications for terminal concessions approaches, as container lines become competitors of ports.

Notwithstanding the above, Hoffmann (1998) highlights some benefits of consolidation in liner shipping to ports. Lower freight rates due to consolidation lead to an increase in trade and general growth in the market, thus, ports stand to benefit from the increase in throughput.

### **2.5.2 Impact of Consolidation in Liner Shipping on Shippers**

Shippers rely on liner shipping to ensure that their supply chain operates smoothly. Container shipping companies have formed and reformed alliances as well as consolidated through M&A to provide more efficient and comprehensive services with lower freight rate fluctuation at lower tariffs and prices when cost savings are effectively passed on to shippers. This has, however, some negative effects on the shipper, such as less choice and quality of service, as well as higher service reliability costs, eroding bargaining power and constrained risk management (OECD/ITF, 2018).

Saxon (2017) and Drewry (2018) cite the considerable frustration and dissatisfaction among shippers concerning the ‘widening gap’ between the service they wish to receive and the one they receive, coupled with a decrease in reliability in the schedule. They further highlight the unreliability of booking and transit times since 2016 and conclude that alliances can be generally associated with less choice, less service differentiation and less service quality for shippers. These developments disrupt the supply chains which end up in additional costs for the shipper. Shippers in their bid to mitigate against this risk of delays and unreliability, have to increase expenditure on stock holding and inventory management (OECD/ITF, 2018).

Also, risk diversification by shippers has become more complicated by the increase in the spate of alliances. In the era of Just-In-Time delivery, the shippers' ultimate concern is the prompt delivery of cargoes before a crucial time, e.g. Christmas. Traditionally, shippers have spread their cargo over various carriers to mitigate the risk of 'putting all your eggs in one basket'. However, the probability that containers from different carriers can end up on the same ship is high due to the dominance of alliances, thus reducing the risk diversification possibilities for shippers as their choices are reduced. According to *Inbound Logistics (2017)*, some shippers as part of their contracts require and demand a guarantee from carriers not to place their cargoes on a vessel operated by an alliance partner.

OECD/ITF (2018) highlights the widening imbalance in carriers size and the size of shippers. Large shippers account hardly for more than 1 per cent of the total number of containers transported by major carriers. In a highly competitive industry, the bargaining power of shippers has diminished due to their limited possibilities to negotiate with the carrier. OECD/ITF (2018) further states that the terms of contract have become more restrictive in some jurisdictions, allowing less container free time with higher demurrage and detention charges.

The Covid-19 has also unveiled some negative impact of consolidation in the liner shipping industry on shippers. According to OECD/ITF (2020), since the outbreak of the virus, reduced demand for liner shipping services has not translated into lower prices for customers. The system of alliances and consortia in liner shipping still have the power to control prices to a certain degree (OECD/ITF, 2018), which not only prevents the collapse of freight rates but also deprive customers of cost reductions during declining demand.

Despite the negative implications of consolidation to shippers such as less choice for shippers, increased monopoly and bargaining power for shipping companies, Hoffmann (1998) paints a positive picture. According to his paper, shippers benefit

from increased competition, more choices due to the introduction of more transshipment services/options and lower freight rates due to productivity increases and economies of scale.

## **2.6 MARKET CONCENTRATION**

Hays and Ward (2011) describe market structure as a spectrum of economic organizations ranging from pure competition, monopolistic competitive, oligopolies to pure monopoly. Market concentration is a way to quantify a market structure (OECD, 2018) and provides a limited guide to the structure of a market (Ferguson & Ferguson, 1994). It shows how a product or service is confined to a few large firms and the degree of market power.

According to economic theory, an important determinant of market behaviour and market results is market concentration (Claudia, 2012). Market concentration can be used as an imperfect indicator of the competitive intensity of an economy or industry (OECD, 2018). It is an important economic tool as it reflects the degree of competitiveness in a market.

Market concentration and its measurement is very important to public policy as it is a critical determinant of approving M&As that could potentially affect on consumers in terms of prices and availability of products and services (Bruner, 2004)

### **2.6.1 Market Concentration in Liner Shipping**

The tendency towards more consolidation in Liner shipping through M&As has far-reaching implications for the maritime transport system as a whole as well as its stakeholders (OECD/ITF, 2018). Although consolidation can reduce overcapacity in the market and provide economies of scale and scope to shipping companies, it also has unintended consequences such as increased market concentration in liner shipping.

Hoffmann (1998) refers to concentration in maritime transport as relatively larger ports, shipping companies and their alliances growing their market share at the expense

of smaller players. Concentration is neither unique nor a new phenomenon to liner shipping. Its study dates back to Chrzanowski (1974) who examined the fleet capacity of selected countries and concluded that liner shipping is more concentrated than tramp shipping. Sys (2009) in her study measuring the degree of concentration concluded that the liner shipping industry is confronted with increased concentration exhibiting prominent features of an oligopolistic market. Van de Voorde and Vanelslander (2010) also note that the recent increase in consolidation through mergers and acquisitions has led to a notable increase in the level of market concentration.

Ha and Seo (2013) in their paper 'An Analysis of Market Concentration in the Korean Liner Shipping Industry' present a contrary view. Their findings conclude that notwithstanding the continuous consolidation among global operators, the concentration ratio of the top four shipping companies (CR<sub>4</sub>) show that the market share of the four largest liner shipping companies in Korea and the HHI declined between 1992 and 2004. This is in contrast to the global liner shipping industry which recorded increases in market concentration ratio and HHI during the same period. It is however good to note that, Korea is a container ship owning nation with its national fleet handling about 15% of total container trade in 2010 (Ha & Seo, 2013).

## CHAPTER THREE

### REVIEW ON THE MARITIME TRANSPORT INDUSTRY IN GHANA

Ghana is located on the Atlantic Ocean and borders Togo, Cote d'Ivoire, and Burkina Faso with a population of about 29.6 million (2018). It has been listed among Africa's 10 fastest-growing economies since 2017 with real GDP growth estimated at 7.1% (AfDB, 2020) mainly driven by the industrial sector. Due to its proximity to the ocean, the recent discovery of oil and location along major trade routes to Europe and the Americas, the maritime transport industry of Ghana plays a vital role in its economic development.

This Chapter seeks to review the maritime transport industry in Ghana in its entirety. A general overview of maritime transport is discussed and subsequently extended to its role to the Ghanaian economy along with its development over the years. The chapter concludes with a brief overview of the liner-shipping sector in Ghana.

#### 3.1 MARITIME TRANSPORT IN GENERAL

Maritime Transport is a derived demand from international trade. It is the linchpin of the global economy providing physical support to the movement of freight between continents and across the globe (Rodrigue, 2016). Owing to the fact that seven-tenths of the earth's surface is covered by water, maritime transport remains the dominant mode of transport for freight due to its advantage of continuity through the provision of regular services and cost-effectiveness owing to its capacity to move at a low cost, large amounts of cargo over long distances (Sepúlveda, 1987). UNCTAD's Review of Maritime Transport (2019) estimates that a total of 11 billion tons of cargo representing four-fifths of world merchandise trade by volume was transported by the sea for the year 2018.

Rodrigue and Browne (2008) classify international maritime freight transport into two main segments; the modes with flexibility in their spatial allocation, such as, shipping



lines that have a level of leeway in terms of route selection, frequency and levels of service; and the port and terminals, as locations, which are inflexible with a fixed capacity that if not used can imply serious financial consequences.

According to Šamija (2011), maritime transport involves the movement of cargoes from an area of supply to an area of demand, along with all the activities necessary to support and facilitate such transport. This involves three essential components namely; fixed infrastructure provided by ports or terminals, a means of transportation through ships and barges and complemented by an organizational system ensuring the optimal use of the ships and fixed infrastructure.

### **3.2 MARITIME TRANSPORT INDUSTRY IN GHANA**

The Maritime Transport Industry in Ghana is undeniably the most critical sector to the development of the nation's economy. It connects the country to the world and facilitates its participation in international trade. In the simplest terms, the Maritime Transport Industry in Ghana is composed of ports, shipping agencies, stevedoring, customs brokerage services, inland container terminals, freight forwarding services and similar enterprises.

Mbiah (2005) classifies the maritime transport industry in Ghana under 4 main sectors; the Demand sector which is made up of users of shipping and allied services represented by shippers and their representative organizations such as Association of Ghana Industries (AGI) and Ghana Shippers' Authority (GSA). There is also a Supply sector made up suppliers of shipper services represented by ship agents, port authorities, terminal operators and their representative organizations such as Ship Owners and Agents Association of Ghana (SOAAG), Ghana Association of Stevedoring Companies (GASCO), etc. The third is the Regulatory sector made up of Maritime Administrations and government agencies responsible for creating regulatory and policy framework. This is represented by the Ghana Maritime Authority (GMA) as well as training institutions such as the Regional Maritime

University (RMU). The final sector of Ghana's Maritime Transport Industry is the Support Services sector made up of shipping agents, freight forwarders, multimodal operators and their representative organizations such as the Ghana Institute of Freight Forwarders (GIFF) and the Customs Brokers Association of Ghana (CUBAG). These sectors complement one another to ensure the harmonious development of the maritime transport industry in Ghana.

### **3.2.1 Role of the Maritime Transport Industry to the Economy of Ghana**

The role of maritime transport in the economic, political, social and historical development of developed, underdeveloped, or developing countries is undeniably of great importance to every nation (Faith, 2019).

The maritime transport industry plays a critical role in the Ghanaian economy particularly the development of the country's international market. It gives local markets a national, regional and international focus allowing for economies of scale in areas of production. According to the World Development Indicators database hosted by the World Bank, total merchandized trade of Ghana for 2018 amounted to \$27.95 billion accounting for 42.5 per cent of the Gross Domestic Product (GDP) (UNCTADstat, 2019).

The ports in Ghana are international gateways for the importation of its basic needs; ranging from pharmaceuticals, food products, chemicals, building materials, petroleum products etc., and provides a major source of revenue from import taxes and levies collected. According to the Port Authority, 85% of Ghana's total trade flows through the ports of Tema and Takoradi with shipping routes and vessel calls to and from all continents through direct and transshipment services (GPHA, 2020). The ports are also geographically positioned to service the northern hinterlands of Ghana as well as the three Sahelian countries of Burkina Faso, Mali and Niger.

The Maritime Industry in Ghana provides huge employment for workers of the port, freight forwarders, insurance companies, transport companies, truck owners and

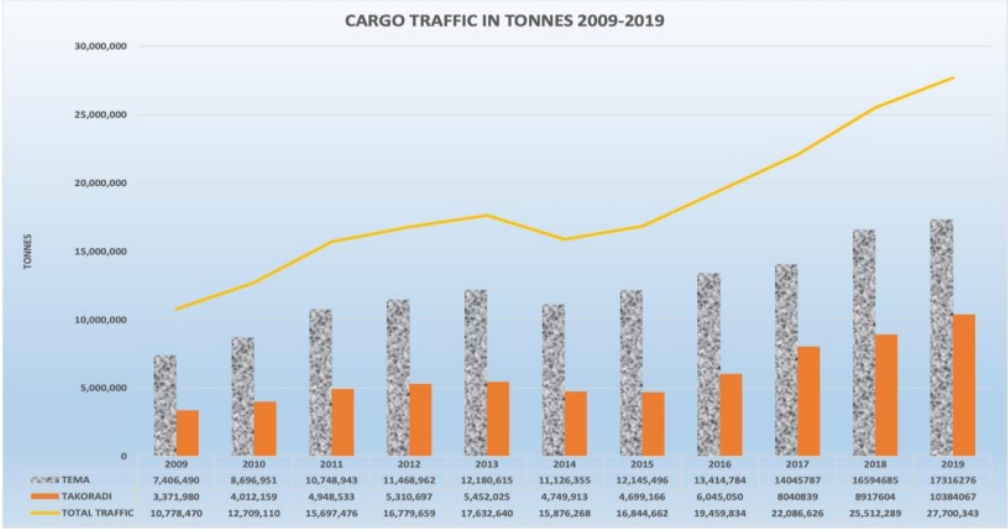
operators, warehousing companies and other logistics providers. According to the Ship-Owners and Agents Association of Ghana (SOAAG), in 2018, 13 active shipping agents employ about 840 workers without those directly or indirectly linked to the shipping lines at the port.

The country also benefits from revenue generated at the ports of Tema and Takoradi through import taxes and levies on cargoes. Apart from custom duties generated from imported cargo which form a sizable portion of governments annual revenue, the ship owners and agents operating at the port also contribute to national development through the payment of corporate taxes. Data available indicate that in 2016, the thirteen active shipping lines contributed GH¢183.3 million in taxes and other statutory payments to the Ghana Revenue Authority (GRA) ("Shipping lines pay GH¢183.3m as taxes in 2016", 2017).

### **3.2.2 Status of the Maritime Transport Industry of Ghana**

Ghana's Maritime Transport Industry has recorded consistent improvement over the last decade. According to the port authority, vessel traffic represented by the number of vessels calls at the ports of Tema and Takoradi increased from 2,590 in 2009 to 3,092 in 2019. Cargo traffic has almost tripled with the last decade, showing a consistent increase from 10.7 million metric tons in 2009 to 27.7 million metric tons in 2019 (Figure 5).

Figure 5. Tema and Takoradi Port Performance – Cargo Traffic (2009 – 2019)



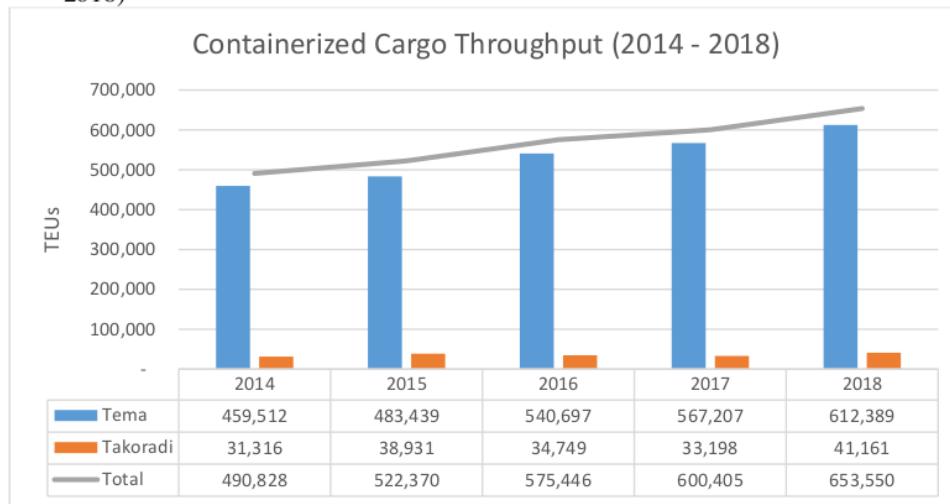
SOURCE: GHANA PORTS AND HARBOURS AUTHORITY (2020)

The growth in vessel calls and cargo traffic over the last decade can be attributed to the port’s strategic objective to become the trade and logistics hub in West Africa. The port authority seeks to enhance its operations and improve service delivery by modernizing and developing the ports through win-win partnerships with the private sector. This is evidenced by its partnership with Bolloré Transport & Logistics and APM Terminals to form the Meridian Port Services Company Limited. This new venture seeks to expand the country’s largest port of Tema to triple its existing capacity of one million TEUs, deepen the port access channel to a depth of 19-metre, construct a 1.4-kilometre-long quay for four container berths with a 16-metre draft and a 4-kilometre-long breakwater (“Tema Port Expansion”, n.d.). This would enable the port to accommodate large container ships with improved cargo handling capabilities, which would increase Ghana’s liner connectivity, reduce transit time and logistics costs. The new Tema Port has potential for increasing Ghana’s export by +/- 15%, which is associated with +/- 2% increased GDP and +/- 4.0% more jobs (Lawer, 2019).

### 3.3 LINER SHIPPING IN GHANA

According to Maritime Trade Statistics of the Ghana Shippers' Authority, the liner-shipping sector of in Ghana is the second-largest contributor to total maritime trade of Ghana. In 2018, it accounted for 8.1 million metric tons out of 21.9 million metric tons of the total volume of seaborne trade representing about 36.9 per cent of Ghana's total seaborne trade (GSA, 2019). This was mainly made up of containerized cargo which accounts for the bulk of liner shipments to and from Ghana. Containerized cargo has recorded a consistent increase in volume over the last 5 years. Figure 6 shows the growth in containerized cargo from 490,828 TEUs in 2014 to 653,550 TEUs in 2018.

Figure 6. Containerized Cargo Throughput for Ports of Tema & Takoradi (2014 – 2018)



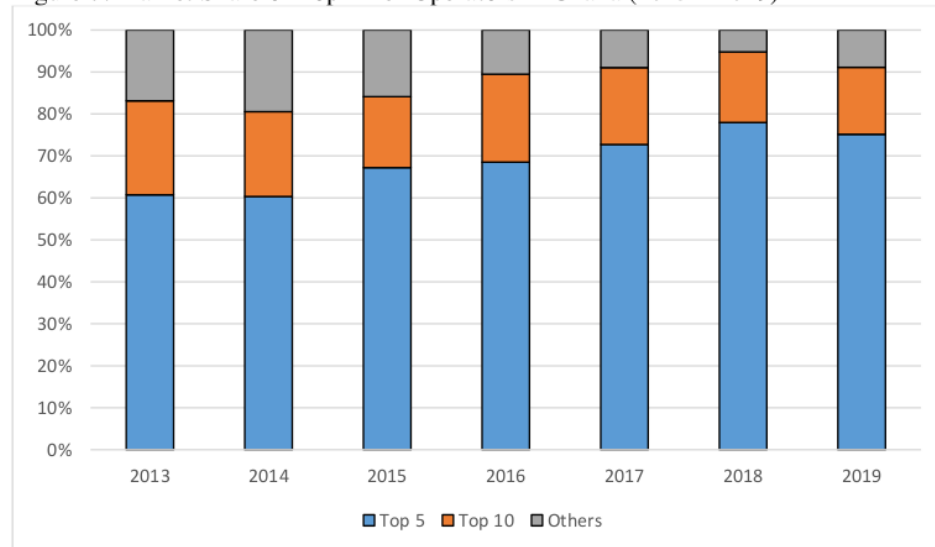
SOURCE: GHANA SHIPPERS' AUTHORITY

Figure 6 above shows the consistent increase in demand for liner shipping services by the local economy. Major liner commodities imported by industrial and domestic shippers include Chemicals, Frozen Meat/Foods, Polythene Raw Materials, Processed Food/Beverages and General Cargo. Major liner commodities exported include Cocoa Beans, Sheanuts/Sheabutter, Cocoa Products, Furniture/Wood Products and Cashew Nuts.

Ghana has seen a steady increase in its performance on the UNCTAD Liner Shipping Connectivity Index, which measures how well countries are linked to global shipping networks. Recording a score of 12.48 since the inception of the performance index in 2004, Ghana’s performance has recorded growth attaining its highest value in 2015 with a score of 23.06. However, Ghana’s performance deteriorated from its peak value in 2015 to 19.84 in 2019. Compared to sub-region competitors, Togo and Cote d’Ivoire, Ghana performed well against Cote d’Ivoire which scored 18.8 in 2019 but not Togo which scored 29.0 in 2019.

Liner Shipping in Ghana has been dominated by five major carriers over the past decade. These are Maersk Line, Mediterranean Shipping Company (MSC), Hapag Lloyd, COSCO Shipping and CMA-CGM. In 2019, Maersk Line accounted for 44% of the Top 5 operators followed by MSC with 27%, Hapag Lloyd, COSCO Shipping and CMA-CGM with 12%, 9% and 8% respectively (GSA, 2020). Figure 7 shows the market share of liner trade per top 5 and top 10 carriers.

Figure 7. Market Share of Top Liner Operators in Ghana (2013 – 2019)



SOURCE: AUTHOR BASED ON GSA DATA

## CHAPTER FOUR

### RESEARCH METHOD

This chapter details a description of the methods and techniques employed to achieve the research objectives. The choice of the research method is guided by the research problem. It sets out the procedures used to collect, analyse and report results.

#### 4.1 RESEARCH DESIGN

Creswell and Clark (2017) define research design as “procedures for collecting, analysing, interpreting and reporting data in research studies”. Bryman and Bell (2011) describe it as the master plan or framework of the research guiding the set of methods and procedures for collecting and analysing data specific to the research problem.

The nature of this research can best be classified as exploratory and descriptive as it exhibits characteristics of both. Exploratory studies help to better understand the nature of the research problem. According to Saunders et al. (2007), this is the appropriate approach when enough is not known about a phenomenon and a problem has not been clearly defined. It helps in discovering “what is happening; to seek insights to ask questions and to assess phenomena in a new light” (Robson, 2002). Consolidation in liner shipping is a well-known phenomenon however there is arguably no evidence of literature on its effect on market concentration in liner shipping in sub-Saharan Africa. Hence the reason an exploratory approach was adopted.

Furthermore, to provide preliminary information on the existing conditions of concentration of liner shipping in Ghana, a descriptive design was also adopted. Descriptive studies aim at portraying accurately the characteristics of a particular group with regards to their attitude or views towards anything (Khanzode, 1995). It is undertaken when the research questions are more concerned with the ‘what’ rather than ‘how’ or ‘why’.

The study employed a quantitative approach to analyze data from credible sources and address the research questions. Quantitative methods seek to explain specific components of a situation based on techniques that provide numerical and standardized data (Saunders et al., 2007).

## **4.2 MEASURES OF MARKET CONCENTRATION**

Notteboom, (2010) and Liu et al. (2011) identify two indicators; Concentration Ratio (CR) and the Herfindahl-Hirshman Index (HHI), as the commonly accepted measures for market concentration.

### **4.2.1 Concentration Ratio (CR)**

Concentration Ratio is one of the simplest methods for measuring the degree of concentration in an industry (Charłampowicz, 2018). CR( $x$ ) represents the relative market share of industry accounted for the  $x$  largest firms. The four-firms concentration ratio (CR<sub>4</sub>) is one of the most common indicators which involves totalling up the market shares of the four largest entities in the industry. Various researchers (Chen and Liao, 2011; Williams, 2003; Varan and Cerit, 2014) agree that high CR act as barriers to the entry for new investors.

Claudia (2012) identifies two significant deficiencies of CR for measuring market concentration concerning competition. First, it does not take into account the relative sizes of the market share of the leading companies, that is, market 1 with four firms each having a market share of 20 per cent each would have the same CR as market 2 with four firms with market shares of 50 per cent, 15 per cent, 10 per cent and 5 per cent. It is quite clear from the example that market 2 has a clear dominant company compared to market 1. Secondly, it only measures the leading companies and does not factor the market share of other companies with smaller market shares in the market.

### **4.2.2 Herfindahl-Hirshman Index (HHI)**

Herfindahl-Hirshman Index is a measure of market concentration based on the total number and market share of enterprises in an industry. Proposed by Herfindahl and



Hirshman in 1950 and 1964 respectively, it has been used in the field of industrial economics. According to Anbarci and Katzman (2005), it is more complete and rich in information as the weighted average of market shares of all companies in a market/industry when is used compared to CR.

It is defined as the sum of the squared market shares of (n) individual firms (Hanafy et al., 2017). Unlike CR, HHI reflects the degree of market share inequality across the spectrum of firms in the market/industry (Claudia, 2012).

According to Qazi et al. (2017), it is mostly used by regulators to provide an assessment of market concentration. A decrease in HHI generally indicates a decrease in concentration (Elsayeh et al., 2011) whilst a higher HHI indicates less competition in the market (Zhang et al., 2001).

#### **4.3 DATA DESCRIPTION**

The main source of data used for the research was secondary data from the Maritime Trade Statistics reports published by the Ghana Shippers' Authority and the Container Intelligence Quarterly (CIQ) reports published by the Clarksons Research.

The main objective of the research was to analyse the market concentration in the liner-shipping sector in Ghana within the context of increased consolidation among carriers in the global liner shipping industry. Time series data on liner shipping covering a period of 7 years (2013 – 2019), made up of 28 quarters, was used for the research. The element of the data used was the market share of liner operators in Ghana and the top global containership operators of the CIQ.

The scope of the data to be used for the calculation of market concentration did not include operators with less than 1% market share as squaring of market shares of less than 1% per the formula would not have any significant impact on results.

#### 4.4 DATA ANALYSIS

Data collected from both secondary sources were analysed using market concentration measures and simple linear regression.

##### 4.4.1 Market Concentration Analysis

To begin with, the market share of each operator in liner shipping in Ghana was calculated as a percentage from total liner throughput in terms of TEUs. This was used to estimate the Concentration Ratio by summing the market shares of four (CR<sub>4</sub>) biggest liner operators in terms of TEUs.

The mathematical formula for CR<sub>4</sub> can be written as follows:

$$CR_4 = \sum_{i=1}^4 S_i.$$

(Lipczynski et al., 2005, p.215)

where  $s_i$  represents the percentage market share of the  $i^{th}$  carrier.

Secondly, the HHI of the liner industry was calculated as a proxy for the degree of concentration in the domestic and global markets. This was calculated by summing the squares of market shares of individual liner operators in terms of TEUs.

The equation for HHI is expressed as;

$$HHI = \sum_{i=1}^n S_i^2$$

where  $n$  stands for the total number of examined carriers and  $s_i$  represents the percentage market share of the  $i^{th}$  carrier.

Using the Guidelines for Horizontal Mergers of the US Department of Justice and the Federal Trade Commission (US DOJ/TFC), the markets are classified under three categories.

- Unconcentrated market has HHI value below 1500,

- Moderately concentrated market has HHI values between 1500 – 2500,
- Highly concentrated market has HHI value above 2500.

#### 4.4.2 Statistical Analysis

To answer the research question three on the relationship between market concentration in the liner shipping in Ghana and the concentration index for the global liner shipping industry, a simple linear regression analysis was conducted on the data with Excel Data Analysis Tool Pak.

Montgomery et al. (2012) describe regression analysis as a technique used to investigate and model the relationship between variables. A simple linear regression models the relationship between a single regressor (x) and its response (y).

Using data on the HHI(Ghana) and HHI (Global) in a simple linear regression, the relationship between two variables is modelled to investigate if there is any relationship between them. The linear equation is modelled based on observed data with HHI (Ghana) being the dependent variable and HHI (Global) being the explanatory (independent) variable.

The linear equation is presented as follows;

$$HHI(GH) = a + \beta(HHI(GL)) + \varepsilon \text{-----} 1$$

where HHI(GH) represents the HHI for liner shipping in Ghana;  
 HHI(GL) represents the HHI for the global liner shipping industry;  
 a is the intercept/constant;  
 β is beta; and  
 ε is the error term.

According to Iyanaga and Kawada (1980), statistical hypothesis testing is the use of statistics to determine whether the probability of a hypothesis is true. A statistical hypothesis is developed to test the relationship between the variables HHI(GH) and HHI(GL).

The hypothesis is presented as follows;

$H_0 : \beta = 0$  (There is no significant relationship between HHI(GH) and HHI(GL))

$H_1 : \beta \neq 0$  (There is a significant relationship between HHI(GH) and HHI(GL))

## CHAPTER FIVE

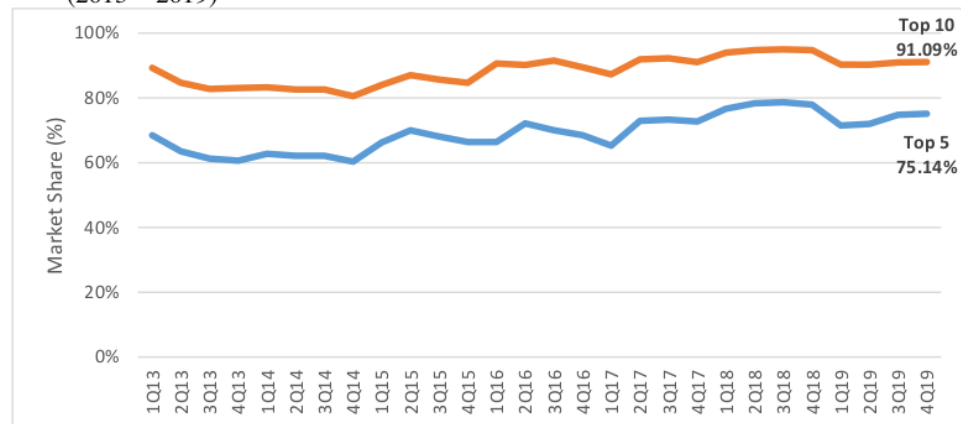
### FINDINGS AND INTERPRETATION

The objective of the dissertation was to analyse the market concentration in liner shipping in Ghana within the context of increased consolidation among carriers in the global liner shipping industry. To achieve this objective, the research was focused on providing answers based on empirical results to the research questions. This chapter presents the findings as follows; an analysis of the market share of top liner operators in Ghana, analysis of market concentration in liner shipping in Ghana and comparative analysis with global concentration index, descriptive statistics on scale variables, and regression analysis.

#### 5.1 MARKET SHARE

A study of the market share provides preliminary information on the degree of concentration in liner shipping in Ghana. The figure below graphically illustrates the quarterly market share of the Top 5 and Top 10 liner companies operating in Ghana between 2013 and 2019.

Figure 8: Market Share of Top 5 & Top 10 Liner Shipping Companies in Ghana (2013 – 2019)



SOURCE: AUTHOR, COMPILED FROM GSA DATA

The market share of the top five liner operators increased from 68.46% in the first quarter of 2013 to 75.14% in the fourth quarter of 2019, with an overall average of 69.2% of total liner trade in Ghana over the same period.

The market share of the top ten liner operators increased from 89.68% in the first quarter of 2013 to 91.09% in the fourth quarter of 2019, with an overall average of 88.4% of total liner trade in Ghana over the same period.

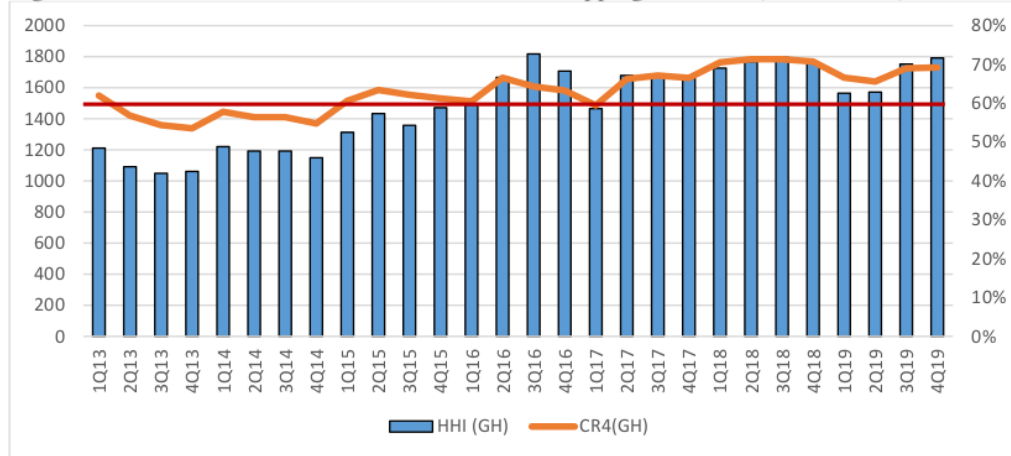
Comparing the market share of top liner operators in Ghana to the market share of total container fleet deployed globally by liner operators, it is quite evident from the diagram (Appendix) that the market share of the top 5 and 10 operators in Ghana is relatively higher. That is, global operators have a larger market share of liner operations in Ghana as compared to their market share in the global liner shipping industry.

The above confirms and also supports what the reviewed literature (Luo et al., 2012; UNCTAD, 2019) asserts that increasingly, a smaller number of liner shipping companies control a larger portion of production capacity and serving a larger share of the market even in developing economies/countries like Ghana.

## **5.2 MARKET CONCENTRATION**

Using the identified market concentration measure (HHI and CR<sub>4</sub>), the concentration of liner shipping in Ghana is determined to investigate the level and trend over the last seven years quarterly. Figure 9 illustrates the level and trend of concentration in the liner shipping market in Ghana.

Figure 9: Trend of Market Concentration in Liner Shipping in Ghana (2013 – 2019)



SOURCE: AUTHOR, COMPILED FROM GSA DATA

The figure above clearly depicts that both concentration indicators used show an increasing trend of concentration in liner shipping in Ghana. The CR<sub>4</sub> which is the concentration ratio of the top 4 container liner shipping companies in Ghana measured in terms of freight handled in TEUs grew from 61.99% in the first quarter of 2013 to 69.23% in the fourth quarter of 2019. The CR<sub>4</sub> peaked at 71.35% in the second and third quarters of 2018 and recorded its lowest value at 53.55% in the fourth quarter of 2013 during the period under study.

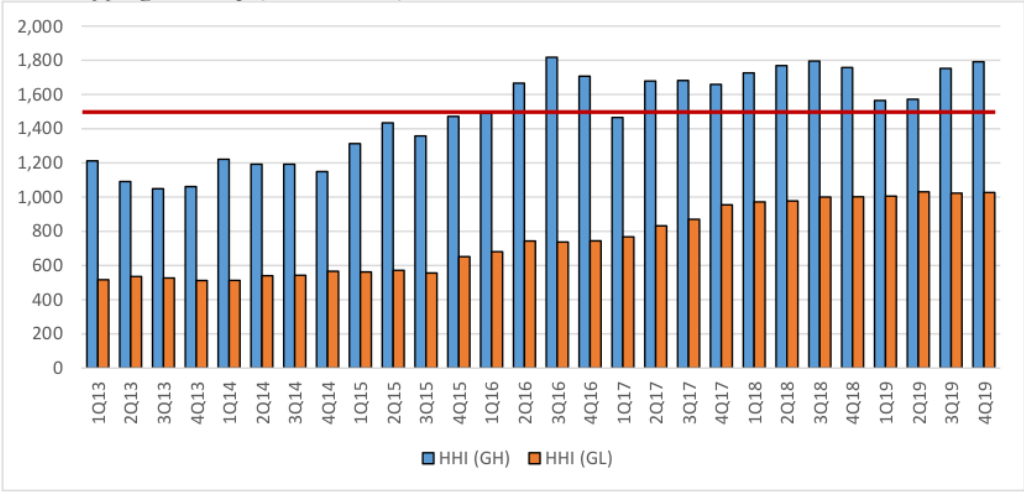
The increasing trend of concentration as identified by the CR<sub>4</sub> is confirmed by the HHI. HHI increased from 1211.75 in the first quarter of 2013 to 1791.69 in the fourth quarter of 2019. It also peaked in the third quarter of 2016 recording a value of 1817.45.

As indicated by the red line in figure 9, the liner shipping in Ghana was an unconcentrated market from the first quarter of 2013 through to the fourth quarter of 2015. The HHI values recorded for that period was below 1500. However, after the first quarter of 2016, it has increasingly become a moderately concentrated market with HHI values above 1500. Within the period under study, the third quarter of 2016 recorded the highest HHI value of 1817. The merger of COSCO and China Shipping

into China COSCO Shipping and its subsequent acquisition of OOCL (American Shipper, n.d.) as well as the failure of Hanjin Shipping in the year 2016 contributed immensely to the increase in market concentration. The consolidation of two major Asian shipping companies through M&A as well as the failure of another resulted in the reshuffling of the market share of liner operators in Ghana as the Far East is one of the major trading partners of Ghana hence increasing the intensity of concentration in the liner shipping industry in Ghana.

Comparing the HHI for Ghana with that of the global container liner industry presented in Figure 10 suggests three interesting findings. First, the HHI for both industries (the liner shipping in Ghana and the global liner industry) showed a consistent increase over the period. Secondly, liner shipping in Ghana recorded higher values of HHI compared to the global liner industry. Finally, using the Guidelines for Horizontal Mergers of the US DOJ/FTC, liner shipping in Ghana has become a moderately concentrated market compared to the global liner industry which remains an unconcentrated market over the period.

Figure 10: Quarterly Comparative Analysis of HHI for Ghana and Global Liner Shipping Industry (2013 – 2019)



SOURCE: AUTHOR, COMPILED FROM GSA DATA AND CIQ



### 5.3 STATISTICAL ANALYSIS

#### 5.3.1 Descriptive Statistics

From Table 4, the mean for market concentration in liner shipping in Ghana (HHI-GH) was 1487.08, which is higher than the global concentration index of the liner shipping industry (HHI-GL) which was 748.63. However, the mean growth rate for HHI(GL) was 0.03 which is higher than the mean growth rate of HHI(GH) of 0.01, although the standard deviation for HHI(GH) is higher than HHI(GL). The details of the descriptive statistics for the variables are presented in Table 4.

Table 4: Descriptive Statistics of Variables

<i>Variable</i>	Obs.	Mean	Median	Standard Deviation	Min	Max
<i>HHI (GH)</i>	28	1487.08	1527.39	257.49	1049.16	1817.45
<i>HHI (GL)</i>	28	748.63	739.86	200.81	511.91	1030.66
<i>Growth Rate (GH)</i>	27	0.01	0.01	0.08	-0.15	0.14
<i>Growth Rate (GL)</i>	27	0.03	0.02	0.04	-0.03	0.16

SOURCE: REGRESSION TEST RESULTS

Table 4 provides empirical evidence to confirm that HHI(GH) is more concentrated than HHI(GL). The mean value representing the average market concentration level for the period studied show that HHI(GH) is very concentrated at 1487.08, almost double, the HHI(GL) at 748.63. The median value of 1527.39 for HHI(GH) classifies it as a moderately concentrated market per the US Department of Justice and the Federal Trade Commission guidelines for Horizontal Mergers compared to a median value of 739.86 for HHI(GL) which is unconcentrated.

HHI(GL) has a higher growth rate of 0.03 than HHI(GH) which is 0.01 meaning that HHI(GL) is growing at a relatively faster rate than HHI(GH). Comparing the standard deviation of HHI and the growth rate of HHI for both markets, it is evident that liner shipping in Ghana recorded higher standard deviation, hence showing greater variability in market concentration and its growth rate.

### 5.3.2 Regression

A simple linear regression analysis was performed with the variables HHI(GL) and HHI(GH) to investigate the relationship between the two variables. The simple linear regression was performed with MS Excel with HHI(GH) as the dependent variable and HHI(GL) as the independent variable. A summary output of the regression statistics is presented in Table 5.

Table 5: Summary Output of Regression Statistics

<i>Regression Statistics</i>						
Multiple R	0.856					
R Square	0.732					
Adj. R Square	0.722					
Std. Error	135.792					
Observations	28					
<i>ANOVA</i>						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sign. F</i>	
Regression	1	1310708.96	1310708.96	71.08	0.00	
Residual	26	479425.19	18439.43			
Total	27	1790134.15				
	<i>Coeff.</i>	<i>Std. Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	665.671	100.751	6.607	0.000	458.575	872.766
HHI (GL)	1.097	0.130	8.431	0.000	0.830	1.365

SOURCE: REGRESSION TEST RESULTS

From Table 5, the significance of the final regression model;  $HHI(GH) = a + \beta(HHI(GL)) + \varepsilon$ , as indicated by *Sign. F* from the Analysis of Variance (ANOVA)

is 0.000 indicating that there is a 0% probability that the output from the regression was random or by chance.

Also, the R-Squared value for the regression model is 0.732 indicating that 73.2% of the total variation in HHI(GH) is explained by the model. This is a good indication of the strength of the relationship between the regression model and the dependent variable, that is, how well the model fits the data and the independent variable (HHI(GL)) explains the changes/variations in the dependent variable (HHI(GH)).

The regression coefficient for HHI(GL) was also statistically significant at 5% as shown by the P-value of 0.000. By this, the null hypothesis ( $H_0$ ) can be rejected as there is a significant relationship between market concentration in liner shipping in Ghana (HHI(GH)) and the global concentration index in the liner shipping industry (HHI(GL)).

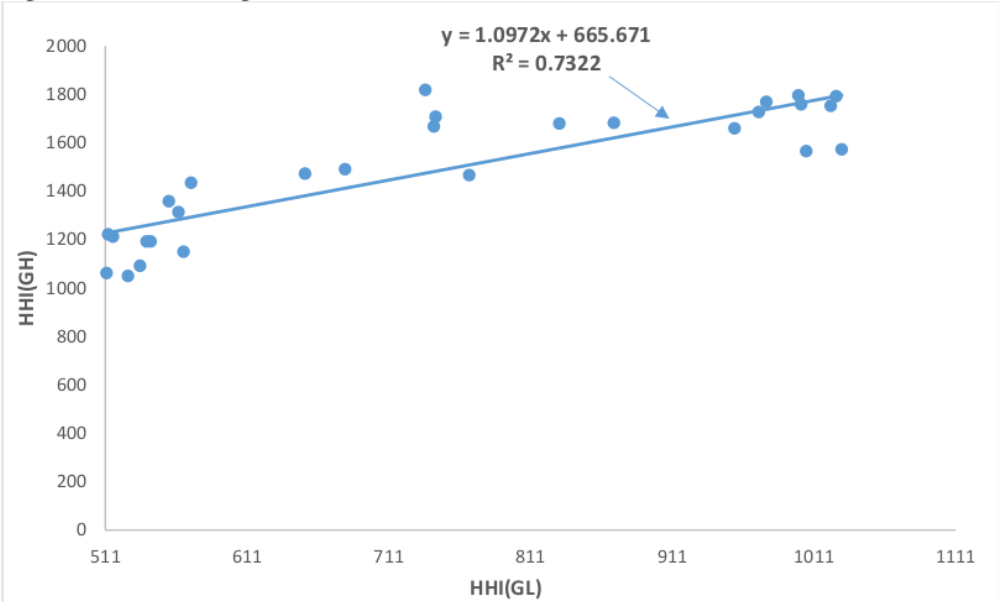
The coefficient value of 1.097 for HHI(GL) also indicates a positive correlation between HHI(GL) and HHI(GH). Thus, with all things being equal, a unit change (increase) in the global concentration index (HHI(GL)) will cause the market concentration in liner shipping in Ghana (HHI(GH)) to change (increase) by more than a unit (i.e. 1.097).

The final regression model is therefore written as;

$$HHI(GH) = 665.671 + 1.097(HHI(GL))$$

The scatter diagram in Figure 11 further graphically illustrates the regression model. From the graph, we can infer from the sample population that there is a positive relationship and correlation between HHI(GH) and HHI(GL) as  $\beta$  is 1.097. Furthermore, the Confidence Interval represented by the lower 95% and upper 95% ( $0.830 < \beta < 1.365$ ) does not include 0, hence we can conclude that there is an X independent variable and Y dependent variable linear relationship.

Figure 11: Scatter Diagram of HHI(GH) and HHI(GL)



SOURCE: AUTHOR

## CHAPTER SIX

### CONCLUSION

This chapter provides a summary of the findings of the research and its implications. It also highlights limitations to the research and proffers some recommendations for areas for further research.

#### 6.1 SUMMARY

Over the last two decades, the pace of consolidation among global shipping companies has increased (Hoffmann, 1998; UNCTAD, 2019). This research sought to analyse the market concentration in the liner-shipping sector in Ghana within the context of the increased consolidation among carriers in the global liner shipping industry. This was achieved through the use of concentration measures such as the four (4)-firm Concentration Ratio (CR<sub>4</sub>) and the Herfindahl-Hirschman Index (HHI) over twenty-eight (28) quarters to compare the market concentration in liner shipping in Ghana to the concentration index for the global liner shipping industry. The summary of the major findings from the data analysis of the research is presented based on this stated objective.

The empirical results of the research findings suggest that there is an increasing trend of market concentration in liner shipping in Ghana over the period surveyed (2013 – 2019). The market share of the top liner operators in Ghana indicate an oligopolistic market structure of liner shipping in Ghana evidenced by few shipping service providers with a high percentage share of the liner market. As at the end of 2019, the top five and top ten liner operators controlled 75.14 per cent and 91.09 per cent of the liner market in Ghana respectively.

Secondly, the liner shipping industry in Ghana measured by the HHI is more concentrated than the global liner shipping industry. Using the US guidelines on Horizontal Mergers, liner shipping in Ghana moved from an unconcentrated market

into the category of a moderately concentrated market in the first quarter of 2016, unlike the global liner shipping industry which remains an unconcentrated market. This development was as a result of increased M&A activities with COSCO and China Shipping merging into China COSCO Shipping and acquiring OOCL as well as the failure of Hanjin Shipping in the year 2016.

Finally, from the results of the regression model, we can conclude that the global concentration index plays a statistically significant role in the market concentration of liner shipping in Ghana. Also, the results of the regression model indicate a positive linear relationship between the market concentration in liner shipping in Ghana and the global concentration index of the liner shipping industry. Thus, continued consolidation among global liner shipping operators which results in a proportionate increase in the concentration index of the global liner shipping industry would more than proportionately increase market concentration levels in liner shipping in Ghana.

## **6.2 IMPLICATIONS**

The findings of the research do suggest an increasing trend in market concentration in liner shipping in Ghana due to continued consolidation among carriers in the global liner industry. This has some implications for users of these services such as the port authority and shippers as well as the role of policymakers and regulatory agencies in Ghana.

The increasing trend of concentration in liner shipping in Ghana implies the growth in the market power of a few shipping companies which present threats to competition. Shippers in Ghana, majority of which have low bargaining power which limits their ability to negotiate, are faced with less choice, high freight rates and local charges as they deal with a few large liner shipping service providers.

In the case of the port authority, increased concentration in liner shipping in Ghana would lead to a higher dependence on a few big clients. It places the port in a weak

bargaining position as such clients may require preferential treatment in terms of port services and charges.

With the top 10 liner operators controlling about 91 per cent of the liner market in Ghana, policymakers and regulatory agencies must take a proactive stance against anti-competitive and collusive practices. There is the need for organizations such as Ghana Shippers' Authority which represent shippers in Ghana as per their mandate to deal with abuse of market dominance through continuous engagement with the liner shipping service providers on their charges and service standards.

The role of the Ghana Shippers' Authority needs to be clearly defined and its mandate fully implemented as it acts as a counterbalance, enhancing the position of shippers to the increasing bargaining and market power of liner operators in Ghana.

### **6.3 LIMITATIONS AND AREAS FOR FURTHER RESEARCH**

The research had some limitations which affected its scope and analysis of data. One of the major limitations of the research was the unavailability of data on the market share of liner operators in other developing economies in sub-Saharan Africa. This made it impossible to compare and support the results of market concentration in liner shipping in Ghana with other countries which would have broadened the scope of the research. Also, due to the unavailability of data, the sample period of 7 years was used for the research instead of a preferably larger sample period of 10 years or more. This would have helped minimize bias caused by events and shocks which may be inherent in the data during some periods.

Future research should expand the scope of this study to cover other countries within sub-Saharan Africa such as Nigeria and South Africa which are major economic powerhouses. Also, qualitative research focusing on the impact of consolidation in the liner-shipping sector on the cost competitiveness of shippers notably from developing countries as well as their choices.

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## APPENDICES

### 1. Chronology of M&A of container carriers from 1977 - 2017

YEAR	M&A ACTIVITY
2017	<ul style="list-style-type: none"> <li>• Cosco Shipping Holdings on July 9 said it would pay \$6.3 billion for Orient Overseas Container Line with the help of the Shanghai International Port Group, which will take a 10 per cent stake in the company. Cosco will retain the OOCL brand after completing the acquisition, which is subject to regulatory approvals.</li> <li>• Maersk Line on June 13 announces the sale of Brazilian cabotage carrier Mercosul Line to CMA CGM to gain regulatory approval for its purchase of Hamburg Süd. The deal closed Dec. 1, 2017.</li> <li>• Hapag-Lloyd and United Arab Shipping Co. on May 24 seal the business combination agreement they signed with the support of their stockholders on July 18, 2016.</li> </ul>
2016	<ul style="list-style-type: none"> <li>• Maersk Line on Dec. 1 announced it will acquire Hamburg Süd and retain its brand. Maersk Line anticipates closing the deal (subject to regulatory approvals) by year-end 2017.</li> <li>• “K” Line, MOL, and NYK Line agreed on Oct. 31 to establish a new joint-venture company to integrate the container shipping businesses (including worldwide terminal operating businesses excluding Japan) of all three companies subject to regulatory approvals. The establishment of the new joint-venture company is planned for July 1st, 2017, with the planned business start date of April 1st, 2018.</li> <li>• CMA CGM Group acquires the majority share of Neptune Orient Lines, (NOL) and its principal operating brand APL on June 9, and closes its voluntary general offer to remaining NOL stockholders on July 18.</li> </ul>

	<p>NOL became a wholly-owned subsidiary of CMA CGM Group following the completion of a compulsory acquisition process with the then-remaining NOL stockholders from July 19 forward that was concluded on Sept. 5.</p> <ul style="list-style-type: none"> <li>• King Ocean acquires the services of Interocean Lines and Trinity Shipping Line on May 1.</li> <li>• • Cosco and China Shipping officially restructure and merge effective Feb. 18, and later rebrand as China Shipping.</li> </ul>
2015	<ul style="list-style-type: none"> <li>• Crowley Maritime completes the purchase of SeaFreight Line, SeaFreight Agencies, and SeaPack, liner, and logistics companies serving Florida, the Caribbean and South, and Central America on Nov. 2.</li> <li>• Hamburg Süd acquires the container liner business of Compañía Chilena de Navegación Interoceánica S.A. (CCNI) upon closing on March 27, 2015. Hamburg Süd will continue the CCNI brand and operations on the west coast of South America trade with Asia, Europe, and North America.</li> <li>• Pacific International Lines acquires Mariana Express Lines on March 11, 2015.</li> <li>• Matson acquires Horizon Lines including its Alaska operations in late May 2015 upon the completion of the sale of Horizon's Hawaii operations to The Pasha Group. Separately, Horizon Lines terminated its Puerto Rico liner operations at year-end 2014.</li> </ul>
2014	<ul style="list-style-type: none"> <li>• Saltchuck acquires Tropical Shipping from AGL Resources, which merged with Nicor in 2011.</li> <li>• Baltic Reefers acquires NYKCool from NYK Reefers Ltd. The name changed to</li> </ul>

	<p>Cool Carriers AB; its 25 vessel fleet will remain independent.</p> <ul style="list-style-type: none"> <li>• The merger of Hapag-Lloyd with the container business activities of CSAV was completed Dec. 1 upon approvals from competition authorities.</li> </ul>
2007	<ul style="list-style-type: none"> <li>• CMA CGM Group acquires U.S. Lines Ltd. (not related to the original U.S. Lines), CoMaNav, and CNC Line.</li> <li>• Hamburg Sud takes over liner operations of Costa Container Lines to the Mediterranean, South America East and North Coast, Central America, and the Caribbean.</li> </ul>
2006	<ul style="list-style-type: none"> <li>• CMA CGM Group acquires Delmas, OT Africa Line, Setramar, and SudCargoes.</li> <li>• Hamburg Sud acquires FESCO's cross-trade activities from Australia/New Zealand to Asia and North America</li> </ul>
2005	<ul style="list-style-type: none"> <li>• A.P. Moller-Maersk acquires P&amp;O Nedlloyd Container Line. The Maersk Sealand and P&amp;O Nedlloyd names were changed to Maersk Line in February 2006. P&amp;O's Farrell Lines subsidiary becomes part of the U.S.-flag Maersk Line Ltd. business unit.</li> <li>• Hamburg Sud acquires 100 % of Ybarra Sud y Cia. Sudamerica S.A. (Ybarra Sud), up from its 50% stake in 1989.</li> <li>• Hapag-Lloyd's parent TUI AG acquires CP Ships, previously traded on N.Y. Stock Exchange as TEU.</li> </ul>
2003	<ul style="list-style-type: none"> <li>• Hamburg Sud acquires Ellerman services to the Mediterranean and India/Pakistan; takes over Kien Hung liner services between Asia and South America.</li> </ul>

2002	<ul style="list-style-type: none"> <li>• A.P. Moller Group acquires the liner division of the Danish Torm Lines and integrates it into both Maersk Sealand and Safmarine.</li> <li>• CMA CGM Group acquires MacAndrews.</li> <li>• CP Ships acquires Italia di Navigazione from d'Amico Societa di Navigazione.</li> <li>• Sea Star Line acquires U.S.-flagged Navieras de Puerto Rico/NPR Inc. from Holt Group.</li> <li>• Seaboard Marine acquires Haiti, Jamaica, Dominican Republic services from Tecmarine Lines.</li> <li>• Tropical Shipping acquires Eastern Caribbean and Guianas service from Tecmarine Lines.</li> </ul>
2001	<ul style="list-style-type: none"> <li>• Grimaldi Group acquires Atlantic Container Line (ACL).</li> </ul>
2000	<ul style="list-style-type: none"> <li>• CP Ships acquires Christensen Canadian African Lines (CCAL).</li> <li>• CSAV acquires Norasia.</li> <li>• P&amp;O Nedlloyd Container Lines acquires Farrell Lines.</li> </ul>
1999	<ul style="list-style-type: none"> <li>• A.P. Moller acquires Safmarine Container Lines, marketed as Safmarine, SCL, CMBT, and Safbank.</li> <li>• A.P. Moller Group acquires Sea-Land Service international container business from CSX Corp.</li> <li>• CMA merges with CGM.</li> <li>• CP Ships acquires full control of Americana Ships from Transportadora Maritima Mexicana plus TMM's worldwide liner services.</li> <li>• CSAV acquires majority holdings in both Companhia Libra de Navegacao, Brazil, and Montemar Maritima S.A., Uruguay,</li> </ul>

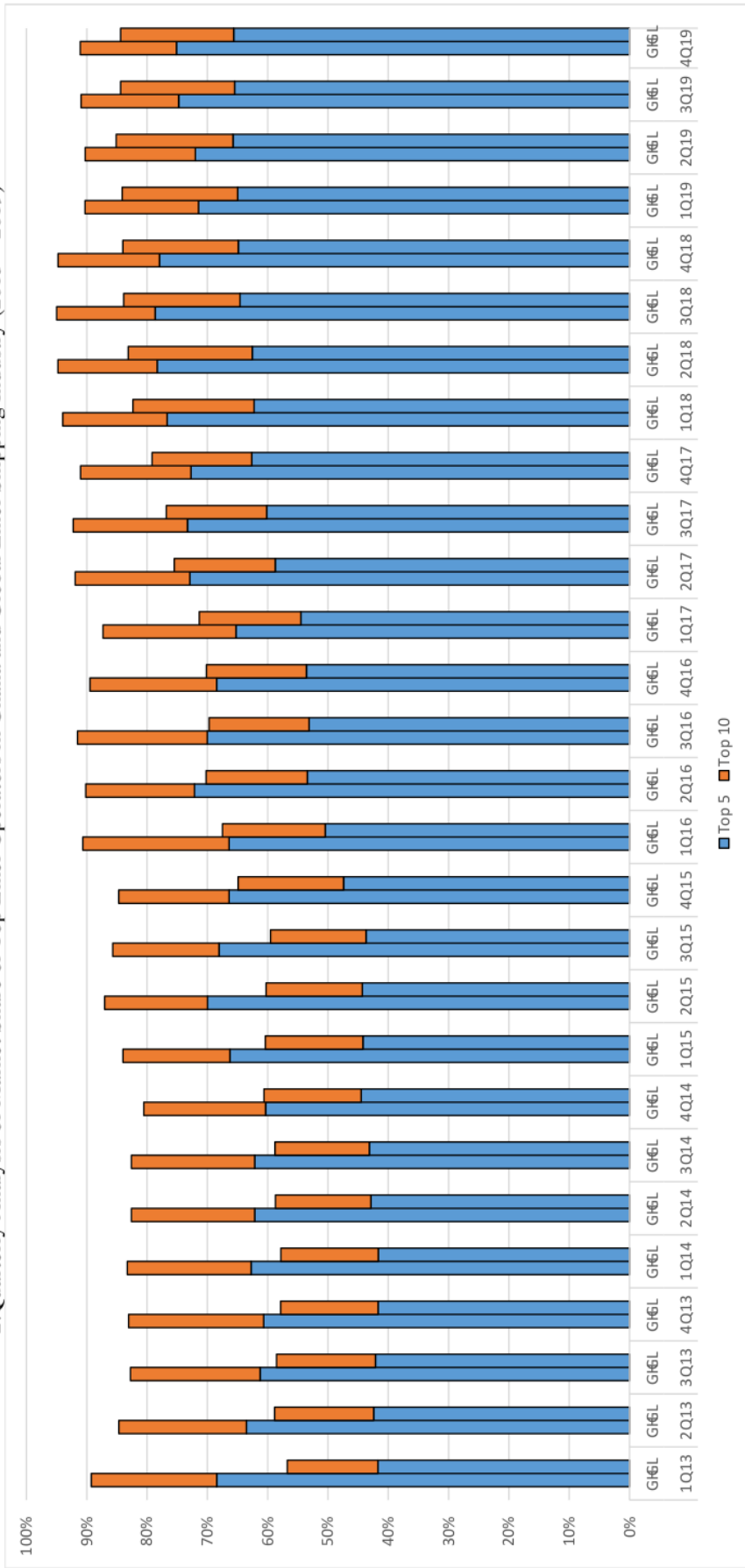
	<p>(rebranded as Libra de Navegacion Uruguay, in 2006).</p> <ul style="list-style-type: none"> <li>• Hamburg Sud acquires South Pacific Container Lines and Transroll's Europe-South America East Coast liner operations.</li> <li>• Hamburg Sud acquires Inter-America services of Crowley American Transport (CAT).</li> <li>• MOL and Navix Line merge.</li> </ul>
1998	<ul style="list-style-type: none"> <li>• CP Ships acquires Australia-New Zealand Direct Line.</li> <li>• CP Ships acquires Ivaran Lines.</li> <li>• Evergreen Marine acquires Lloyd Triestino, later branded Italia Maritima.</li> <li>• Hamburg Sud acquires Alianca and South Seas Steamship.</li> <li>• NYK Line and Showa Line merge.</li> <li>• P &amp; O Nedlloyd Container Line acquires Blue Star Line.</li> <li>• Totem Resources, now known as Saltchuk Resources, acquires Sea-Barge and rebrands as Sea Star Line.</li> <li>• Transportadora Maritima Mexicana and CP Ships create a joint venture service, Americana Ships.</li> </ul>
1997	<ul style="list-style-type: none"> <li>• CP Ships acquires Contship Containerlines.</li> <li>• CP Ships acquires Lykes Lines.</li> <li>• Hanjin becomes the majority shareholder in DSR Senator Line.</li> <li>• Neptune Orient Lines acquires American President Lines.</li> </ul>
1996	<ul style="list-style-type: none"> <li>• The British P&amp;O Group's container business merges with the Dutch Royal Nedlloyd N.V. (Nedlloyd Line) to establish P&amp;O Nedlloyd.</li> </ul>

	<ul style="list-style-type: none"> <li>Transportadora Maritima Mexicana acquires Flota Mercante Grancolombiana.</li> </ul>
1995	<ul style="list-style-type: none"> <li>CP Ships acquires Cast Group.</li> </ul>
1993	<ul style="list-style-type: none"> <li>A.P. Moller takes over the Danish East Asiatic Co., known as EAC, including its Far East &amp; Australia container liner business.</li> </ul>
1991	<ul style="list-style-type: none"> <li>Blue Star Line acquires ACT/PACE, except the Europe/Australia service, which goes to P &amp; O Containers.</li> <li>NYK Line acquires Nippon Liner System.</li> </ul>
1990	<ul style="list-style-type: none"> <li>Hamburg Sud acquires Rotterdam-Zuid America Line and several divisions of Furness Withy (Shipping).</li> </ul>
1989	<ul style="list-style-type: none"> <li>Hamburg Sud acquires a 50% stake of Ybarra Sud y Cia. Sudamerica S.A. (Ybarra Sud).</li> <li>Japan Line and Y.S. Line combines as Navix Line.</li> <li>Totem Resources, now known as Saltchuk Resources, acquires IOM.</li> </ul>
1988	<ul style="list-style-type: none"> <li>Hanjin Container Line and KS Line forms Hanjin Shipping Co.</li> </ul>
1987	<ul style="list-style-type: none"> <li>P&amp;O Containers acquires Trans Freight Lines (TFL).</li> </ul>
1986	<ul style="list-style-type: none"> <li>Crowley Maritime acquires Coordinated Caribbean Transport with Crowley Caribbean Transport rebranding.</li> <li>Hamburg Sud reaches 100 percent stake in Deutsche Nah-Ost-Linie.</li> </ul>

	<ul style="list-style-type: none"> <li>• P &amp;O achieves sole ownership of OCL, Overseas Containers Ltd., and rebrands as P &amp; O Containers.</li> </ul>
1985	<ul style="list-style-type: none"> <li>• U.S. Lines acquires ships and other assets of Delta Steamship Lines.</li> </ul>
1984	<ul style="list-style-type: none"> <li>• OOCL gains full ownership of Dart Containerline's trans-Atlantic services from prior one-third</li> </ul>
1982	<ul style="list-style-type: none"> <li>• Crowley Maritime acquires Delta Steamship Lines from Holiday Inns.</li> <li>• NICOR acquires Tropical Shipping.</li> <li>• Totem Resources, now known as Saltchuk Resources, acquires Totem Ocean Trailer Express.</li> <li>• U.S. Lines acquires the Moore-McCormack fleet and routes.</li> </ul>
1981	<ul style="list-style-type: none"> <li>• Trans Freight Lines (TFL) acquires Seatrain Line's North Atlantic services.</li> </ul>
1980	<ul style="list-style-type: none"> <li>• OOCL acquires Furness Withy (Shipping), including Manchester Liners.</li> <li>• OOCL acquires Seatrain Pacific's trans-Pacific services.</li> </ul>
1978	<ul style="list-style-type: none"> <li>• Delta Steamship Lines acquires Prudential Lines' Latin America services.</li> </ul>
1977	<ul style="list-style-type: none"> <li>• Malcolm McLean acquired U.S. Lines.</li> </ul>

SOURCE: JOC.COM

2. Quarterly Analysis of Market Share of Top Liner Operators in Ghana and Global Liner Shipping Industry (2013 – 2019)



SOURCE: AUTHOR, COMPILED FROM GSA DATA AND CIQ