Assessing the media perspective on container terminal turnaround time: lessons for the Port of Durban

By

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Dear Miss NL Makhathini,

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New Project title: Assessing the media perspective on container terminal turnaround time: lessons for the Port of Durban.

Approval Notification – Amendment Application

This letter serves to notify you that your application and request for an amendment received on Date 25 November 2020 has now been approved as follows:

- Change in Title

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form; Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

Best wishes for the successful completion of your research protocol.

Yours faithfully

Date: 26 November 2020

……
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cc: Supervisor: Dr Sanele Gumede
cc: Academic Leader Research: Prof Josue Mbonigaba
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I dedicate this thesis to:

I would like to thank God for the successful completion of this dissertation.

My heartfelt and sincere thanks go to my family and friends who supported me through this journey. My parents Prayers (Babo and Khishiwe Makhathini) gave me strength to complete this dissertation. My sister Nokuthula Makhathini your assistance of talking sense at all times is acknowledged. My brother Thamsanqa Makhathini for always asking me when am I finishing my masters that was super primary support.

I dedicate this research to my late God sent friend Mr Dominic Stephen Brown Gondwe I have never seen love, care and commitment that you furnished me with during my studies. From the time you taught me how to write an email, to teaching me about God. You were angel in earth and surely in heaven too.

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Nomathemba Lucia Makhathini

ABSTRACT

The primary goal of this research was to assess the media perspective on container terminal turnaround time of the Port of Durban. Furthermore, it sought to assess how the Port of Durban conforms with media perspectives on similar economically-related ports and leading global ports in terms of productivity.

The study adopted a qualitative research paradigm employing secondary source data. The information data for the research was drawn from 76 online news articles. The study sought to describe the concept of container terminal turnaround time within the selected seaports. The articles used in the study ranged from 2009 to 2019 making a total of 76 articles. The study enabled the researcher to track how the media portrayed the turnaround performance of these seaports over the years. The study also looked at measures put in place in these container terminals to reduce turnaround time and to promote productivity over the years. The study adopted a thematic analysis (TA) approach to determine the key indicators, factors or features that described the concepts of container terminal turnaround time (productivity) as described by the print media.

Findings from the study revealed that container terminals are becoming increasingly inclined towards the use of smart solutions that could help to optimise turnaround time, propagate performance and decrease shipping costs – all without requiring substantial infrastructure and equipment expenditures. It was further determined that container terminal turnaround time Performance cannot be judged just on the basis of a single value or measure. The study concluded that Before South Africa's largest freight gateway is completely operational at an international turnaround time standard, there is still a long way to go.

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ACRONYMS

BRICS -Brazil, Russia, India, China and South Africa
DCT - Durban Container Terminal
GDP - Gross Domestic Profit
KPIs - Key Performance Indicators
NPA - National Port Authority
SADC - Southern African Development Communities
SAMSA - The South African Maritime Safety Authority TEU
- Twenty-Foot Equivalent Unit
TNPA - Transnet National Port Authority
TPT -Transnet Port Terminal
UNCTAD - United Nations Conference on Trade and Development
WHO -World Health Organization
DEA-CCR -Data Envelopment Analysis named after Charnes, Cooper and Rhodes
DEA- BCC -Data Envelopment Analysis named after Banker, Charnes and Cooper

MEANINGS/Definitions

1. Media Perspective- Online news articles about container terminal port

2. Turnaround time- "is the amount of time taken to complete a process or fulfil a request"

3. Port: "defines a port as a maritime intermodal interface, it is an area where there are facilities for berthing or anchoring ships and where there is equipment for the transfer of goods from ship to shore or vice versa" Hart (2019, p.11).

4. Containers: Containers are huge cannister/packs that are utilised to carry products from one location to the next. Its usage is intended for simplifying the transportation of products with no need for intermediary reloading (Huynh & Walton, 2005).

5. Container Terminal: "an area designated for stowage of cargo in containers, usuallyaccessible by truck, railroad, and marine transportation, where containers are picked up, dropped off, maintained, and housed" (Sirimanne *et al*., 2019, p.12)

6. Turnaround Time: The time period between when the ship arrives at the port and when it

departs from the port (Comtois & Slack, 2019).

7. Transit container: A container on its way to a movement condition (Huynh & Walton, 2005).

8. Dwell time: defined “dwell time as the average time a container remains stacked on the terminal and during which it waits for some activity to occur” (Hart, 2019, p.12).

9. Port logistics: “Port logistics is the part of the supply chain process that plans, implements, and controls the efficient and effective flow and storage of goods, services and related information from point of origin to point of consumption in order to meet customers’ requirements in a port and business environment.” (Li, 2014, p.1)

10. Vessel Turnaround Time: “turnaround time is the gross time spent by a vessel in a port, that is the time difference between the date and hour when a ship leaves the port limits and the date measures the precise time in hours and minutes which the ship spent in port.” Robinson 1974 as citied by (Hart, 2019, p.13)

CHAPTER ONE

1.1 Introduction

Through the collection and dissemination of information to society as a means of mass communication, the media has become a dominant actor within the public and a key stakeholder within the socially, culturally, and politically entrapped economic setting (Voinea & Kranenburg, 2017). The media perspective is part of an economic, political, social, and cultural battle, with the concept that hegemonic means have preponderant power or influenceover others (Voinea & Kranenburg, 2017). The fact that the media allows knowledge and newsto be widely communicated is one of the advantages of the media perspective (Molale, 2014). This data includes everything from the fundamentals, such as e.g., international trade and movement of goods from one sphere of the world to the next, connecting the globe to one (Voinea & Kranenburg, 2017). It would be implausible challenge to keep people informed about international events if the media (radio, newspapers, television, websites and social media) did not exist (Moyo, 2019).

Different stakeholders and social classes strive for power and try to enforce their agenda, interest and ideas on society as a whole (Deephouse, 2000). Industries, for instance, maritime, Struggle for social supremacy with other groups via distributing images through the media (Williams *et al*, 2008). Given their reliance on the media's responsibility, credibility and answerability, corporations execute either premeditated or firefighting activities, according to organizational response literature and stakeholder management. The advantage of a media perspective is ease-of-reach, interactivity of these channels and speed, which together allow organisations to issue press releases to specific stakeholders that are more personal, direct, and authentic (Saxton & Waters, 2014).

This study aims to assess the media perspective (**Online news articles about container terminal port**) on container terminal turnaround time and to provide recommendations to the Port of Durban by focusing on the defining measure of output using available literature and by comparing this with other media perspectives of successful container terminals worldwide with the objective of making recommendations for improvement. This chapter attempts to introduce this study by contextualising media perspective of container terminal turnaround time that could provide lessons for the port of Durban to consider under the following headings: The study's context; the problem statement, which guides the development of objectives and questions, as well as the methodology and importance of the current research topic.

1.2 Study Background

Although managers are not the only voice in the press, or who hold a particular view, they do have a privileged voice during a crisis (Gregory & Ronan, 2015). The main goal is to enable a seamless information interchange in order to expedite transportation operations, improve safety, reduce environmental impact and boost competitiveness (Babica *et al*, 2019). The media perspective has become a significant actor within the public setting and a crucial stakeholder within the different entangled corporate setting through gathering and disseminating information to the society by online news, newspapers and broadcasting as a system of communicating in mass.

The media perspective has a tremendous influence on information exchanges and irregularities between businesses and the public. It has become a crucial stakeholder for businesses since it communicates to other stakeholders a social signal that is suffering uncertainty because of irregular information (Deephouse, 2000). This is exposed by generating contingencies in an agenda setting, furthermore, it manipulates the importance of the topic and the pressures exerted by numerousstakeholders (Gamson *et al*., 1992). Moreover, it has an impact on the social construction of reality in terms of industrial operations (Chen & Meindl, 1991). It depicts public information and attitudes about industry (giving critical external perception data to businesses) and It has an impact on public perception and awareness of businesses (Sinha *et al*., 2012).

The media's point of view correspondingly offers a platform for discussion of what constitutes socially acceptable economic etiquette (Gamson *et al*., 1992). Media viewpoint impacts the firms' reputation and legitimacy by establishing the general insight of industry amongst numerous stakeholder groups and the amount to which the firms comply to the satisfactory domains (Cognitive, normative and regulatory) (Deephouse, 2000). Furthermore, the media has been shown to be a means of gaining a competitive edge, and moreover attaining better results (Greenwood *et al*, 2005). The media's point of view is useful in guiding economic growth and public interest patterns, efficient port management, local development in the port area/region and attracting cargo investment. Assessing the perspective of the media contributesto port success and maintaining a balance of social, economic and environmental principles (Merckx *et al*., 2003).

Ports play an important role in connecting nations to international trade. The maritime sector has traditionally employed a cost-driven approach by leveraging economies of scale in vessel

container transit, but then again to further decrease cost, an influence of time over the vessel wait time in the port to deliver containers remains a cost concern. The cost of cargo transportation rises as a vessel spends more time due to congestion or idle time outside the port waiting for a succeeding berth, which is sometimes referred to as "turnaround time (UNCTAD, 2016). Port managers are always striving for competitiveness and excellent performance. This is only feasible if there is a reliable mechanism method of assessing performance. Steadfastness of methods depends on what is desired to be achieved (Kasozi-mulindwa, 2013).When there is a need for stakeholder decision-making, decisions can be influenced and triggered by different assessments that are considered to be useful to achieve the main goal (Mori, 2010). It is a common practice for media to alert the public/stakeholders of important information that is presented at professional meetings or press conferences (WHO, 2005).

In former times, general cargo ships used to spend weeks in port or many days, but modern container ships just stay a few hours, allowing shipping lines to complete more revenue-generating journeys per vessel each year (Notteboom, 2006). Much of containerization's success is attributed to time economies, especially on how to decrease the amount of time ships spend in port (Slack *et al*., 2018). Despite the fact that ships currently spend less time in port than they do at sea, the vessel time spent will continually impact on cost elements, and lowering terminal expenses is one of the goals of service design for container terminals. Furthermore, delays in ports caused by a strike, congestion, or other disruptions result in carriers bypassing ports or levying congestion fees, which affect the operation of a terminal negatively. Concerns have been voiced regarding the dependability of container shipping schedules, implying that time remains competitive and an operational consideration (Notteboom, 2006; Vernimmen *et al*., 2007). As a result, terminals have been working hard to reduce the vessel stay time while boosting turnaround time by creating numerous decision support systems (Steenken *et al*., 2004).

Port management includes understanding turnaround time as an essential concept, whether it is used against port competition or to assess port productivity against production and utilisation (Valentine & Gray, 2002). Raballand *et al*., (2012, p.3) explains that "the turnaround time of a port is generally measured in terms of speed with which a vessel is despatched, the rate at which cargo is handled and the duration that cargo stays in port prior to shipment or post discharge". The entire time between the arrival ready to offload container cargo and departure of vessels leaving the berth divided by the total number of vessels is what is referred to as turnaround time (Marlow & Paixao, 2003). Brooks & Pallis, (2013), maintain that, for a

productive economic chain and maritime transport system to be achieved, ports must attain an efficient turnaround time status through an efficient cargo-handling operation at the berth. This phenomenon makes turnaround time a key issue for any port management system.

The Port of Durban is one of the most important terminals within the Southern African Development Community (SADC), handling most products shipped into the area and serves as the region's major port and commerce gateway. It forms part of other South African 7 commercial ports (altogether 8) namely: Cape Town, Coega and Saldanha, Richards Bay, East London, Mossel Bay and Port Elizabeth; governed by Transnet National Port Authority (TNPA) (Motau, 2015). According to Sorgenfrei (as citied in Zangwa, 2018, p.4-5), "a hub port must have a faster vessel turnaround time, efficient port services, and reliable connection to other modes of transport and strong feeder networks, to neighbouring ports, reasonable port charges, and adequate water depth. About 60 per cent of imports and exports pass through the port of Durban and it therefore plays a primary role in assisting economic growth in South Africa".

Zangwa (2018, p.5) Stated "EThekwini Municipality (2017), reported that the Durban port and industries related to the port contribute 20 per cent of the city's GDP". Durban generates plus or minus 15 percent of South Africa's GDP, but out of that, through recent developments, advice suggests that Durban Container Terminal (DCT) has lost its title as the busiest African container port to Tanger Med. As a result, it is critical for the port sector to properly be capitalized and maintained to stay relevant and competitive. Furthermore, the expansion of other ports around the world and in neighbouring countries puts the Durban Container Port in jeopardy of competition. Hence, a regular port review of the turnaround time and proficiency is required for the port to assess its relevance and competitiveness in continental commerce and worldwide, as well as to minimize congestion and strive to become the SADC hub (Caschili & Medda, 2012).

Therefore, the importance of analysing the turnaround time of the port has increased as a consequence of the intense competition between neighbouring ports and globally, the increase in containerisation, the development and supply chains of new production distribution-consumption systems as well as fluctuation in the shipping market. For that reason, the study will assess the media perspective on the container terminal turnaround time of the Port of Durban. This research aims to assess the media perspective on the container terminal turnaround time performance to give lessons to port of Durban. Furthermore, the study's

findings are likely to contain recommendations for improving the scale of performance and efficiency of DCT turnaround times, and maximizing the utility of existing port services and superstructure.

1.3 Justification of the Study

The ever-increasing competition in marine transport and trade requires the improvement of container turnaround time (Dowd & Leschine, 1990). Container terminals have demonstrated that they are more productive than multiple-purpose terminals (Liu & Ge, 2018). But the yearly percentage growth in port production of containers is slower than expected by technical advancements anticipated (Liu & Ge, 2018). The fast expansion and an urgent requirement of the container terminal port functioning to deliver service that is quick and effective, and a minimum Container terminal turnaround time, inspired this study. On a worldwide scale, the productivity of South African container terminals is considered unsatisfactory; as a result, South African container terminals continue seeking to improve in order to attain a faster port turnaround plan (Motau, 2015). From 2010 South Africa in the continent has been regarded as the largest economy and the world's largest developing country, China partnered to operate in continental, multilateral and bilateral levels: to-date, these two governments are working hard on the partnership to realize the comprehension strategic partnership that was envisioned (Alden & Wu, 2014). SA–China connections are playing a key role in continental and even global events, with the speed of trade and investment ramping up, as well as greater international collaboration with Beijing through G20 and Brazil, Russia, India, China, South Africa (BRICS) group (Alden & Wu, 2014).

China is politically driven to invest in Africa because it sees the region as a key chance to dramatically increase its global footprint and influence. China has taken an opportunity to offer emerging market in Africa partnering to achieve growth and strong returns over its investment, i.e. the SA-China operation mainly deals with raw material export from South Africa in exchange of Chinese investment. Because raw materials account for 90 per cent of the SA's highest exports to China, the department of trade and industry encourages value-added manufactured exporting items to China, mostly through trade and connection expo (Mhaka & Jeke, 2018).

The port of Shanghai and the Port of Dubai (Jebel Ali Port) were chosen to benchmark against the port of Durban. The Shanghai port is known for being the centre of business, finance and

trade, which is characterised by passenger connections and a convenient network of freight and highly developed infrastructure (Lin & Ai, 2020). It is said to be one of the most important seaports in the globe and has a great variety of space to accommodate port containers and a quicker turnaround time besides can also accommodate, with the same number of berths, a huge number of port calls. While the port of Dubai (Jebel Ali Port), is recognized for being a gateway centre that facilitates trade across the area and beyond the Middle East, it is listed among the top 10 container ports in the world (Anderson et al., 2008). Because of the depth ofthe harbour and the scale of the port facilities, the port of Jebel Ali has become the most oftenvisited by ships in contrast to Africa, both geography and port changes have emerged as significant considerations (Akhavan, 2017). South Africa is one of Africa's best-connected countries, as is the rest of the continent, hence the introduction of Durban Container Terminal.

This study will therefore assess the media perspective on container terminal turnaround time to give lessons to the Port of Durban through literature and through the use of secondary data.

1.4 Problem statement

The rapidity of communication in the media is a two-edged sword it causes bad comments to spread rapidly at times, making it impossible for the commercial to manage (Lee, 2013). Although the rapidity of the media channels allows businesses to address problems more swiftly and pro-actively, a press statement sent through the media may also escalate much morequickly (Kelly-Holmes & Milani, 2011).

Media perspective has the characteristic of ending quickly, but it can linger in media channels for stakeholders to retrieve especially in the maritime industry in South Africa as it has projects such as Operation Phakisa, which is a long-term investment of public/government spending project (Kwet, 2017). Another hindrance is that an organisation/industry can manage its own media material, but not the comments, interpretations, or sharing of that content by stakeholders (Jeffery, 2009). Despite the fact that managers are not the only voice in press releases or in sharing views via the media, but they do have the privileged voice during a pressconference or release of information (Dolan *et al*., 2016). Not only are organisational managers as communicators perceived have less power on the media's point of view, yet the facts they give might be misunderstood, and the public or witnesses to events can contest the perspectiveand voice their own perspectives (Barker & Gower, 2010). Despite these issues, the media perspective can’t be muzzled in a free and open society.

The Port of Durban's involvement into the worldwide distribution network brands a connection in South Africa's worldwide business. As a result, port efficiency is critical. Because of the success of globalisation and economies of scale, the authorities of the port are under great pressure to remain competitive and increase port efficiency. (Almawsheki & Shah, 2015). According to (TPT) Transnet Port Terminals (2017), the Durban container terminal (DCT) has had inefficiencies in operation, for instance, outages. (Zangwa, 2018). To establish a port's efficiency, performance must be assessed using appropriate indicators such as container terminal turnaround time (Zangwa, 2018). Again, with the key role of facilitatinghinterland trade, characterised by its topographic location, the Port of Durban experiences lessthan optimal use and congestion of available infrastructure (Meyiwa & Chasomeris, 2016). Asa result, there is a persistent challenge of low productivity and inefficiency, compared to othersuccessful container terminals (Gumede & Chasomeris, 2012). Although it is reputed to be themost successful, the largest terminal in Africa, its major criticism stems from its slowness in container movements within an hour, which leads to low productivity as compared with other ports internationally because Port of Durban has a higher turnaround time (Scholtz, 2017). The activity analysis provides a strong management tool for benchmarking containers and planning in ports. It is critical to the port's competitiveness and existence (Clark, Dollar, & Micco, 2004).

The glimpse trends in turnaround time in the Port of Durban

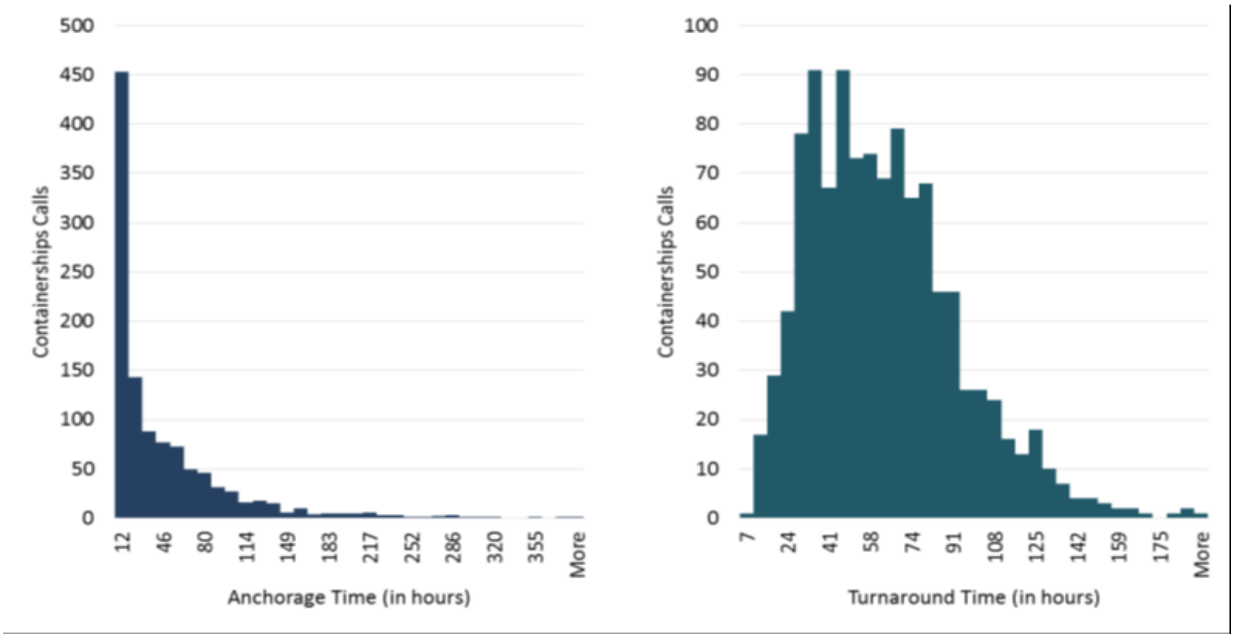

Figure 1.1 Turnaround time and Anchorage time in the port of Durban showing calls of containership around February 2012 up to April 2013, *source:* (TNPA, 2014)

This information was gathered and presented by TNPA, and it contains all containerships from January 2012 to April 2013 that called the port of Durban (a total of 1096 ships). There was an elimination of ships that called over one berth (a "switch") within the port. The difference between the time a ship reaches the port's boundaries and the time the same ship reaches the breakwater was used to compute anchorage time (port channel entrance). Ships that transit from the port's boundaries to the breakwater without anchoring are also included. The time difference between when a ship entered the port at the breakwater and when it departed the port at the breakwater was used to determine the turnaround time.

Table 1.1 Shows an average vessel and port turnaround time in the port of Durban *source:* (Urban-Econ (PTY) Ltd, 2012).

Indicator	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Target
Vessel Turnaround Time	53.0	51.2	54.1	61.8	72.8	70.7	64.1	52.5	55.1	40 Hours
Port Turnaround Time	165.4	131.8	141.1	128.2	183.7	194.3	137.8	87.0	104.1	40 Hours

Table 1.1 is showing April to December 2014; the following table shows the average vessel and port turnaround time at pier 2. It also displays the key performance indicator for each of these items. A container vessel stopping at Pier 2 has an average turnaround time of 60 hours (2 and a half days), while the port has an average turnaround time of 141 hours (just less than 6 days). However, 40 hours is the important performance indicator for each of these (less than 2 days). Port efficiency is critical for the South African economy and while vessel sizes and quantities rise, efficiency will decide Durban Port's ability to remain competitive (Urban-Econ (PTY) Ltd, 2012).

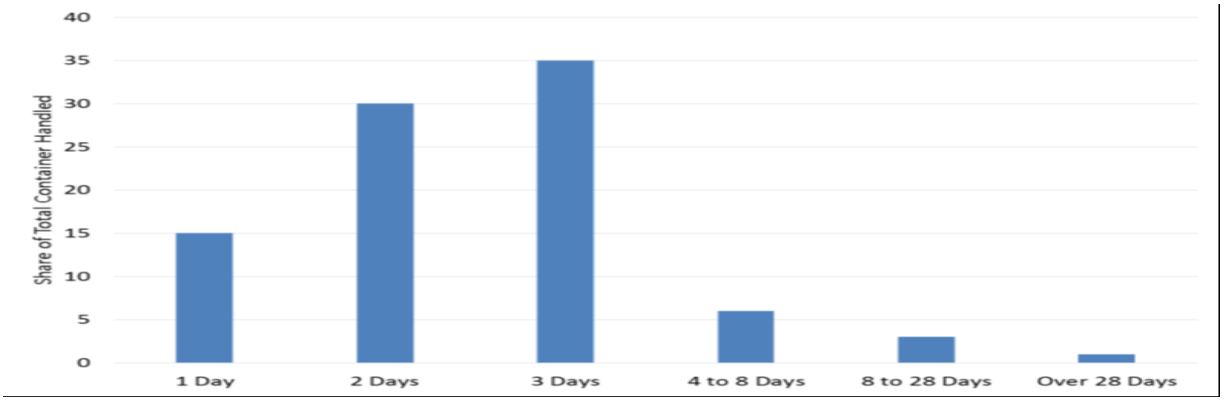

Figure 1.2 frequency of container Cargo dwell time at the port of Durban in May 2011, *Source*: (Raballand *et al*, 2012)

The effectiveness of terminal operations is also hampered by labour difficulties. In the case of Durban, performance incentives might have unintended consequences, especially when productivity premiums are offered. Rising wind velocities, for example, tend to reduce the number of crane container moves. Crane operators would halt operations at certain wind speeds that do not jeopardize safety, because productivity would decrease to a point where productivity bonuses would be jeopardized, rather than tolerating lower productivity, according to industry officials. Due to Durban's dual position as a gateway and a transhipment centre, the terminal's dwell time varies depending on the kind of flow. In Sub-Saharan Africa, where most ports have almost twice as much stay time, the average dwell time for all container movements is roughly 3.9 days, making it the most efficient. This is also connected to the fact that the free transhipment stay period is set at seven days rather than three for imports and five for exports. This reflects transhipment activities, which require containers to wait for longer periods of time at the transhipment hub before being loaded onto a connected ship. This is a common misunderstanding. Approximately 80% of containers stay at the port's terminals for little more than three days.

Turnaround time in the industry of port involves the ability of container terminals to provide efficient services and capability. This research is driven by the fast growth of port container terminals to provide effective and efficient services as well as high port productivity, with the goal of attaining optimal port performance (Mokhtar & Shah, 2006). This calls for a study in the assessing of the media perspective on the container terminal turnaround time to guide and recommend towards an effective and unified movement through the supply chain that involves managers' interventions. Transportation network operations and port activities are inextricably intertwined, since the good port's performance is tied to its good/bad media perspective. (Wilson *et al*., 2015). Therefore, there is a need to assess whether or not, there are significant interruptions in cargo clearance, resulting in congestion at the Port of Durban, might become a major source of worry for all port users. This research is significant because the port is responsible for all aspects of the supply chain and logistics for all port users; including prospective port users, port users and freight forwarders who are informers.

Assessing media perspective helps to keep a balance among environmental economic, and social values and to determine port success (Merckx *et al*., 2003). However, the cause of higher turnaround time at the Durban container terminal has not been assessed. This study is therefore,

geared towards assessing the media perspective on this container terminal's turnaround time to give guidance to the Port of Durban by focusing on performance indicators as measures of output using available literature in comparison with other successful container terminals worldwide namely the Port of Shanghai and the Port of Dubai. Hence, the study will have associated questions regarding 'what' to assess, 'how' to assess and 'how' to improve container terminal turnaround time through media perspective assessment.

1.5 Aim of study

Research aims to assess the media perspective on container terminal turnaround time to give guidance to the Port of Durban.

1.6 Research Objectives

1. To determine the theory that underlines media perspective on container terminal turnaround time measures to be applied to the Port of Durban;

2. To understand the key points raised by media perspective on the Port of Durban; and

3. To explore the practicability of the Port of Durban implementing suggestions for improvements gleaned from the example of other selected global ports.

1.7 Research Questions

1. What is the theory to be drawn that underlines the media perspective on container terminal turnaround time measures to be applied to the Port of Durban?

2. What are the key points raised by the media perspectives on the Port of Durban?

3.What are lessons Port of Durban can learn from other selected global ports?

1.8 Research Methodology

The study used a qualitative research approach. This research approach was chosen because it enhances comprehension and interpretation of meaning, as well as of the measure's fundamental turnaround time as expressed in the media perspective. The study adopted the critical assessing theory as a paradigmatic philosophical base for exploring and understanding the different turnaround time measures that impact on ports' overall productivity. `

Consequently, because this study employed a qualitative approach, the data for is obtained using a direct search engine of online news articles (Media Perspective) on the three selected ports used in this study. The data obtained using an algorithm that was specifically geared towards the online news reporting on the Port's turnaround time (productivity) and excellence. The reason for using online news articles as the source of data for this study, is because online news articles are mostly a direct report of interviews conducted with individuals by online news reporters. The data for this study related to three (3) ports namely: Port of Shanghai, Port of Dubai (also recognized as Jebel Ali Port); and Port of Durban.

The study used a non-probability purposive sampling strategy for identifying and selecting information-rich examples and to choose the ports linked to the phenomena of this assessment study. This research study used subgroups of interest (Ports of Durban, Dubai, and Shanghai) to facilitate comparison and to understand the different measures of turnaround time in these ports.

The study employed a Thematic Analysis methodology to analyse the collected data and to understand the conditions (measures) behind ports overall turnaround time. This will enable the study to identify the key indicators, features or factors describing the concepts of turnaroundtime strategy as designated by the media online.

1.9 Chapter's Outline

This dissertation is outlined as follows:

Chapter 1: This part introduces the subject of the study, the study's context that includes cases relevant and topical issues relating to the Durban container terminal, the purpose and objective, questions, the implication and justification of the study.

Chapter 2: The chapter provides a concise survey of some of the current relevant theoretical and empirical research of literature that surrounds container terminal turnaround time.

Chapter 3: This portion of the study develops a comprehensive research plan that acts as the study's template for data collecting, data processing, and data presentation.

Chapter 4: This chapter is the interpretation and data analysis include the report on the analysed data, as well as the data interpretation.

Chapter 5: This chapter presents a discussion drawn as concluding a base on the study's results and makes suggestions based on the study's findings.

1.10 Summary of chapter one

Through a brief history, this introductory chapter provided the groundwork for the notion of the port sector in South Africa. A background of research was brought forth to establish the necessity for study into the issue of the Durban container terminal in South Africa and its performance and productivity measures, Thereafter, the problem statement was outlined, along with research aims and objectives, as well as the study's rationale. The first chapter closed with a synopsis of the chapters that followed. The next chapter provides a review of the relevant literature.

CHAPTER TWO: LITERARURE REVIEW

2.1 Introduction

The chapter highlights the theory that underlies media perspective on container terminal turnaround times and provides suggested improvements to the Port of Durban through evaluating productivity measures (performance). The literature review further gives an overview of the Port of Durban container terminal and it reveals key limitations that need addressing so as to advance the standard of performance and productivity of the container terminal by assessing the constraints that hinder the port's performance. The literature should assist in providing a clear scholarly overview and synthesis of the issues, trends, and concepts surrounding the research topic. As result study objective and question, one will be tackled in this section which is "1. To determine the theory that underlines media perspective on container terminal turnaround time measures to be applied to the Port of Durban; and 1. What is the theory to be drawn that underlines the media perspective on container terminal turnaround time measures to be applied to the Port of Durban?"

2.2 Productivity Measures

According to the (DCT) *Durban Container Terminal* (2017), DCT is known to be one among the largest and busiest container terminals in the continent. The DCT handles approximately 2.7 million TEUs and 70 per cent of the SA's containers which generates about 60 per cent of the SA's revenue (*Port of Durban*, 2017). As a thriving container terminal, a productivity analysis must be done regularly by measuring the current productivity of the container terminal so that it becomes clear how much progress has been made in achieving goals and how much improvement is still needed. Begin by collecting and analysing information, according to the relevant measurements use of assessing the terminal performance. This involves enhancing productivity and efficiency at today's container terminals by increasing the automation level ("defined as the sharing between the human and machines with different degrees of human involvement. Level of automation is a continuum from manual to fully automatic operations" (Parasuraman et al. 2000)) of a terminal with products that automate a single portion of the procedure or the entire process. Automation advantages include reduced operating costs and enhancing terminal efficiency, safety and security. According to (Woo *et al*., 2018), Container terminal procedures have become more prominent, and it is important for port executives to measure their efficiency. The traditional method used to assess the effectiveness of a container port with a quayside gantry crane that focuses on container movements per hour (Comtois &

Slack, 2019), see figure 2.1 showing movements of containers around terminal yard and the vessel offloading. The study's assessment includes service time, port time, vessel features, waiting time, ship productivity, and labour productivity.

figure 2. 1 container terminal throughput variables, source: (Lu et al., 2015)

2.3 Port Performance Measures

Container terminal performance is assessed from various angles, including operational efficiency, comparative cost, and technical efficiency (Talley, 2009). The cost-effectiveness assessment/evaluation relate to maximising the port's profit. Single and total factor analysis are two other productivity measures that can be used to assess performance (Zangwa, 2018).

2.3.1 Single factor

A single factor is a one input productivity measure that relate to partial input type (Myronenko, 2012). Most ports describe a single factor for the optimum comparison of the proportion of use, however, Zangwa (2018) indicated that this ignores the manufacturing factors of replacement and cooperation. This shows that elevated quay productivity is linked to fleet of ships awaiting /queuing outside the port, causing congestion.

2.3.2 Total factor

Data Envelopment Analysis (DEA) is used in total factor analysis (Kutin *et al.*, 2017). Various statistical models are developed to provide a further accurate grade of multi-port technical

efficiency outcomes by utilizing input and output measurements throughout the twenty-foot equivalent unit (TEUs) (Zangwa, 2018). For each input, the border measures can simultaneously evaluate technical efficiency.

2.4 Container terminal

In the "*Productivity of Marine Terminals" (*1986) the committee described the 'terminal container' as a complicated huge box involving a distinct range component as well as procedures, including ship berths, container transfer cranes between the terminal and container storage yards, entry and exit doors, and several other equipment and administrative subdivisions. Figure 2.1 demonstrates a state-of-the-art container terminal and distinct activities that affect port efficiency. The berthing region deals with the vessel's arrival in the port together with piloting, tug aid conditional on the requirement of the ship and mooring operations.

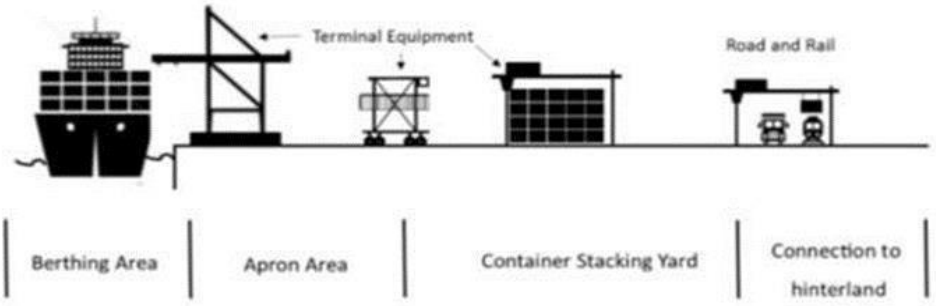

figure 2. 2 State-of-the-Art Container terminal, source: (Moon, 2018)

The apron zone is where cargo handling takes place between the vessel and the terminal. Cargo is temporarily stored in the stacking region of the terminal waiting for further transportation.

Container Terminal performance assessment helps port executives make corrective decisions on measures to enhance its performance, benchmark performance, and satisfy client expectations. Understanding the features and structure of a container terminal is essential in defining the right parameters required to assess the container terminal performance dependent on numerous elements of the port's operation. UNCTAD proposed two main types of container terminal key performance indicators (KPI) in 1976 namely; financial and operational indicators, which over the years are extensively utilized as a point of reference in containerisation across the world of terminals (Marlow & Casaca, 2003). Table 2.1 shows a list of them.

Table 2. 1 Operation and Financial Indicators suggested by 1975 UNCTAD

Financial indicators	Operational indicators
Tonnage worked	Arrival time
Berth occupancy revenue per ton of cargo	Waiting time
Cargo handling revenue per ton of cargo	Service time
Labour expenditure	Turnaround time
Capital equipment expenditure per ton of cargo	Tonnage per ship
Contribution per ton of cargo	Fraction of time berthed ships worke
	Number of gangs employed per ship shift
	Tons per ship hour in port
	Tons per ship hour at berth
	Tons per gang hour
	Fractions per time gang idle

Overview of UNCTAD (1975) recommended performance indicators

In measuring port efficiency, Trujillo (1999) suggest that many other forms of performance indicators are to be investigated. The authors restricted the steps to three broad ranges:

- Visual measures calculating turnaround time for vessels, waiting time for vessels, the occupancy rate for berth and working hours;

- Factor metrics for labour productivity calculation and the capital need for loading and unloading of goods;

- Economic and financial metrics that apply to a ship or the TEUs ' overall surplus and costs in relation to maritime entry, and expenses relating to Gross Recorded Tons (GRT).

However, Trujillo argues that the port process itself is complex and dynamic, requiring multi-faceted methods to assess, evaluate and analyse performance to guarantee high productivity levels. As a result, it is critical to create a standardised method for measuring container terminal output to create a port environment that focuses on operations, which is clear of bureaucracies, and retains great physical and electronic communication among all stakeholders.

Tongzon (1995), in keeping with the aspects of port operations being measured, proposes a range of other wider approaches to measuring port performance.

- Throughput – Port charges, geographical locations and frequency of the ship calls
- Efficiency – berth utilization, storage utilization, container mix, crane efficiencies, cargo exchange, land utilization, gate throughput and the container dwell time.

Tongzon sees the container turnaround time as a key aspect in container terminals, as it's a major competitive challenge for the port, providing some practical reasons for it:

1. Large containers usually stop at numerous ports at multiport itinerary, therefore, retardation will be an issue to next ports in one of the ports at the itinerary (Baird, 2006).

2. Ports have limited allocation options for berths. This could result in a ship waiting for long periods at the anchoring due to slower turnaround times at peak times followed by operational inefficiencies.

Secondly, the waiting at a port allows ships to arrive in the next port late. The delays that occurred will cause further waiting times at the next port and could affect the allocated berthing window or fail. it is critical that the processing time of the shipping and waiting at the ports is minimized to avoid incurring excessive penalty costs, crew cost and possible fine charges, from the point of view of those consumers who want their shipments shipped in time (Tongzon, 2005). There has also been a gradual shift in power from a carrier-centric system of port business to a shipping model, which emphasizes port productivity as a prerequisite (Notteboom, 2004). It is therefore in the ports best interests that ship transit times are shortenedand port reliability increased to ensure that long port vessels do not cancel the economic advantages of large ships.

More literature is continuing to develop comparable structures and measures of success to create reliable benchmarks for productivity evaluation of container terminals. The following methods are developed by Robinson (1999) as citied by (Bichou & Gray, 2004)

- Port efficiency can be calculated with an emphasis on long- and short-term approaches. Short-term calculation is categorized of 4 separate areas, which includes processes of stevedoring, yard operations, intermodal cycles and yard cycles and long-run category measures the container storage time and throughput.

• Port availability refers to the location of the port; berth productivity refers to the degree of freight management at a particular berth length; and gang productivity refers to the rate at which labour maximise its production by using maximum crane productivity.

Quayside activity cannot be the only metric of integrated port efficiency indicators to show the level of performance of a container terminal. Equally important are landside activities in maintaining a smooth system of physically removing freight and transferring it to the next means of transport. In general, in sub-Saharan Africa, port efficiencies have shown an underperformance comparison to comparable ports in Asia. Notteboom narrowed the study to two main basic port productivity performance indicators, namely turnover period and container dwell time, in contribution to Africa Development Bank report on "Port Growth in Africa" (2010). The key indicator of port quality according to Notteboom is the average time of turn-over, which is measured in hours per ship The cycle period at the moment the ship arrives at the port to date of departure is calculated As a matter of fact, the ship turnaround doesn't mean much, since the duration of the stay depends on some factors, which also includes the size and form of freight to be carried and the facilities needed for carrying freight. Turnaround period can also be utilised as a measure of all idle time (the entire interruptions in port) which can be a good indication of the pressure of a port. The port will usually split the overall port time into ‘duty time’ and ‘off time’, so that it could classify both the entire number of interruptions and the delay root causes. The next Notteboom performance measure is the cargo time in port. This is an indicator of performance used by exporting or manufacturing firms when assessing a port's output. Dwell time usually indicate service inefficiency, which is the time spent in port after a ton of cargo has been discharged measures in days.

Sub-optimal activities at ports contributing to productivity limitations have important consequences for the whole supply chain and transport costs which are vital for increasing the competitiveness of the port through shorter dwell time. Throughout Africa, dwelling time in many ports around twenty (20) days is significantly high. SA and Lamu Port from Kenya are 2 ports with periods of 4-to 7 days for most of the shipping lines. These are the two most productive ports (Raballand et al., 2012). Mostly compared to Idle time, dwell time indicates areas in which significant improvements could be made, as opposed to ship-turnaround times in ports. Nevertheless, it does not fulfil the fulfilment of the various procedures before the cargo is transported and Dwell time is mainly just an indicator that port maintenance must be optimized to ensure that port operations are properly streamlined in order to ensure that freight

remains in the terminal yard for shorter periods. Difficulty to cope with dwelling periods resulting in heavy traffic, which contributes to the global competitiveness of a terminal.

In East Asian ports, Notteboom (2006) estimated that the time spent in the port, on average, was 20% of overall shipping, compared to the average time spent in the port, in Europe, of roughly 80%. It is thought that the longer and higher the dwell times at ports appear to be, the more clogged the port looks to be.

2.5 The Port productivity

A variety of theoretical studies have been carried out in improving operations and allocating resources for a container terminal yard. A published report of the Swiss Transport Research Conference in 2007 as citied by (Radimilović & Jovanović, 2006) emphasized the importance of defining comprehensive indicators which can be used in assessing a container terminal's productivity and efficiency and in using key performance indicators (KPIs) to implement a support decision system that optimizes objective functions built on those indicators. There are two studies that established and highlighted key areas of Key Performance Indicators that the terminal authorities and operator simplify as follows:

- Services: these KPIs measure the quality of service provided to customers and are represented by shipping lines and outbound pickups during turnaround periods. In order to take into consideration, the terminal's competitiveness, this category of indicators will need to be established, which requires berth and gate service time.

- Efficiency-oriented: KPIs measure volumes of container traffic handled by port terminal, i.e. annual TEU volume throughput, use of cranes, efficiency of cranes, use of berths, land use, and productivity of storage.

A literature review by Vis (2003) and an analysis by Chen and Hsu (2003) used conventional research methods to optimize single or multiple parts of a container terminal service, increasing port efficiency to boost contemporary port quality. There are six areas of optimization defined and distinguished below:

1. Optimization of quayside transport – by increasing transport time and harmonizing the stacking and unloading of the quay alongside the transport phase (Rashid, 2013);

2. Berth allocation – relates to reducing the total distance of all containers from a vessel to yard during the stacking and unloading.

3. Crane allocation – applies to the ship's bay delivery cranes and the bay operating schedule.

4. Storage space allocation – this is the definition of slot that must be selected with the goal of organizing a container in the yard and therefore decreasing the containers reposition (Bazzazi et al., 2009).

5. Movement and reposition of empty container – these elements pertain to decreasing inefficiencies in container activities by relocating empty containers to offer capacity to satisfy freight demand.

6. Integrated technique (simulation and analytical)–using many dynamically integrated components to enhance a container terminal performance, these can be categorized as simulation approaches (computer modelling) and computational approaches (mathematical simulations or algorithms for optimization).

Specific research explains why the best practice is to use software to improve port efficiency. Schmidmeir (2006) considers engineering as a form of best practice, stating that "over-customisation" and "under-integration" have more of the focus on the container terminal operating system. He outlines the areas of best practice in yard sacking, storage preparation and crane scheduling below:

- Pooling and spreading straddle carriers through several cranes, resulting in expanded use of yard facilities rather than assigning the straddle to a precise crane;
- “Automatic yard stacking control needed to increase yard capacity and significantly reduce container re-shuffling compared to manual stack planning” (Motau, 2015, p.33);
- Automatic storage planning required for manual vessel planning to improve efficiency;
- Optimizing crane scheduling to increase the efficiency of cranes and manpower and increasing ship turnover over manual preparation and interaction.

Other methods for increasing performance can be implemented in a container terminal. The double cycling method is a technique not widely practiced but rather effective. Double cycling is a method that can be used to increase quay crane performance by removing certain crane movements which are empty, thereby letting containers to be simultaneously loaded and

unloaded. Cranes can be used to reduce turnaround times for shipments so that the port quality can be improved, and capacity issues solved. In the academic literature, the definition of double cycling has not emerged, but has been accepted for 19 years in industry (Goodchild, 2005). Daganzo (2007) measured the double cycle operations and for the first time proposed a scheduling approach for loads only inside the confines of a solitary hatch cover, demonstrating that law of Johnson could be used when ordering the stack discharge and loading activities. Researchers provide a framework for evaluating the consequence of double cycle operations in reducing "the number of cycles during ship operations and analysing the effects of dual cycle operations on landside operations. While dual cycling will not automatically eradicate port congestion, it can be easily enforced in tandem with other initiatives and promote traffic before more long-term infrastructure projects come on the line" (Goodchild & Daganzo, 2007, p.15). The literature emphasizes the identification of container port terminals as diverse entities. A container port terminal's most important objective is to aim to maximize its efficiency and reduce the time amount a ship use in a port terminal and also productive landside activities. Achieving this goal would rely on the efficiency of resource allocation and organizing yard cranes, quay cranes, berths, trucks IT, gate control and employees as key resources. Such productivity can be accomplished by effective administration and leadership skills as well as careful planning to monitor the activities of the whole port to ensure traffic costs are prevented.

2.6 Factors Influencing Efficiency

Using the defined port performance indicators, related literature must be used to assess efficiency from many perspectives and many inputs and outputs that are required to analyse port performance. Therefore, the performance evaluation has developed into a full port quality measure, the port productivity assessment differs from input data (Suárez-Alemán *et al.*, 2016). Performance is the proportion of output to inputs, but relative performance is the number of weighted output and inputs (Moon, 2018). In contrast, Moon suggests that prominent comparative performance is the quality of size, functional and distribution.

A comprehensive review of previous studies shows different techniques and strategies for measuring efficiency. The relationship between efficiency and form of port ownership has been recognized by most studies (Tongzon 2005). Findings indicate that the private sector participation increases ports ' operational efficiency; port authorities encourage private terminal investment to increase productivity. Notteboom (2000), however, stated that correlation

between efficiency and port structure isn't clearly defined. Wu et al (2010) used standard DEA models to test efficiency in comparing 77-container terminals worldwide. This indicates that out of the four chosen output (i.e. freight handling capability Facilities, Berths number, and Storage Capacity), the berth number is the critical indicator of most container ports. They then suggested an independent analysis of the effects of each data. Nevertheless, the report stresses the approach with an insufficient empirical analysis of the findings.

Yuen et al (2013) researched how to increase port performance in China by using the Tobit regression and DEA models. Their research measured the number of quay cranes, the maximum length of berths, and total number of berths as inputs to assess the container's efficiency throughput (TEU). The findings revealed that some inter-port competition factors such as low time costs for goods, reliable service, and competitive prices for port services hada negative relationship with productivity growth. The input data used in experiments include width of the berth or the number of berths, yard machinery and quay cranes as the major measurements used to test the efficacy. DEA-CCR and DEA-BCC were used by Zheng and Park (2016) to assess the effectiveness of container port in Korea and China; and only one factor between the total berths and the duration of berths is supported. Some studies used totalfacilities for each terminal that varied greatly based on the current state of facilities in the portsurveyed, thereby stressing the use of reliable data sources.

In their study Ding & Wang, (2015) used different methods (DEA and Tobit regression) to determine the comparative productivity of China small-sized container ports and china medium-sized container ports. The explanatory factors that impact terminal productivity performance were measured using Tobit regression (i.e. government shipping line shareholding, staff composition, recorded assets, terminal operator total number and shipping routes. According to the findings, the total terminal operators have a negative impact on output when used as an explanatory variable. Encouragement of shipping companies to invest in terminal operations increases performance, according to the research. Productivity is the output-to-input ratio often used to measure a port's quality by evaluating how inputs are being used in producing the output and the increase in productivity correspond to an increase in level of efficiency. Due to various amount of inputs and output, Total Factor Productivity technique was developed and used. Some Scholars took productivity of the port as the primary factor that represents port performance (Ding *et al*., 2015).

2.7 South African Ports

Ports in South Africa are constantly changing their design to meet ships ' increasing sizes and customer requirements. Radical advances in freight processing, engineering and labour standards have taken place, the general pattern of inventions and approaches implemented by port managers is therefore important (Geriffi & Korzeniewicz, 1994). The SA Government in 2016 focused on the value of the maritime industry, the acceptance of the 2030 dream of the SA as a known maritime country through the SA Maritime Roadmap and Operation Phakisa (Findlay, 2018). all things considered, the position of the SA on the oldest shipping route provides the benefit of becoming an excellent crossroads for global trade and connections among the Eastern and Western Hemispheres (Operation Phakisa, 2016).

2.7.1 The container port system in South Africa (SA)

The port of South Africa serves as a portal for trading among partners from SA and Southeast Africa and acts as the centre for traffic to and from the other parts of the world. Around 8 ports transport, 98 percent of the exports of SA via the sea (SAMSA, 2013) compared to other countries in Sub-Saharan Africa, SA has a high rate of maritime connectivity, which is partially explained by its high levels of freight generation and attractiveness. SA ports have a key role to play in meeting the country's societal and economic advancement targets. Figure 2.3 shows the location and connectivity of the ports of South Africa in the country. The SA location offers the prospect of becoming the continent's leading transhipment centre with the best links between Asia and the Americas. Transportation through the port of Durban is designed for neighbouring countries in Africa.

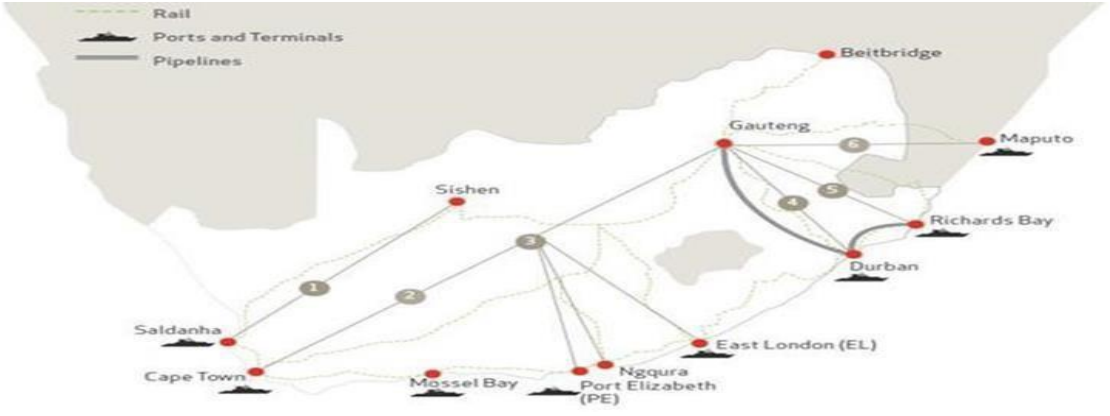

figure 2. 3 South African ports, source: (SAMSA, 2013)

The figure below graphically demonstrates variations in performance of commodities between 2016/2017. The containers are measured in millions of TEUs, millions of tons of bulk and unit

vans. The automobiles treated in 2017 had a slight improvement. The overall performance, however, declined. According to TPT (2017), the total ports report shows container volumes that are below the 2017 target owing to the global economic recession of TEUs 4 395 962 but higher than 2016 (4 366 376 TEUs). In the report, presented low global demand for break-bulk and bulk resources, and a decreasing commodity prices resulting in 4.7 percent adverse-effect on bulk export products and 21 percent far below equated to 2016 for break-bulk. Automotive volumes decreased to 679 792 (2016: 709 891) by 4.2 percent in 2017.

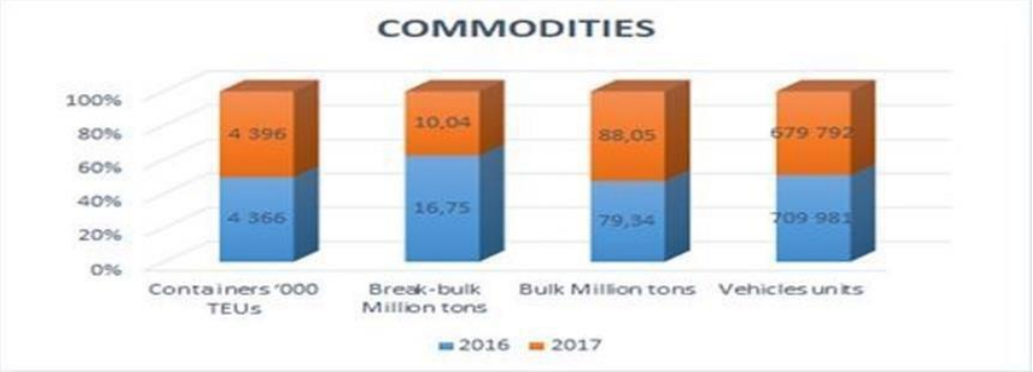

figure 2. 4 2016/17 Commodities (performance), Source: Transnet National Port Authority

The table 2.2 above graphically "illustrates the performance changes in all commodities between 2016 and 2017. The containers are expressed in million TEUs, bulk and break-bulk million tons and vehicles expressed in units" (Zangwa, 2018, P.23). There was a slight improvement in the number of containers handled in 2017 from 4366 000 to 4396 000. However, the overall performance declined.

2.7.2 Management of port

The South Africa Ports are overseen and regulated by Transnet national Port Authority (TNPA) by providing port service in accordance with the Act of 2005 of the National Port. Under lease agreements, a private sector engagement is limited to subsector and vessel repair (SAMSA, 2013). Transnet falls under the department of public enterprise as a stated owned enterprise consisting of five (5) set division namely the national ports authority, the port terminal (which is terminal operation), freight rail, pipelines and engineering (TNPA, 2018). Because TNPA owns the land, private businesses lease port assets for the provision of supplementary marine services. Transnet Port Terminals (TPT), another part of Transnet Limited, has a monopoly in the management of automobiles and leads in the handle of bulk and containers. TNPA provides a restricted range of port services, notably maritime pilotage and towage services as primarily

asset management, on the other side, the TPT deals with international freight operations market.

2.8 The Durban Container Terminal (DCT)

The Durban Container Facility, according to TPT, is Africa's busiest terminal, and is considered among the top ports in the worldwide. Durban functions as a primary port out of other three container terminals gateways of SA that includes Cape town, Nqgura (Transhipment) and Port Elizabeth. The Durban container terminal handles 65 percent of the total container capacity of these ports, which is 7.7 million TEUs (TPT, 2018). Two joint ports (Pier 1 and 2) serve the Durban container terminal. Table 2.3 displays the container terminal services for both Pier 1 and Pier 2. The terminal's maximum cargo size is approximately 3.6 million TEUs with 8 berths.

Table 2. 2 Durban Container Terminal facilities Services

Facilities service	*Pier 1*	*Pier 2*
Draft	*12.5m*	*12.2m*
Capacity	*0.7 TEU*	*2.9 TEU*
Berths	*2*	*6*

Source: http://www.transnet-tpt.net/Ports/Pages/Durban_Container.aspx

However, Durban Container Terminal faces operational challenges, particularly when benchmarked to the international container terminal performance. Container terminal facilities Ship habits, a vessel volume, ship size, and tidal impact are the main factors behind lower performance rates. This, along with smaller capacity storage per acre and lengthy internal motions among the dock and stake yard, creates a challenging situation. DCT serves with pier 1 and 2 terminals, which handle approximately 65 percent of South Africa's cargo and serve as a vital link between Johannesburg and its' neighbouring a full potential capacity of approximately 3.4 million TEU potential capacity. Figure 2.5 depicts the present structure of Durban port, as well as an overview of various services, rail and road linkages used in intermodal logistics.

figure 2. 5 Port of Durban Layout, Source: (TNPA, 2017)

2.9 Performance Limiting constraints of Container Terminals

Container terminal efficiency is the maximum TEU number of movements which can be reached annually by the terminal (TEU movements / year) (Scholtz, 2017). According to Cullinane &Wilmsmeier (2011), the key factors to consider when determining the container terminal maximum capacity (i) Berth dimension refers to the physical capacity of berths in terms of TEU movements per year, (ii) Container stacking yard dimension refers to movement in terms of TEU per year generated by the container stacking yard as well as other capacity constraints for example, rail terminal capacity, road terminal size and container crane capacity. Figure 2.5 illustrate examples of aspect to be considered when assessing a container terminal turnaround time (productivity). Terminal actions are split into three sections: (i) the yard, (ii) the gate operations, and (iii) the berths.

2.9.1 Berth Dimensions/operation

Berth operation is the process of a vessel occupying a berth and dimension is the size that a vessel occupies (Kim and Lee, 2006). The section demonstrates the quality or efficiency measurement that a container terminal berth can accommodate physically (Kim and Lee, 2006).

Available considerations such as cranes and crane motions per vessel affect the performance of the berth (Jonker et al, 2019). Figure 2.6 shows the importance of synergy to provide superior products in port containers operation. The diagram of the pipeline shows the activities of the port and how slow or fast performance areas can be identified.

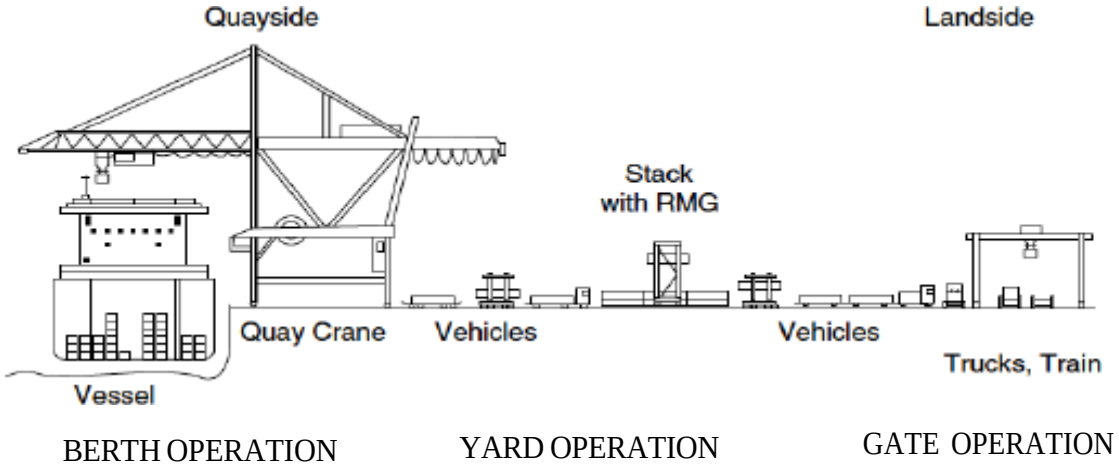

figure 2. 6 An Operation of a container terminal diagram, Source: (Voss et al., 2004)

2.9.2 Yard Dimension

Yard Dimension is the total number of containers moving that can be reached annually by the stacking yard. This should be equivalent to the berth capacity to function at optimum efficiency for a container terminal (Moon, 2018). The amount of TEUs addressed in a given period per square meter of storage space (Schroder, 2014). It also ponders the calculation of the efficiency of the system (the amount of container movements per hour of work).

2.9.3 Gate operation

Gate operation is the process of container leaving the yard or terminal via trucks, train or any other mode of transport (Schroder, 2014). Three common entities such as a driver, a vehicle, and a container, move via port gates (Govender, 2018). Due to the increased scale of the ships, the container volume that goes over the entrances is amplified intensely. Therefore, setting the gate operation is essential in order to reduce the turnaround time of the truck (Motau, 2015).

2.10 Summary

Port of Durban's relevance as a container terminal has been examined in two parts, the first of which is in the form of a backdrop supporting literature review technique used to analyse the media's viewpoint on container terminal turnaround time. According to theory, there are several

elements that influence port performance, and those variables are connected to port performance evaluation, as many writers have highlighted**.** It also acts as the foundation for data consideration in comparable research. The Literature review dealt with material concerning productivity measures which regards turnaround time as an important variable measure. Turnaround time is the main and most crucial factor that can be utilised to assess production of container terminals. There are many other variables that are of importance but the turnaround time is identified as the main time the ship spends in the yard and the cost that is related to it. A gate operation and berth capacity are on many occasions a limitation to operation of container terminals. Fast-tracking gate berth capacity allows a vessel to come and leave faster and allows a gate operation to run smoothly. The literature also presented an overall outline of the SA container port system, with an overview of the Durban container terminal and port administration. Therefore, our first objective and question for this research is attempted, which is “To determine the theory that underlines media perspective on container terminal turnaround time measures to be applied to the Port of Durban; and What is the theory to be drawn that underlines the media perspective on container terminal turnaround time measures to be applied to the Port of Durban?” The Port of Durban has high potential for international port service as it could play a crucial role by being a traffic gate to other southern African countries if it can adapt to technological advancement to accommodate growth. To follow in the next chapter, research methodology outlines the research design and sampling of the study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The methods, procedures, and techniques utilised to do the research are discussed. The chapter continues by addressing the need for the study and outlining research goals and questions. It addresses method of the study which is qualitative methods, under which research can be classified. Furthermore, the collection and reliability of data as well as the analytical approach used is stated and conversed.

This study assesses the media perspective on container terminal turnaround time to provide suggestions to the Port of Durban based on a comparison with the turnaround times of two global-standard container terminals based determined from online news article reports. The terminals selected were: the container terminal of Dubai (Jebel Ali Port) and the container terminal of Shanghai. Here, the study drew on facility capacities, infrastructure, technological advances, quality assurance, and many more aspects to inform the study undertaken within a broader of exploring and understanding under media view. The aim of this study is to consider the measures of media perspective on container terminals turnaround time and to assess how the port of Durban container terminal conforms with some of the global leading container terminals in terms of overall turnaround time. In other words, the study proposed a framework to assess and review the container terminal of the Port of Durban against global leading container terminals and against the rationalisation of their overall performance.

3.2 Research Methodology

A study methodology or research design, is a form of inquiry that provides a thorough guidance to the techniques and processes to be utilized to address study questions (Creswell, 2013). A plan for data gathering and subsequent analysis must be established (Neuman, 2013). The nature of the research topic and the phenomena under assess define the research technique. Suggesting that the research strategy or methodology utilised must be taken as a tool in answering the questions asked the research proposal. This study is geared toward assessing the media perspective on container terminal turnaround time to provide suggestions of improvement to the Port of Durban. This research did not seek to establish a single, definitive fact regarding the subject issue, but rather it seeks to give interpretive review of media perspective on container terminal productivity by assessing the container terminal turnaround time of the port of Durban and steered by the succeeding specific questions:

1. What is the theoretical framework to be drawn that underlines the media perspective on container terminal turnaround time measures to be applied to the Port of Durban?

2. What are the key points raised by the media perspective on the Port of Durban?

3.What are lessons the Port of Durban can learn from other selected global ports?

It is imperative that the methodology chose for the study and a strategy that is aimed at discovering best solutions to the above research questions. A qualitative strategy was deemed plausible as the method for the research as this approach interpretation, Here, qualitative research and qualitative analysis were used to capture the assessment of media perspective on container terminal turnaround time in the Port of Durban against that of global leading ports

Qualitative research is described as being inductive by nature, whereby research usually explores meanings and insights into the subject matter (Mohajan, 2018). According to Punch (2013, as citied from, Mohajan, 2018, p.2), "a qualitative research approach is a type of social science research that collects and analyses non-numerical data that seeks to interpret meaning from the collated data to unravel aspects of social life through the study's targeted populations or places". This type of study approach is said to be a multi-method, with an interpretative and naturalistic approach to the topic area (Miller et al., 2018; Gentles et al., 2015; Denzin & Lincoln, 2005; Hill et al., 1999). Here, the many-sided complexion of the qualitative research approach allows a study to create a comprehensive picture of the phenomena. Thus, a qualitative study aims to explore or analyse local knowledge and understanding of the phenomena or program, and also people's experiences, meanings, and connections, furthermore look at social processes and besides contextual elements that influence the topic under research. Denzin & Lincoln (2005) listed the following principles as the basis of the qualitativestudy approach:

- Qualitative research is holistic in the sense that it considers the whole picture before attempting to comprehend it.
- It investigates or studies the relationships that exist within a system.
- It's focuses on comprehending a specific social setting, rather than making predictions around the given setting;
- It's a time-consuming analysis, as it necessitates continual data examination;

- In a qualitative study design, research is required to convert or be part of the research instrument which usually incorporates the descriptive researcher's own prejudices and ideological preferences; and
- A qualitative study approach is responsive to ethical concerns by incorporating informed consent decisions.

"Therefore, in a qualitative research approach, the objective is exploratory and descriptive instead of explanatory" (Mohajan, 2018, p.23), this means there is no proving of point rather findings, discovering, learning and determining of issues and experiences. "The descriptive component of a qualitative research approach allows the researcher to provide a description of the experiences of the participants, which will either support or disagree with the theoretical assumptions on which the study is built" (Mohajan, 2018, p.23) this will be portrayal of events or partaker experience over the issues or circumstances, generally they do not confirm to theory. While the majority of research is quantitative other forms of data cannot be reduced toquantities for examination. In many situations, language provides a more effective and sensitive means of communicating findings (Bless et al., 2015). Therefore, a qualitative designis proposed as a versatile inductive reasoning approach for this research (Creswell, 2013). This is a study methodology that aims on understanding the phenomenon of the study by examiningon different meanings that individuals attach to diverse human and social issues (problems) (Basias & Pollalis, 2018). "As a result, the descriptive nature of this type of research approachenables the reader to understand the meaning attached to the experience, the distinct nature of the problem and the impact of the problem" (Camic et al., 2003, p.56).

This study aimed to explore different productivity measures of container terminals without presenting the results as definitive, but as ways of determining alternative approaches to assessing a container terminal turnaround time. The study used a non-probability purposive sampling strategy for identifying and selecting information-rich examples and to choose the ports linked to the phenomena of this assessment study. This research study used subgroups of interest (Ports of Durban, Dubai, and Shanghai) to facilitate comparison and to understand the different measures of turnaround time in these ports. A thematic analysis (TA) was used to identify the different measures regarding ports' overall container productivity focusing particularly on container terminal turnaround time. Numerous hours spent analysing the collated data ensuring that the results are a true reflection of the way in which the online media reports construct meaning in terms of container terminal turnaround time measurements. "Within the classical understanding of qualitative research, Interviewing, participant

observation, and the use of personal documents are the three broad categories of data collection" (Mouton & Marais, 1988 as citied by Du Plesis, 2004, p.1). The main source of datacollection in this study was online newspaper reporting on three different ports, implying that this study used secondary data to analyse the findings presented in chapter four (4) of this research study.

The current research was based on a critical theory because it attempted to provide fresh insight and purpose to ports' container terminal turnaround time. As mentioned in the early chapter of this research, most studies concerning container terminal turnaround measures focus on the port cargo-handling capacity; the duration of shipments transacted; and the quality of service to inland transportation at the port as a means of measuring overall container terminalproductivity. Only a little amount of study has been done on topics like technological advances in the appropriate measurement of turn-around time, smart ports, port governance, the voyage and vessel efficiency, and time efficiency as a means of assessing container terminal turnaround time (measuring overall productivity). Increasingly, theorists have examined the used of critical theory paradigm in several fields as a research approach to guide knowledge development in various fields. As a result, this study used a critical theory as the philosophical basis for exploring and understanding different ways to assess container terminal turnaround time. Central to this position is the argument that critical theory can provide the integrative framework for development of empirical knowledge that can cultivate container terminal overall performance. Critical theory is therefore described as a research tradition that uses a critical metatheoretical perspective as its point of departure about the production and uses of knowledge (Mill et al., 2001). The critical theory paradigm's ontology takes a middle ground between subjectivism and objectivism, acknowledging both the reflexive and subjective components of research (Morrow, 1994). In other words, ontologically, the critical theory argues that an absolute representation of objective reality cannot be achieved. Again, an analysis of the epistemological assumption of critical theory also suggests a position somewhere between the extremes of positivism and anti-positivism. The pragmatic rationality of a theory is connected to its potential efficacy in addressing issues, rather than its foundationalist capacity to support or disagree with a theory - utilizing empiricist approaches, according to the critical theory paradigm (Morrow, 1994). As a result of this exploration, a critical theory provides a framework for potentially understanding and analysing the relationships between different forms of inquiry within specific methodologies and research problems (Müller-Doohm, 2017). In other words, a critical theory provides a framework for

potentially understanding and analysing the relationships between the different forms of container terminal productivity measures of a port's overall performance.

3.3 Data collection procedure

The collected information for this study was obtained by instituting an exploring of online newspaper reports on the three selected container terminals used for this study. The data were obtained using an algorithm that was specifically geared towards exploring online newspaper reports on the container terminal productivity and excellence. This algorithm is expressed as follows: 'Container Terminal of Shanghai productivity*"' 'Container Terminal of Dubai productivity*'; and '*Container Terminal of Durban productivity*'. Thus, the use of this algorithm allowed the researcher to obtain only the online newspaper's articles relevant to this research. This also allows the researcher to determine and understand the different ways that Container Terminals productivity discussed by the print media over the last ten years. The collected data (online newspaper articles) ranged from 2009 to 2019 to capture a decade time of trend –involving a total number of 76 online newspaper articles. The motivation around choice of timeframes is based on when compared to working with an open-ended timetable, the researchers opted to focus on looking at an interval of 10 years to not slide away from the content of time and also to not deviate. This allows the data collected to show links and also differences between years within the formulated following years and yield more exact results and relevant differences. This timeframe allows the study to see trends within succeeding years. The ten-year time frame of 2009–2019 was chosen to avoid long data collection periods and to set a target of data to be collected that is relevant and up-to-date from the perspective of the media. Another reason for using online newspaper articles as the source of data for this study, is because newspaper articles mostly involve a direct report of interviews conducted with individuals by newspaper reporters.In it, the reports usually carry a direct expression of those being interviewed as a way of describing their personal perceptions or views on the topic of interest.

According to the World Shipping Council (WSC), the container terminal of Shanghai is ranked as the number one among the top 50 world container ports, with about 35.29 to 42.01 million TEU from 2014 to 2018 (UNCTAD prosperity for all, 2019). The WSC report also revealed that the nine top world container terminal ports are situated in Asia. To be; precise China, Singapore and South Korea (Wan et al, 2019). Based on the report, the 10^{th} top world container port is situated in the Middle East, that is, the Jebel Ali Port of Dubai, with about 15.25 to 14.95 million TEU from 2014 to 2018 (Wan et al, 2019). None of the African container terminals

made it to 50 top container ports. This is a clear indication that African container terminals are ranked the lowest in terms of productivity and performance. Thus, the WSC report was instrumental in choosing the container terminal for data collection based on their productivity and performance in the global market. The data obtained from two of the 50 top world container ports (Port of Shanghai and Port of Dubai) was used to assess media perspective on container terminal turnaround time compared to the level of Port of Durban.

3.4 Sampling and Sample Size

When it comes to research, there are a variety of sampling methods available even though at most qualitative research focuses on a fairly small sample. This study used a purposive sampling a method for selecting and identifying cases with a lot of information about the phenomenon of this study (Emmel, 2013). Scholars describe purpose sampling as based on research objectives and population characteristics as a result, it is characterised as non-probability sampling (Benoot et al., 2016). This type of sampling techniques requires a researcher to have prior knowledge of the purpose of the study to effectively select and/or approach eligible participants. Although there are several different types of purposeful sampling techniques (Ames et al., 2019), a stratified purposeful sampling approach was used as a method of selecting container terminals for this research. Here, research uses subgroups of interest (container terminals of Durban, Dubai, and Shanghai) to facilitate comparison and to understand the media perspective on container terminal turnaround time to give suggestions for improvement to the Port of Durban. The use of this non-probability sampling technique permits the researcher to obtain rich information on the selected ports to acquire a lot about issues that are crucial to research's purpose. Therefore, the data for this study were collected from three (3) different container terminal, resulting in the examination of 76 online newspaper articles. Below table 3.1 shows a sample presentation of this study sample size. The 76 were chosen based on stratified sampling and purposive sampling, which involved gathering information that was relevant to the study and selecting units from a population using a subjective (i.e., non-random) method. The 76 articles chosen were based on a fast, easy, and inexpensive method of obtaining data.

Table 3. 1: Study sample size

SEA PORTS	NUMBER OF ARTICLES	PERCENTAGE
Port of Shanghai	21	27.63
Port of Dubai (Jebel Ali Port)	33	43.42
Port of Durban	22	28.95
Total	**76**	**100.0**

3.5 Data Analysis

According to Mouton & Marais (1988 as cited by Du Plesis, 2004 p.5) "a data analysis is the process whereby a phenomenon is broken down into its constituent parts for it to be understood better". Within a critical theory model, the paradigm of thematic analysis (TA) set-off standard procedure (Braun & Clarke, 2006). Thus, the study employed a TA method to understand the conditions (measures) behindhand container terminal turnaround time 'media perspective and analyse the collected data. In doing so, this research identified media perspective as the subject matter for assessing the container terminal turnaround time that provided suggestions for improvement to the Port of Durban as a substitute for providing a definitive solution to the issue.

3.5.1 Data Realisation Method

Since the study aimed to assess media perspective on container terminal turnaround time in the Port of Durban, this research set out to understand the different ways' container terminal turnaround time is debated within online media print. The source of data for this study used is secondary qualitative data, which is the use of already existing information**.** The collected data for this research comprised 76 online articles' newspaper that sought to pronounce the idea of container terminal productivity within the selected container terminals. These articles were published between 2009 and 2019 – making a total of 76 articles (refer Table 3.1). Each article was numbered for easy identification during the analysis of the study. This granted the study to track how the media portrayed the performance of these container terminals over the years. It also allowed the researcher to keep track of the measures put in place in these container terminals to promote container terminal productivity over the years. Again, since it was not possible to conduct interviews with members of the container terminal of Shanghai and Jebel Ali container terminal management team, the online print media platforms allowed the study to have access to newspaper excerpts obtained directly from the management teams of these ports as presented in the media. This gave the researcher closer access to the rationale of their operational activities, which allowed the research to determine its impact on the overall container terminal productivity of these ports.

3.5.2 Thematic analysis (TA)

A thematic analysis is described as "a method of identifying, classifying and interpreting patterns of meaning across qualitative data" (Clarke & Braun, 2012, p.57). "This method of

qualitative data analysis was first developed by a physicist and historian of science named Gerald Holton in the 1970s" (Merton, 1975, p. 335). Nevertheless, according to Howitt & Cramer (2008, p.341), Braun & Clarke proposed a sophisticated and systematic approach to TA in 2006, which is widely adopted globally in qualitative research approaches. In it, Clarke & Braun (2014a, p. 6626), "argue that a good thematic analysis does not only describe or summarise key patterns in qualitative data, but it equally goes beyond reporting what is in the data". This suggests that a principled thematic analysis (Clarke & Braun, 2014, p. 283) "involves telling an interpretative story about the data in relation to a research question". Here, by using a thematic analysis method, research reached key indicators of study; factors or features that described the concepts of Container terminal productivity as described in the online media.

3.5.3 The analysis procedure

Upon the collection of data, the analysis procedure opted for was a continuous process, which involves going over the material more than once, by reading the material repeatedly, and each time a higher degree of understanding transpires. Consequently, literature research and data analysis happened concurrently. Thus, although literature research directed the study to focus on specific features related to the phenomena being studied, the process of analysis also informed the relevant literature that required to be examined during the analysis procedure phase. Furthermore, as analysis took course, the researcher continually reviewed and referred to study questions to circumvent doing unnecessary analyses that will not speak to study main objectives. Thus, in three (3) phases the analysis was conducted and completed.

3.5.3.1 Phase 1

The researcher reviewed over the obtained data in phase 1 of the study to become familiar with the data and to gain a sense of the various online media reporting styles. While reading through the online media reporting, in study analysis, it was noted the means in-which the reporters erected the sense of container terminal productivity measures and how it impacted on the overall performance of the container terminal. Each of the online media reports were read many times to guarantee that the research process thoroughly comprehended and recorded the idea constructs. Each online media newspaper was read repeatedly as far as convincing to no new patterns or interpretations emerging from the text. Moreover, the researcher also noted the similarities in phase 1 of the analysis on how the reporters-built concepts and connected meaning to their builds.

3.5.3.2 Phase 2

Common constructions or meanings that emerge from the various online media reporting in the second phase of the analysis are identified and noted. These meanings identified are then dismantled to improve one's understanding of each discussion as portrayed or constructed by the various online newspapers. The research looked for contradictions, similarities, and ambiguities in the text during the deconstruction process. As a result, based on the language used by online newspapers, the researcher identified the research objectives in phase 2 of the analysis process. As a result, following the deconstruction of the discourses, the research was conducted.

3.5.3.3 Phase 3

There was an integration of different constructions after classifying and looking for similarities and differences in how the reporters attached gist to the discourse. As a result, in phase 3, a holistic and comprehensive view was developed of the emerging constructions or discourses. A summary of each finding was conducted in narrative style. In attempting to describe the notion of container terminal productivity throughout the time period, relating the results to the insight of the data collected. For the interpretation and organisation of the collected data, a six-step thematic analysis process was adapted from Braun & Clarke's (2006, p 87-93). Of the 76 newspapers (articles), each was independently subjected to an open coding, which allowed for the close investigation of the collected data each meaning and portrayed discourse– for major themes and specific themes. This procedure assisted in comparing codes, to discuss some of the themes that arose out of online newspaper, and outlines. This procedural entailed identifying specific themes that describe the concept Container terminal productivity within the selected container terminals by "careful reading and re-reading of the data" (Rice & Ezzy, 1999, p.25) obtained from the online print media. A thematic analysis method is employed to bring logic of the data by (Braun & Clarke, 2006, p. 87-93):

- Becoming familiar with data collected at the same time classifying each item of probable interest;
- Assigning preliminary codes to describe the content over the data collected (Specific codes);
- A thoroughly search is conducted over the coded data for thematic patterns; and a review of themes over the 76 Articles;
- Naming and defining main themes and sub-themes; also

- Present the findings gleaned from the information gathered.

3.6 Ethical Considerations

The research study process begins once consent for the study had been given by the Committee of Higher Degrees of the University. After approval, The University's Research Ethics Office provided an ethical authorization letter for the research study. This was to ensure the researcher's commitment and strict adherence to the University's research ethos of confidentiality and anonymity.

3.7 Validity and Reliability

While quantitative research takes pride in the degree to which findings are reliable (consistent over time) and if the study accurately measures validity (what it was designed to test), qualitative research takes delight in the degree to which results are consistent over time (Denzin & Lincoln, 2005), Qualitative research challenges the notion of the necessity for results to be generalizable, arguing that meaning is historically contingent and hence no two individuals can experience the same 'object' in the same way. Thus, "with qualitative research, there is a multiplicity of data and findings can therefore not be generalised across different contexts" (Polit & Beck, 2010, p 1453). Validity in qualitative research correspondingly can be realized in the level to which the researcher deems sufficient detail to allow the reader to construe the context meaning of what is presentable (Smythe, 2012; Mouton & Marais, 1988). "Some scholars argue that the trustworthiness of a qualitative research process can be determined by the extent to which the researcher provides information on the processes through which the end results are met" (Basias & Pollalis, 2018; Koch, 1994). Therefore, "validation is contingent on the transparency with which the data collection and analysis procedures are presented". In other words, "the trustworthiness of a qualitative research study is reliant on the transparency through which the research was conducted". In this study the lookout was always in the processing, for any proof of the data gathered that is suggestive of repetition or irrelevance relative to the research questions. This process helped to decide when to halt or to proceed with the literature review, data collection, and data analysis. In addition, "since qualitative research focuses on understanding the subject matter by ensuring that the analysis reflects the research findings captured, validity in this study was measured by the extent to which the analysis reflects what was said by the online newspapers" (Mohajan, 2018). The study was validated by exploring at

each newspaper read on different ports and discovering different voices in each media presented assuring authenticity. The credibility is maintained of the source is that the media wrote responses/interview that are spoken by port management assuring reliability and credibility of information explored.

3.8 Summary

The chapter presented a description of the study method employed in order to attain study goals. It was achieved in primarily addressing the study methods employed and by justifying the use of the proposed research design. The research sampling, the collected data procedures,analysis data method and ethical implication as well as trustworthiness was touched in short. The next section presents the research findings and discussion.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

The primary goal of this research is to assess the media perspective on container terminal turnaround time to provide suggestions for improvement to the Port of Durban. This study furthers sought to assess how the Port of Durban compares with some of the global leading ports in terms of turnaround time. In other words, this study proposes a framework for benchmarking Port of Durban and some of the global most productive ports and the rationale of their operational activities. Here, two global most productive ports; namely: Port of Shanghai and Jebel Ali Port (Dubai Port) were employed to propose a benchmark framework for assessing media perspective on container terminal turnaround time using productivity measures literature. The rationalisation of their operational activities was employed as a means of harnessing Port of Durban's container turnaround time (Productivity). This chapter will tackle the second objective and question of the research which is "2. To understand the key points raised by media perspective on the Port of Durban; and 2. What are the key points raised by the media perspectives on the Port of Durban? This question is main to address the chapter 2 findings and understanding it topic and looking at port of Durban compared to other chosen ports media perspective certainty.

The analysis was based on the World Shipping Council (WSC) productivity indicators. The WSC productivity indicators' method has the main advantage of allowing for both output expansion and input contraction in discovering productivity changes and relative efficiencies among all global ports (Kutin, 2017). Here, the bird's eye-view rationale is that multi-country ports benchmarking provides a different perspective from the result of benchmarking different ports within a country– It gives different reflections of managerial practices and cultural background (Merk, 2013). As a result, it provides benchmarks for improving the operation of those ports that perform poorly by comparison with others. In it, it also accounts for several valuable managerial insights and their insinuations on productivity outcome. Hence, the study employed a qualitative analysis method to interpret the data – as well as the practical steps employed in the data analysis.

4.2 Findings: Presentations and Discussions

To assess the media perspective on container terminal turnaround time accurately, a TA technique was is to demonstrate the relationships between Key performance Indicators (KPIs)

and their impact on the overall turnaround time. This allowed for an identification of the individual role that each of these KPIs plays in the overall turnaround time on ports. This study's findings are presented in line with study objectives, which are:

1. To determine the theoretical framework that underlines media perspective on container terminal turnaround time measures to be applied to the Port of Durban;

2. To understand the key points raised by media perspective about the Ports of Durban; and

3. To explore the practicability of the Port of Durban implementing suggestions for improvements gleaned from the example of other selected global ports.

4.2.1 Productivity Measures at Port of Durban

Since Key Performance Indicators (KPIs) are measurable values that illustrate how effectually a port or any entity is accomplishing their key objectives in business, this study focuses on determining and articulating the productivity measures that are applied at Port of Durban (Zangwa, 2018). For Port of Durban container terminals, measuring KPIs allows the management team and the various stakeholders to improve operational efficiencies and productivity. Thus, during the data analysis, there are five (5) prominent concept developed from the collated data that sought to explain the ideas of media perspective on container terminal turnaround time to provide suggestions for improvement of the Port of Durban as portrayed in the online newspaper media.

figure 4. 1 Summary of the major themes of productivity performance at Port of Durban as depicted by the online newspaper media (Source: Researcher)

These include improvement in: Port Governance; Truck Visit Time; Technological Operations; Vessel and Voyage Operations; and Other Performance Measures. Therefore, using these KPIs, the researcher evaluated how successful the Port of Durban is at reaching specific targets that promote the overall container terminal turnaround time productivity performance. See **Figure 4.1** above for a detail and concise description of the major themes that emerged from the data.

Therefore, a port can, at least in theory, provide excellent service to vessel operators while still being judged as inadequate by inland transport operators or cargo interests (or vice versa). Referring to figure 4.2, This is an indication that ports' poor productivity performance is not limited to one group of port users but rather, it is contingent on all services offered by the port. Therefore, it is virtually impossible and certainly inappropriate to study port performance measures based only on the traditional measures in isolation of other KPIs measures. However, because of the particular importance of the KPI measures, the findings reported in this study tells a more detailed story of the strong interrelationship that exists between the traditional performance measures and the various KPI measures employed at the Port of Durban as depicted in the print media. Governance and port governance models play a huge role in port overall performance (Vieira et al., 2014; Rezaei et al., 2019). As has rightly been argued by Geiger (2009), the concept of governance has many meanings in the port arena. We see this taking shape in the Port of Durban case as portrayed by the media. Here, Geiger (2009) proposes the following meanings of governance within a port arena that plays a major role in enhancing port performance: 1) in the coordination of actors in the organisation cluster; 2) as aconcept linked to public policies, which can also be diffused with the notion of *government*; and 3) as a desired cooperative standard of behaviour with regards to exchange trade with publicly traded companies.

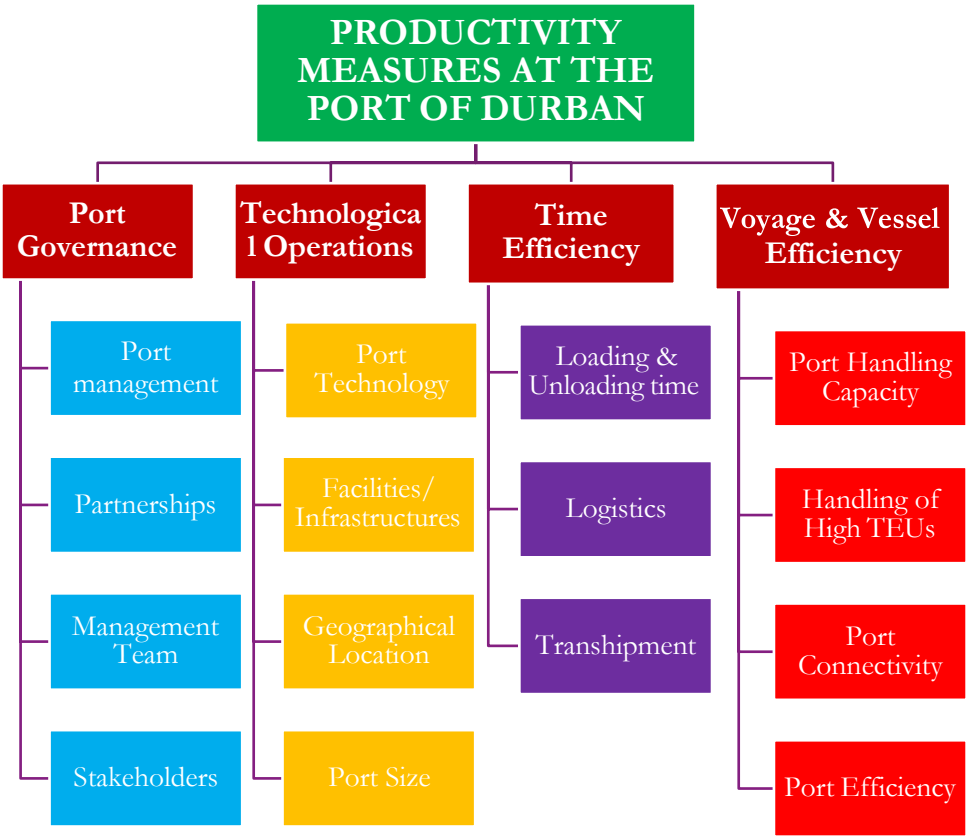

figure 4. 2 Summary of the key themes of productivity measures at Port of Durban and their associated sub-themes as depicted in the print online media (Source: Researcher)

4.2.1.1 Port Governance

The case of the Port of Durban and latter expressed in the case of Jebel Ali Port and Port of Shanghai, it clearly illustrates the relationship between port governance and two possible outcomes: high port performance index or poor port performance index. Therefore, while port governance outcomes in the Port of Durban do not explicitly translate into or influence a high port performance index, but it does clearly result in some improvement as captured by the media. However, based on the collected data, port governance within the Port of Durban context influences the overall port performance negatively. It basically indicates a dual- relational-outcome, which is mainly captured as negative based on the media reports.

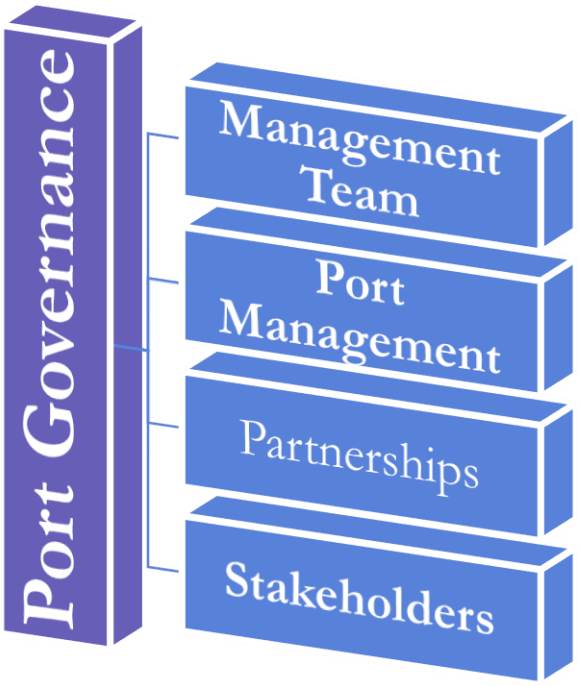

figure 4. 3 Summary of the specific codes of port governance at Port of Durban as depicted by the Medial (Source: Researcher)

Management Team, Port Management and Stakeholders at the Port of Durban

The seaport management team has been highlighted as one of the contributing factors that influences the Port of Durban governance which impacts at length overall port productivity performance at the Port of Durban. Most of the articles explicitly acknowledge the role played by the management team to promote and improve the Port of Durban's productivity performance. These acknowledgements are recorded especially in articles DP57, DP58, DP59, DP60, DP68, and DP73. The articles also report on the cause of action taken by different management teams to promote and improve productivity at Port of Durban. Here, management solutions rendered on investments, inland transportation, construction, facilities and equipment upgrades, business models and port management has been reported to effectively improved port performance over the years at the Port of Durban.

"... In November 2015 we began to address this issue by rolling out Phase 1 of our two-part project to provide the terminals users with a suitable superior and safety constructed road. I am delighted to report that despite recent underground service risks which had identified as being problematic that we are at 47% completion of the overall Road Rehabilitation Project with minimal impact to operations and truck turnaround times. We understand the importance

of investing in our infrastructures to create greater value for our customers by ultimately delivering better services and turnaround times. Our Key Accounts Managers are in constant communication with our clients and stakeholders to update them on the progress being made. We are grateful for their patience and support with the completion of this much-needed road rehabilitation project," said by Transnet Port Terminals' GM: KZN Operations Containers, Brenda Magqwaka (Infrastructures News, 2016).

"*The Port of Durban continues to work with terminal operators and other stakeholders to ensure improvements in terminal productivity levels for quicker ship turnaround times. Operational efficiencies are the focus to drive volume performance*," voiced by Port of Durban Acting Manager, Nokuzola Nkowane (World Maritime News, 2019).

Furthermore, while many articles have reported on the role of the management team toward promoting and improving port performance at Port of Durban, other articles also highlighted on how poor management team at Port of Durban impact negatively on the overall port performance over the years. These arguments are prominently highlighted in articles DP65, DP66, DP72, and DP76. These articles articulated the opinion of several management team members and senior people across the maritime sector on how a poor management team and poor port management slows down performance at Port of Durban. Among the consequence of poor governance at the port is the real possibility of poor port logistics, poor port efficiency, poor port management solutions, poor port technology, poor facilities/infrastructures, and ultimately poor overall Container terminal productivity performance.

"…The Port of Durban, and all South Africa's other ports, are in a crisis. It is a crisis of their own making, and one in which it is not clear whether those in charge of the ports fully understand the gravity of the matter and the consequences of actions taken and not taken that has resulted in this. … Does Transnet really expect the economy to wait that long for a fix? At three million TEUs a year, a surcharge would add almost R22 billion to the cost of moving containers for one year, and that's just for Durban" (Hutson, 2019).

"*At the end of the day all of the issues pertain to management. …The current ship-to-shore rates are a result of a number of things: poor human relations between port authorities and labour, which is not helped by aggressive unions. They can go on a go-slow to get what they want. The average ship-to-shore container rate is now 19 or 20 a day. At a decent overseas*

port you probably get double that for container moves out of the ship onto the ground", stipulated Dave Watts, Maritime Consultant (Jansen, 2019).

"*The next reason that immediately springs to mind is ground handling management. You might have containers just not being picked up quickly and that could be a management issue, or the way the yards have been set out and the way they work in the yard"*, states Dave Watts, Maritime Consultant (Jansen, 2019).

Furthermore, "MSC chairperson Captain Salvatore Sarno, whose company is the biggest single user of the container ports" (Hellenic Shipping News worldwide, 2019) argues that theproblems at Durban terminals relate mainly to a poor management team, poor management andequipment failures. In addition to port governance, Sarno states that another "real reasons behind the drastic drop in productivity relates to the withdrawal of an incentive bonuspreviously paid to workers" (Hellenic Shipping News worldwide, 2019). Thus, Sarno, Besnard,Watts and several other people believe that Transnet's immediate problem is assigning full- time managers in a variety of positions at Transnet, re-motivating its larger work force, promoting good management and improving productivity performance to acceptable standards.

"Yet TPT has a more than adequate fleet of container-handling equipment except that much of this is broken and out of order, often a result of a lack of proper regular maintenance. Some of the lapses include things like not adding oil to machinery parts when necessary. In other cases spares are not ordered timeously, leading to delays in servicing. …there are other factors including the number of gangs (teams) working per crane, which TPT has promised to address but which will take time, as well as issues concerning the maintenance of the equipment", says Sarno (Hutson, 2019).

"*Maintenance of equipment like straddle carriers, rubber-tyred gantries (RTGs), haulers, is just not up to scratch. At container terminal's pier 1 there was an RTG breakdown last week. Then, to crown it all: the access to the port is not fit for purpose and never has been. It's been an issue for literally years and nothing's been done about it. The single road access along Bayhead Road carries traffic to the petroleum storage tanks at the Cutler Complex from where KwaZulu-Natal's diesel is distributed, so there is a massive amount of tankers in and out of the complex. There are other bulk facilities along Bayhead Road also being serviced by trucks*", states Dave Watts (Jansen, 2019).

"… an ongoing go-slow by workers has dragged productivity back to the levels of the 1990s and early 2000s. …*The motivation of your work force is always the most important thing that a leader of a business can manages. Without the proper motivation you will not have productivity. We are in peak season and it is now that Transnet should be maximising productivity. Instead, we have an acting management team at Transnet head office replacing a monthly incentive bonus with no bonuses other than a one-off ex-gratia payment"* (Hutson, 2019).

"*Too many changes in staff, it's almost like a roundabout there with the very high turnover in staff with some appointed to positions they're not really equipped to handle*", states Dave Watts, a Maritime Consultant (Jansen, 2019)

"*Everyone is acting-manager, acting CEO, acting this, acting that. We need competent people to be appointed and given the authority to do their jobs*", says Sarno (Hutson, 2019).

The findings of this study clearly suggest that port governance – if well-structured – can impact positively on the overall port performance. With Government assistance and a credible management team, the Port of Durban stands a better chance of improving container productivity at the Port of Durban. The external transport environment, particularly rail and road, is critical to the physical link between the two systems (Maibach et al., 2007). Furthermore, the findings from this study greatly support the argument of Brooks & Pallis (2008, p. 422) and Beresford et al., (2012, p.81), when they argue that port governance models, processes and performance components impact greatly Container terminal productivity. Similarly, when it comes to the Port of Durban governance model, it suggests a dual outcome that is dependent on the input.

4.2.1.2 Port Technological Operations

Major technological advances in information and construction industries have been a key factor in boosting overall Container terminal productivity in ports. Since ship size does not only determine competitive power in the shipping business, However, it also implies that the arrival of huge ships will become a crucial determinant in defining a port's size. This is a clear indication that ship size has an important implication for both ports and shipping, and ultimately for international logistics (and port connectivity) as a whole. Thus, the emergence of larger container ships has made large ships the primary criteria for port construction, development and ultimately in determining higher productivity. Consequently, the demand for

bigger ports with greater reach for cranes over the years creates a significant impact on shipping and port requirements. Moreover, the need for smart ports and increased demand for cargo handling in ports also plays major roles in port networking and productivity, which is solely dependent on ports' technological operations.

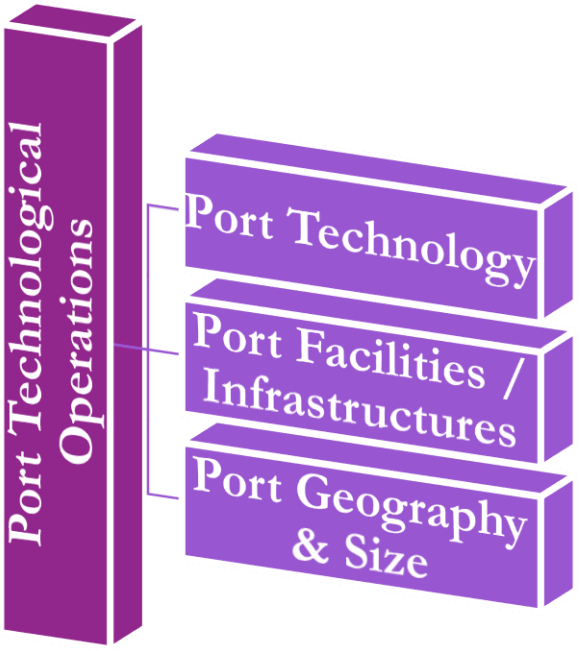

Figure 4.4 Summary of the specific codes of port technological operations at Port of Durban as depicted by the Medial (Source: Researcher)

Port Technology, Port Facilities/Infrastructures, Port Geographical Location and Port Size

Over the past decade, the concept of port technological operations has been glorified and it is now perceived as liberating and redemptive to those ports that appropriately utilise this to its full potential – especially at the Jebel Ali port and Port of Shanghai. "However, the media reporting between 2009 and 2019 highlighted major challenges or difficulties that are associated with poor Container terminal productivity at the Port of Durban" Dyer, 2014, p. 25). The findings from the media reporting not only reveal the consequences of poor technological operations at the Port of Durban, but equally they provide data on port operational technology, port technical services, port facilities/infrastructures, port geographical location, port size and ultimately on the overall Container terminal productivity. The media reporting also revealed that advancement in technological operations (such as upgrading of facilities, improvement in

technical services, port location and size) at the Port of Durban has greatly impacted on the overall port productivity throughout the years. For example, the creative use of information technology at the Port of Durban has created a benefit comparable to that of construction and containerisation. In other words, technological advancements have transformed shipowners and other stakeholders into value-added logistics service providers for the Port. Shipbrokers, businessowners and other stakeholders at the Durban Port demand changes that offer one-stop freight services, a high port handling capacity, storage, inland transportation, insurance, and the efficient arranging of ocean carriages. However, as shippers become more attuned to sophisticated supply chain management, the Port of Durban is faced with both opportunities and challenges to meet the global standard. Consequently, due to poor technological operations reported at the Port of Durban, the facility experienced lower productivity turnouts. These findings are mostly captured in article DP55, DP57, DP58, DP63, DP65, DP66, DP67, DP69, DP70, DP73, DP74 and DP76.

"The recovery plan for Transnet Port Terminals' (TPT) Durban Container Terminal (DCT) Pier 2 was introduced last year. This following delays and downtime linked to the rollout of the Navis SPARCS N4 terminal operating system. This system is in use at most TPT's container terminals, but DCT Pier 2 was the biggest and most complex Terminal to have adopted it. Navis is a web-based portal that provides real-time shipping information to TPT and customers, allowing them to track the movement of containers in port. TPT was also the first port operator in the world to use the multi-site, single-server functionality of the system. Duringdisruptions, TPT worked closely with the Navis software manufacturers to iron out thetechnical issues and the set out to introduce its recovery plan to industry and other stakeholders. This plan aimed to stabilise the terminal's operations from June 2011 and to grow the business thereafter by encouraging improvement in keys areas such as human capital,equipment and planning" (Infrastructures News, 2012).

"To keep DCT at an acceptable operational level, it is necessary for the planned maintenance and safety critical works to take place across the collapsing stacking area and weakening quayside. This will also minimise the risks posed to operating landside equipment and our employees. At the same time all efforts continue to be aimed at improvement in operational efficiencies and to ensure the safety of customers' cargo", says Karl Socikwam, TPT Chief Executive (Tancott, 2014).

"Equipment upgrades have been a key focus, as Transnet's accelerated capital expenditure programme sets out to reduce the impact of breakdowns due to ageing equipment at DCT. …The plan aimed to reduce bottlenecks and boost the terminal's operational performance after delays and technical downtime linked to the Navis rollout in 2011. Thus far, DCT had seen improvements in its container handling rates, berthing times, truck turnaround time and degree of congestion in the container stacking yard…" (Infrastructures News, 2012).

"*Durban Container Terminal has been upgraded to optimize capacity. The additional equipment at the terminal includes 3 quayside cranes and 20 straddle carriers. The upgrade will increase the capacity of the terminal from 1.3 to 1.6 million TEU's per year"* (Cochran, 2018).

"*The new equipment can simultaneously handle four 20-foot containers and lift up to a maximum of 80 tons. They can accommodate vessels with 24 containers stowed across the deck. These capabilities will see a massive jump in productivity with gross crane moves per hour – a key measure of terminal efficiency and how well equipment is used – jumping from the current 26 to 33 GCH over the next three years. …This is a 27 percent improvement",* saysMalusi Gigaba, Minister of SA's public enterprises (JOC Staff, 2013)).

Furthermore, despite the improvements rendered to technological operations at the Port of Durban, many media reports highlighted the challenges encountered at the Port of Durban due to poor technological operations, such as poor port services, poor facilities and infrastructure, poor technology, poor construction, and lack of a smart terminal. These findings echoed a resounding need for further technological improvements at the Port of Durban to ultimately improve port efficiency and to promote sustainability.

"*As ships are forced to wait outside the harbour and stack dates are missed, some shipping lines have been obliged to make last-minute rescheduling plans. Fresh Plaza has been told of a number of vessels that have… decided to bypass Durban and rather make for the newly refurbished Walvis Bay Harbour in Namibia*" (Jansen, 2019).

"We lost eight ship-to-shore cranes, some RTG (rubber-tyre gantry) cranes and some buildings. It was a trauma for the people that were at the port at that time. For three months, Durban's container terminal were operating at between 25% and 50% of their capacity. …Much also needed to be done if TPT was to achieved its goal of becoming one of the top five

terminal operators in the world within five years…", says Nozipho Sithole, TPT Chief Executive (KZN Industrial and Business News, 2018).

4.2.1.3 Time Efficiency

"Port efficiency is a multi-dimensional concept that refers to operational performance, particularly the maximization of the produced output or the production of a given output with limited possible resources. It has expanded to include additional dimensions of port performance" (Pallis & Syriopoulos, 2007, p.235). Container dwelling time and truck visit time are used as key performance indicators for measuring Container terminal productivity time efficiency, this is described as the time a shipping container spends at a terminal (Chung, 1993; Gamassa & Chen, 2017; Dwarakish, 2018; Nur et al., 2018; Comtois & Slack, 2019; Yap & Loh, 2019; Mustafa et al., 2020). These authors also argue that the shorter the container dwelling time and truck visit time, the higher the potential utilisation of the container terminal. Here, assessing time efficiency average in terms of container dwelling time and truck visit time is among the most cost-effective mechanisms to improve container terminal productivity. Furthermore, Comtois & Slack (2019, p.13) add that "even the most marginal reduction in container dwell time can have a major impact on Container terminal productivity– especially at terminals where the availability of stacking area and storage yards are limited". In essence,a reasonable arrangement of berth and quay cranes at terminals holds the potential to improve time efficiency of vessels at berths as well as to improve port overall productivity (Gamassa & Chen, 2017). Herrera Dappe & Suarez-Aleman (2017) further argue that the manner in which a port performs has an impact on time, cost, and efficiency factors of port commerce – which partly determines the level of global competitiveness and ultimately influences port output. Therefore, these findings suggest that there is an interrelationship between port performance and time efficiency – and vice versa.

Loading/Unloading Time, Logistics and Transhipments at the Port of Durban

The study's findings found that though the Port of Durban performance has improved over the years, it is still lacking in terms of time efficiency. The findings from the media reporting suggests an interrelationship between port performance and time efficiency. In addition, it also suggests that the Port of Durban demonstrates poor time efficiency due to poor performance (such as deprived facilities, poor management, deprived technical services, deprived

infrastructure/ equipment). However, these findings also acknowledge at some point, time efficiency improved and, ultimately, container terminal productivity.

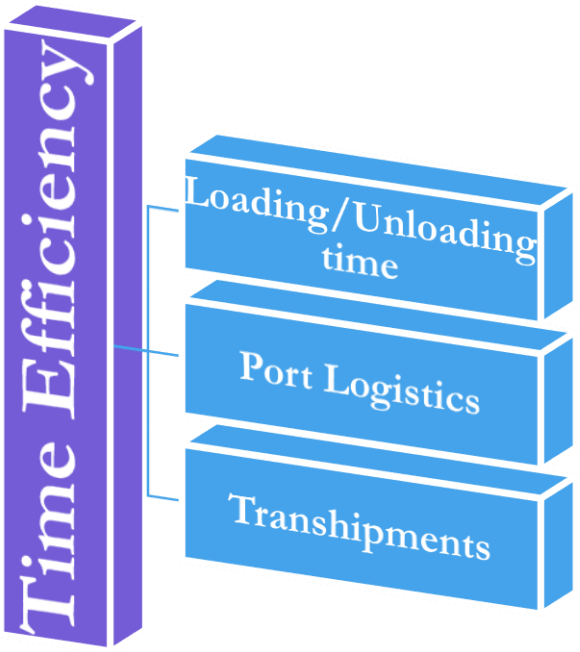

Figure 4. 5 Summary of the specific codes of time efficiency at the Port of Durban as depicted by the Medial (Source: Researcher)

Therefore, coupled with how the Port of Durban performance affects the time, cost, and efficiency of trade, the media reporting highlighted three key indicators (loading/unloading time, port logistics and transhipments) that influences time efficiency at the Port of Durban. These findings are mostly captured in articles DP55, DP57, DP58, DP65, DP66, DP67, DP68, DP71, DP73, and DP76.

"*The port of Durban has come a long way but it is not yet where Transnet Port Terminals (TPT) wants it to be… I'm not sure how many of us remember the congestion. Those were the days when you couldn't drive on Bayhead road because there were trucks all over the place and there were large numbers of vessels at outer anchorage awaiting berths. TPT has since reduced train and truck turnaround times at its container terminals in Durban and Richards Bay. …As a result, sea side congestion had dropped, with vessels that were once spending up to ten days in port now leaving within four hours. Right now, we are bettering on arrival, which is three hours after the vessel arrives", says Nozipho Sithole, TPT Chief Executive; adding that*

"…extremely old equipment used for loading woods chips had seen ships waiting in port for up to ten days when they should have left within four days. The necessary parts had been procured and this equipment was about to be completely refurbished" …In addition, Sithole states that "Whenever we talk to our colleagues, we wait for a train or a truck or a vessel. We want to move from being a pure terminal operator to a facilities operator. We will talk to the shipping line as well as the cargo owner. We will provide the inland facilities. We will provide the value-added services so that we firmly occupy the space of being a logistic service provider" (Le Guern, 2018).

"*Since then, TPT had slashed train and truck turnaround times at its container terminals, both in Durban and Richard Bay. Right now, we are berthing three hours after vessels arrives. …however, it had yet to achieved its truck turnaround target of 35 minutes within terminals*" says Nozipho Sithole, TPT Chief Executive (KZN Industrial and Business News, 2018).

"*Truck drivers are understandably very unhappy at having to wait for up to eight, nine, even ten hours for a single uplift or delivery at the terminal. The ideal target is 90 minute"* (Jansen, 2019).

"*Among the consequences of delays in clearing containerised cargo at the ports is the real possibility of a container surcharge of around $500 (R7315) being levied on every 6m container (TEU) handled by the shipping companies"* (Hutson, 2019).

"There had been definite improvements, especially when it came to ship working hours. …despite the fact that there was considerable improvement, Port of Durban was not yet up to the standard of international ports such as Abidjan", says Alex Hill, part of the national executive of the South African Association of Ship Operators and Agents (Le Guern, 2018).

"However, the challenges around trucking (trucks to transport consignments from the farm and trucks to transport containers) and reefer container equipment delivery is one that is not easily resolved" (Meintjes, 2018).

Therefore, the findings from this study suggests that tracking and monitoring ship turn-around time and truck visit time would allow Operators and teams of port terminals to define key performance indicators affecting the container dwelling time (CDT) and a greaterunderstanding of the lead time that containers should take in occupying a yard. Thus,

monitoring CDT through port logistics and transhipments at the Port of Durban is among significant methods to improving operations which ultimately to promote productivity.

4.2.1.4 Voyage and Vessel Efficiency

Voyage and vessel efficiency measure how fast the port does loads and unloading of containers. It also measures the efficiency of vessel operations on port performance. Thus, assessing voyage and vessel performance is key to unlocking, propagating and improving overall Container terminal productivity because terminal operators expect to finish unloading and loading swiftly so that the ship may proceed to the next port of call and shipping firms want their ships to arrive on time, they want. In addition, some studies revealed that assessing voyage and vessel efficiency are among the key determinants of port performance indicators (Wang & Meng, 2012; Woo & Moon, 2014; Tran & Haasis, 2015; Dulebenets, 2018), Shipping lines always opt to work with the most efficient terminal because time is money. These studies also highlighted that reducing load and unload times, and as well as maximising port efficiency, port handling capacity, port connectivity and handling of high TEUs at ports is paramount to attaining voyage and vessel efficiency, and ultimately achieving port performance (Wang & Meng, 2012; Woo & Moon, 2014; Tran & Haasis, 2015; Dulebenets, 2018).

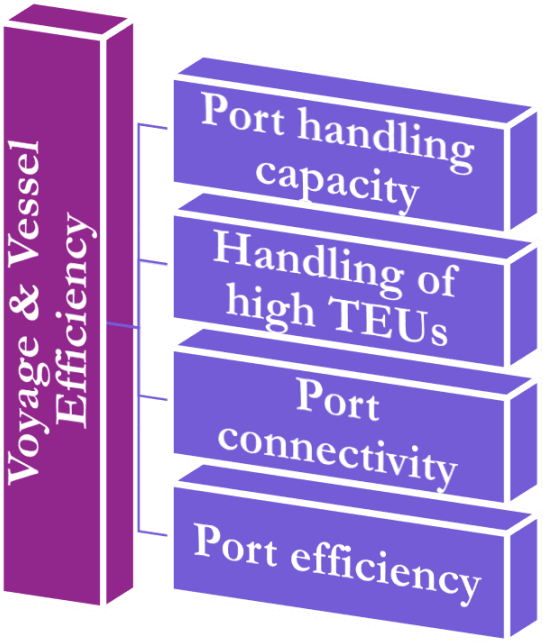

Figure 4. 6 Summary of the specific codes of voyage and vessel efficiency at the Port of Durban as depicted by the Medial (Source: Researcher)

Voyage and vessel efficiency have been highlighted in the media reporting as among the

important performance markers (KPI's) that impact on the Port of Durban's overall productivity. Most of the articles revealed that port efficiency, port handling capacity, port connectivity, and handling of high TEUs are some of the leading factors that are associated with voyage and vessel efficiency, which ultimately impacts on the Port of Durban's total productivity. For example, articles DP74, DP73, DP68, DP67, DP61, DP60, and DP59 suggest that there have been improvements when it comes to container terminal performance over the years at the Port of Durban due to voyage and vessel efficiency based on port efficiency, port handling capacity, port connectivity, and handling of high TEUs. This is a clear indication that the findings from this study support the argument that maximising port efficiency, port handling capacity, port connectivity and handling of high TEUs at ports is paramount to improving voyage and vessel efficiency, and ultimately achieving port performance (Wang & Meng, 2012; Woo & Moon, 2014; Tran & Haasis, 2015; Dulebenets, 2018).

"*The port of Durban continues to work with terminal operators and other stakeholders to ensure improvements in terminal productivity levels for quicker ship turnaround times. Operational efficiencies are the focus to drive volume performance*", says Nokuzola Nkowane, (World Cargo News, 2019).

"*In the port of Durban which handles approximately 65% of the total containerised cargo of South Africa, we have a critical need to provide modern, safe, deeper and longer container berths to accommodate the ever-increasing size of container vessels we are now servicing. This will ensure that our flagship Port of Durban and South Africa as a whole remain competitive within the industry, while catering for the needs of the marine sector*", says Krishna Reddy, Transnet Chief Capital Officer (Frankson, 2018).

"…while DCT Pier 2's container handling had improved beyond pre-Navis launch levels, the challenge was now to build sustainable processes to ensure continue performance and to make DCT competitive at international norms" (Infrastructures News, 2012).

"Container volumes in the port of Durban ended 9.5% higher for the year ending December 2018 at 2 956 670 TEU compared to 2 699 978 TEU handled in 2017… Of this, container imports grew by 10% in 2018 and exports by 17%. These are the highest volumes handle bythe port in the last seven years. …The port also noted growth in its automotive throughput with imports growing by 4% and exports by more than 15% year-on-year excluding transhipments and coastwise cargo. The port of Durban thus handled a total of just over 487 000 units in 2018, which is the highest since 2013 when a throughput of 503 000 units was

recorded" (World Cargo News, 2019).

4.3 Durban Container Terminal productivity performance measures Versus Jebel Ali Port and Port of Shanghai productivity measures

4.3.1 Productivity Summary of Jebel Ali Port and Port of Shanghai

In terms of port governance, time efficiency, voyage and vessel efficiency, Technological operations, volume throughput and ultimately productivity across the benchmarks (Jebel Ali Port and Port of Shanghai) ports, Port of Durban is below standard. Unlike Port of Durban, the online print media portrayed Jebel Ali Port and Port of Shanghai has one of the global leading ports in terms of productivity. For example, with Port of Durban most container traffic recorded at 2.9 million TEUs per annum, the highest traffic recorded with the Port of Shanghai and Jebel Ali Port is 42.02 million and 14.95 million per annum, respectively. Furthermore, according to the World Shipping Council (WSC), the port of Shanghai and the port of Jebel Ali are ranked and listed on the 2018 Top 50 World Container Ports, with the port of Shanghai ranked as number one and the Jebel Ali port Ranked as number ten (WSC, 2019). This is a clear indication that productivity at Port of Durban is way beyond the productivity standard of the benchmarks' ports. This also indicates that the effectiveness of Jebel Ali Port and Port of Shanghai 's key performance indicators measures (such as port governance, time efficiency, voyage and vessel efficiency, Technological operations, volume throughput and financial performance) landed them the well-deserved glory as one of the Top 50 World Container Portsbetween 2014 and 2018 (WSC, 2019). Therefore, in this study I compared some of the media reporting on Port of Durban versus Jebel Ali Port and Port of Shanghai based on Port Governance and Technological Operations while reflecting on how these two KPIs impact on the productivity of these ports.

4.3.2 Port Governance of Port of Durban Versus Jebel Ali Port and Port of Shanghai

As already established in this study, governance and port governance models play a huge role in port overall performance (Vieira et al., 2014; Rezaei et al., 2019). While port governance outcomes in the Port of Durban do not explicitly translate into or influence a high port performance index, port governance within the context of Jebel Ali Port and the Port of Shanghai is recorded by the print media as one of the key performance indicator measures that contributed massively to the overall productivity of Jebel Ali Port and the Port of Shanghai. The findings from the print media described a port management team, port management,

government policies, management solutions, the port work force and port stakeholders of Jebel Ali Port and Port of Shanghai as the key specific factors that promote and propagate the port performance through port governance. In addition, while some print media ascribed the challenges faced at the Port of Durban to its poor governance and port governance models, the print media over the years glorified Jebel Ali Port and Port of Shanghai's governance and port governance models as key indicators of their overall productivity.

Media reporting on *Port Governance* at the Port of Durban.

"…The Port of Durban, and all South Africa's other ports, are in a crisis. It is a crisis of their own making, and one in which it is not clear whether those in charge of the ports fully understand the gravity of the matter and the consequences of actions taken and not taken that has resulted in this. … Does Transnet really expect the economy to wait that long for a fix? At three million TEUs a year, a surcharge would add almost R22 billion to the cost of moving containers for one year, and that's just for Durban" (Terry Hutson, 2019).

"*At the end of the day all of the issues pertain to management. …The current ship-to-shore rates are a result of a number of things: poor human relations between port authorities and labour, which is not helped by aggressive unions. They can go on a go-slow to get what they want. The average ship-to-shore container rate is now 19 or 20 a day. At a decent overseas port you probably get double that for container moves out of the ship onto the ground*", states Dave Watts, Maritime Consultant (Jansen, 2019).

Media reporting on *Port Governance* at Jebel Ali Port and Port of Shanghai.

"*Operational efficiency is a watch word at DP World, UAE Region. We have set out to demonstrate to our customers and the industry that we can consistently provided a high quality of service. The new quay crane record set at our flagship Jebel Ali port is a result of all-round teamwork and we are delighted that our efforts are paying off by directly benefitting our customers. We congratulate the operations team", "says Mohammed Al Muallem, Senior Vice President and Managing Director at DP World, UAE Region. Adding to this, Mohammed Ali*

Ahmed, Chief operating Officer of DP World, UAE Region, said": "Container handling at our terminals is a carefully choreographed operation that integrates our highly skilled manpower with state-of-the-art machines. The new productivity benchmark set by our team while servicing MSC Madeleine is a result of the fundamental business process changes we have been introducing in recent years. We congratulate everyone who has made this possible" (Dubai News Today, 2011).

"*With regard to the management of port operation, SIPG has developed terminal operation process system (TOPS) and 1gangtone e-commerce platform, which can provide integrated information tracking and business processing service to either ports or shipping lines or logistics players*" (Shanghai International Port Group, 2019).

4.3.3 Technological Operations at the Port of Durban Versus Jebel Ali Port and the Port of Shanghai

Today, success stories of the top leading ports in terms of productivity and operations cannot be told without highlighting the impact of technological advancements towards the achievements of those ports. As earlier mentioned in this study, major technological advances in information and construction industries have been a key factor in boosting overall Container terminal productivity in ports. Thus, the study's findings discovered that the Port of Durban was able to boost its productivity due to some of the technological advances made in the port. However, regardless of some of the technological achievements made in terms of port technology, technical services, upgrading facilities/infrastructures and advances in information technology, the media reporting revealed that the Port of Durban still struggles to improve and sustain its productivity substantially due to poor technological operations. A different story is told in the case of Jebel Ali Port and Port of Shanghai. Here, the media reporting suggested that these ports are able to achieve great things due to technological advances such as port technology, technical port services, smart port/terminal technology, quality facilities/infrastructures, port geography and size, and technological advances in information and logistics.

Media reporting on *Technological Operations* at Port of Durban.

"Equipment upgrades have been a key focus, as Transnet's accelerated capital expenditure programme sets out to reduce the impact of breakdowns due to ageing equipment at DCT. …The plan aimed to reduce bottlenecks and boost the terminal's operational performance after

delays and technical downtime linked to the Navis rollout in 2011. Thus far, DCT had seen improvements in its container handling rates, berthing times, truck turnaround time and degree of congestion in the container stacking yard…" (Infrastructures News, 2012).

"*Durban Container Terminal has been upgraded to optimize capacity. The additional equipment at the terminal includes 3 quayside cranes and 20 straddle carriers. The upgrade will increase the capacity of the terminal from 1.3 to 1.6 million TEU's per year"* (Cochran, 2018)).

"We lost eight ship-to-shore cranes, some RTG (rubber-tyre gantry) cranes and some buildings. It was a trauma for the people that were at the port at that time. For three months, Durban's container terminal was operating at between 25% and 50% of their capacity. …Much also needed to be done if TPT was to achieved its goal of becoming one of the top five terminal operators in the world within five years…", says Nozipho Sithole, TPT Chief Executive (KZN Industrial and Business News, 2018.

Media reporting on *Technological Operations* at Jebel Ali Port and Port of Shanghai.

"*Last year, the port launched trial operations in a new, automated container terminal, described as the world's largest unmanned terminal. The new port can handle 4 million TEU; thus, the port of shanghai wants to maintain its leading position among international shipping centers*" (Ship Hub, 2020).

"*Port Services unit is a supplementary segment of SIPG businesses to support the rapid growth of the group's core business. The improvement and expansion of the service functions is geared to enhance the group's overall operational capability, optimize port service, and improve port efficiency. Currently, the port-related services unit includes six main categories, namely, pilotage, tugboat, shipping tally, agency and port information technology service*" (News Room, 2019).

"*…a fully-automated container terminal with an investment of 14 billion yuan started operating at Yangshan Port of Shanghai. Previously, the only global suppliers of port automation solutions were foreign companies. The automated terminal, or the fourth phase of*

the Yangshan port project, is designed to handle a maximum of 6.3 million TEUs (20-foot equivalent units), making it the largest automation port worldwide. Its energy consumption system should result in zero carbon dioxide or other emissions while allowing savings of up to 70 percent." In addition, *"Smart ports are what future ports are going to be. This is a systematic eco-system with the combination of the state-of-art technologies of the internet andinternet of things*", says SIPG Chairman Chen Xuyuan (Wang Ying, 2018)

"*The productivity achievement is a reflection of our unshakeable belief that investing in our people and technology is the best way to deliver service excellence to our customers and support Dubai and the UAE's development,*" states HE Sulayem, Chairman, DP World (Port Strategy, 2015).

"*T3 is set to be the world's most advance maritime terminal, featuring 19 of the largest, most advanced and semi-automated ship to shore (STS) quay cranes and 50 fully automated rail mounted gantry (ARMG) yard cranes, which will be remotely operated from the comfort and safety of a control room*" (Offshore Energy, 2014).

"*The future is already visible at the newest terminal. Terminal 3 has a 1.8-kilometre-long quay length, with an Eagle Eye Monitoring System consisting of hundreds of cameras recording the loading and unloading of containers. …They sit a couple hundred metres away in a pleasantly air-conditioned control room on the third floor of a building at the terminal. The containers move across their computer screens like giant ants. DP World considers the technology has great potential. If the nearby terminal can be controlled from there, why not container throughput in a port that is thousands of kilometres away?*" (Hapag-Lloyd, 2018).

"*Trucks transport most containers from and to the port. Gate 4, one of many in this giant harbour, resembles a big toll gate on a motorway. Dozens of lorry entrances are in rows next to each other. There are trucks at nearly every gate. The automated check-in only takes seconds, an X-ray scanner scans the load. The lorry is registered, and data is confirmed aboutthe company's status as a harbour partner. It receives a transponder, and the driver precise information on where to go. The harbour workers there get message so they can be ready for the lorry when it arrives. Then the clock starts ticking*" (Hapag-Lloyd, 2018).

The findings from this study revealed that port governance, time efficiency, voyageand vessel efficacy, connected technologies and technological operations are ushering ports into the digital era, therefore increasing production and lowering expenses. Therefore, the findings

from this study support the argument that technological advances promote andpropagate port efficiency and productivity growth (Meletiou, 1970; Helmick et al., 1996; De & Ghosh, 2002; Barros et al., 2011; Notteboom & Vitellaro, 2019; Lopez-Bermudez et al., 2019).

4.4 Summary

This chapter has challenged the second objective and question of the research which is “To understand the key points raised by media perspective on the Port of Durban; and What are the key points raised by the media perspectives on the Port of Durban? This question was the main to be addressed in chapter after finding literature in chapter 2 findings and understanding it topic and looking at port of Durban compared to other chosen ports media perspective certainty. Modern ports are without doubt a complicated network encompassing a diverse range of stakeholders, starting from port authorities and operators to shipping and haulage companies. Nevertheless, the advent of technological advances poses both opportunities and challenges for this complex system, such that technological advancement is embedded in this complex network of port systems. As global trade rises, cargo volumes and vessel sizes have increased, cumulative pressure over ship yards and berths. Therefore, ports are significantly more prone to employing smart solutions that will aid in operation optimization, propagating performance, and limiting the cost of logistics – completely not needing key investments in infrastructure or new equipment. The most important lesson to learn from this study is that Container terminal productivity cannot be measured or assessed using a single measure. A comprehensive port's productivity performance evaluation can be contingent on a numerous measure that does not only relate to:

The port cargo-handling capacity;

The duration of shipment transactions; and

The quality of service to inland carriages at the port.

In summary, the findings from this suggested that even though a port performance has seen significant improvements in recent years at the port of Durban, the journey still prevail to be long before South Africa's busiest container terminal operate fully at an international standard. Therefore, there is a greater need at the Port of Durban to improve its operations, without which it is almost impossible for it to improve and to sustain its productivity. Promoting and enhance collaboration between port stakeholders at the Port of Durban is also critical towards improving productivity.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is tackled for third objective and answering question of the study which is, "3. To explore the practicability of the Port of Durban implementing suggestion for improvements gleaned from the example of other selected global ports; and 3. What is/are lessons Port of Durban can learn from other selected global ports?", Unlike the preceding section, which analysed and further discussed the study findings in light of the research objectives, this chapter presents the general and/or major recommendations or rather endorsements and conclusions of this research. The important findings of this study are discussed in this portion of the conclusion. As a consequence of the findings of this study, suggestion and future research recommendations were made. Furthermore, the chapter highlights the relevant significance and limitations of this study and to conclude, the chapter issummarized**.**

5.2 General Conclusion

The conclusions of the qualitative study's findings are presented in this section are geared toward assessing the media perspective on container terminal turnaround time to provide suggestions for improvement to the Port of Durban.

5.2.1 Conclusions on assessing media perspective on container terminal turnaround time to the Port of Durban

The findings of this study revealed that there were five (5) prominent themes which emerged from the collated data that highlighted and described the concept of assessing media perspectives on container terminal turnaround time to provide suggestions for improvement to the Port of Durban. These includes: Port Governance; Truck Visit Time; Technological Operations; Vessel and Voyage Operations; and Other Performance Measures.

Traditionally, the rate at which a ship is dispatched, the speed rate at which shipment is handled and the time it spends in ports before being shipped or delivered otherwise after dispense are generally employed in measuring (Quantifying) the operational performance of a port (De Monie, 1987). However, the findings of this study tell a different story that reveals a strong interrelationship between the traditional ports' performance measures and others KPI's that are currently utilised in measuring container terminal turnaround time. On port governance, the findings from this study revealed that governance and/or port governance models are crucial elements of the port overall performance which illustrates two possible outcomes: high port

performance index or poor port performance index. These possible outcomes are by-products of either good port governance or poor port governance. In the instance of the Durban Port, the results revealed that port governance outcomes do not explicitly translates into or influence a high port performance index – suggesting that port governance within the Port of Durban context influences the overall port performance negatively. Although there were a few media reports of how the Port of Durban governance impacts on the productivity of the port over the years, this study findings basically indicates a dual-relational-outcome, which is mainly captured as negative, based on the media reports. The findings revealed that when compared with other global leading ports, port governance at the Port of Durban impacts negatively on the overall productivity due to poor and/or lack of a good governing system and a good policy. In addition, even though the findings on port governance also revealed that the port management team influences the Port of Durban governance which has promoted and improved on the overall port performance over the years, it also highlighted how a poor management team at the Port of Durban impacts negatively on the overall Port performance over the years. The collected data cited the opinion of several management team members andsenior people across the maritime sector on how a poor management team and poor port management slows down the performance at the Durban container terminal Port. Hence, the consequence of poor governance at the Durban container terminal Port manifests itself in poorport logistics, poor port efficiency, poor port management solutions, poor port technology, poor facilities/infrastructures, and ultimately poor overall container terminal productivity performance. Therefore, the findings from this study clearly suggest that port governance – if well-structured – can impact positively on the overall port performance.

Furthermore, on port technological operations, the findings from this study revealed that major technological advances in information and construction industries have the potential to boost the overall Container terminal turnaround time of the Port of Durban. For example, the findings revealed that advancement in technological operations (such as upgrading of facilities, improvement in technical services) at the Port of Durban has greatly impacted over the whole port performance throughout the years. However, the results further revealed that as shippers become more attuned to sophisticated supply chain management, the Port of Durban is faced with both opportunities and challenges to meet the global standard. Due to poor technological operations reported at the Port of Durban, the facility experienced lower productivity turnouts. The findings revealed from the collected data echoed a resounding need for further technological improvements at the Port of Durban to ultimately improve port efficiency and to promote sustainability. The findings from this study not only revealed the consequences of

poor technological operations at the Port of Durban, but equally they provide data on port operational technology, port technical services, port facilities/infrastructures, port geographical location, port size and ultimately on the overall Container terminal turnaround time.

One of the most cost-effective strategies to enhance a container terminal turnaround time is to measure average time efficiency in terms of container dwell time and truck visit time. Although the Port of Durban performance has improved throughout the years, the result of the research revealed that there is still a lack of time efficiency – suggesting that the Port of Durban demonstrates poor time efficiency due to poor performance (such as poor managements, poor technical services, poor facilities/ equipment/ infrastructure). Therefore, coupled with how the Port of Durban performance affects the time, cost, and efficiency of trade, the findings from this study highlighted three key indicators (loading/unloading time, port logistics and transhipments) which influence time efficiency at the Port of Durban.

Assessing voyage and vessel performance at the Port of Durban is key to unlocking, promoting and improving the overall Container terminal productivity because terminal operators expect to finish unloading and loading swiftly so that the ship may proceed to the next port of call and shipping firms want their ships to arrive on time, they want (UNCTAD, 2019). Thus, findings from this study revealed Voyage and vessel efficiency play a crucial part in the Port of Durban's overall productivity. Port efficiency, port handling capacity, port connectivity, and handling of high TEUs are some of the leading factors that are associated with voyage and vessel efficiency, which ultimately impacts on the Port of Durban's total turnaround time. The findings from this study revealed that maximising port efficiency, port handling capacity, port connectivity and handling of high TEUs at the Port of Durban is key to improving voyage and vessel efficiency, and ultimately achieving high port performance at the Port of Durban.

5.2.2 Conclusions on media perspective on Container Terminal Turnaround Time Measures Versus Jebel Ali Port and Port of Shanghai Productivity Measures

The findings from this study revealed that port governance, time efficiency, voyage and vessel efficiency, technological operations, volume throughput and ultimately productivity at the Port of Durban is below the standards of Jebel Ali Port and Port of Shanghai. Unlike the Port of Durban, the findings from this study revealed that Port of Shanghai and Jebel Ali Port are two (2) of the leading global ports in terms of productivity. For instance, while the Port of Durban's highest container traffic ever recorded was 2.9 million TEUs per annum, the highest container traffic recorded at Port of Shanghai (Wan et al., 2019) and Jebel Ali Port was 42.02 million

and 14.95 million per annum, respectively. Thus, the result of research discovered that the effectiveness of Jebel Ali Port and Port of Shanghai ‘s performance measures (such as port governance, time efficiency, voyage and vessel efficiency, Technological operations, volume throughput and financial performance) landed them the well-deserved glory of being among the best ports in the world, and ultimately resulting in a higher productivity index.

Furthermore, this study revealed that while the port governance outcomes in the Port of Durban do not explicitly demonstrates a high port performance index, port governance within the context of Jebel Ali Port and Port of Shanghai was highlighted as among KPI’s that contributed massively to the overall productivity of Jebel Ali Port and Port of Shanghai. Here, the collated data described a port management team, port management, government policies, management solutions, the port work force and port stakeholders of Jebel Ali Port and Port of Shanghai as some of the key specific factors that promote and cultivate high port performance through port governance.

On technological operations, the results of this study strongly suggested that the success stories on the overall productivity of Jebel Ali Port and Port of Shanghai are highly influenced by technological advancements. This is suggesting that major technological advances in information and construction industries are crucial contributing factors in boosting the overall Container terminal productivity at Jebel Ali Port and at the Port of Shanghai. Central to this study is the conclusion that regardless of some of the technological achievements made in terms of port technology, technical services, upgrading facilities/infrastructures and advances in information technology, the results of this study highlighted that the port of Durban still struggles to improve and sustain its productivity substantially due to poor technological operations. Unlike the Port of Durban, the findings of this study revealed that Jebel Ali Port and the Port of Shanghai are able to improve their performances substantially over years due to technological advances such as port technology, technical port services, smart port/terminal technology, quality facilities/infrastructures, and technological advances in information and logistics. In summary, results from this study strongly highlight that, regardless of the improvements recorded over the years at the Port of Durban, there is still more that need to be done if SA's busiest freight port is to operate fully at an international standard. The Port of Durban desperately needs to enhance its operational substantially such as port governance, truck visit time, technological operations, vessel and voyage operations, and other performance measures – without which it is almost impossible for it to improve and sustain its productivity

substantially. The most important lessons of this study are that Container terminal productivity performance is not only based on a single value or measure, but that it is contingent on a set of measures not limited to traditional port performance measurements.

5.3 Recommendations

- **Time Efficiency:** Due to the poor time management recorded at the Port of Durban in comparison to other global standard ports, there is a pressing need to increase time efficiency at the Port of Durban through tracking and monitoring ship turn-around time and truck visit time. This would allow the Port of Durban to define key performance indicators impacting on container dwelling time and improve on how to assess how long containers should remain in the yard.

- **Improvement of Technological Facilities:** The advent of technological advances poses both opportunities and challenges for the Port of Durban. Improvement of its technological operations is imperative to improving Container terminal productivity at Port of Durban substantially. This will help optimise operations, improve time efficiency, voyage and vessel efficiency, promote performance, and limit logistics costs.

- **Good Management Leadership:** Port governance at the Port of Durban – if well-structured – can impact positively on the overall port performance. With credible management leadership and Government assistance, the Port of Durban stands a better chance of improving its container terminal turnaround time substantially. The physical link among the two systems is strongly reliant on the external transportation environment, particularly rail and road.

5.4 The limitations of the study

Research uses secondary data for its analysis, which was obtained from online newspaper articles between 2009 and 2019. Thus, the quality control of the data can be compromised as the data was not primarily collected.

- Financial and time factors also served as limitations to this study. The research lacks the resources to travel to the study sites to collect primary data for the study, which

would have ensured the quality control of the data and should have eliminated any biases that might have occurred in the secondary data.

5.5 Future Research Recommendations

There is a need to collect raw data in the key performance indicators counting financial indicators, labour and operational time to study the influence of these factors on Container terminal turnaround time at the Port of Durban and to compare these with other global leading ports. Moreover, it is critical to analyse the efficiency of South African port structure.

Interested researchers should conduct studies that measure port users' experiences in South Africa and they should compare them with experiences of port users at other global leading ports. This could serve as a means of understanding service quality and Container terminal productivity.

There is need to replicate this study at national and international levels by collecting primary data. Future research is needed to determine the port's economic and environmental viability, as well as how well it interacts with the back-of-port neighbourhood. Studies might involve determining whether or not the estimated expenses, and therefore financial ramifications, are correct and affordable, as well as whether or not the promised advantages of port projects are realistic in the future?

There is also room for new measures and assessment of port productivity and effectiveness to be considered, as well as consultation with other terminals and operators to see whether the suggestions of this and other research on potential port extensions are indeed essential.

5.6 Conclusion

The main drive of this research is towards an assessment over the media perspective on container terminal turnaround time critically and to suggest improvements to the Port of Durban. This chapter tackled third objective and question of the study which is, "To explore the practicability of the Port of Durban implementing suggestion for improvements gleaned from the example of other selected global ports; and What are lessons Port of Durban can learn from other selected global ports?", The study also sought to assess how the Port of Durban compares with some of the global leading ports in terms of productivity.

The study relied on qualitative secondary sources as the primary source of information. The collected data comprised of 76 online newspaper (websites) articles that sought to narrate the media perspective on container terminal turnaround time within the selected ports. The articles used in the study range from 2009 to 2019 making a total of 76 articles. The study tracked how the media portrayed the performance of these ports over the years. It also looked at measures put in place in these ports to promote turnaround time/productivity over the years. The study adopted a thematic analysis (TA) method which to regulate the key indicators, features or factors that described the concepts of media perspective on container terminal turnaround time described by the print media.

According to the study's findings, ports are growing more oriented toward smart solutions that should assist to optimize operations, enhance performance, and reduce logistical costs–all without requiring substantial investments in new infrastructure and equipment. Furthermore, it was established that container terminal turnaround time based on productivity performance cannot be judged using a single number or metric. According to the report, there is still a long journey to go before Port of Durban SA's busiest freight gateway is fully operating at an international level. Recommendations for improvement were made.

REFERENCE

Akhavan, M. (2017). Development dynamics of port-cities interface in the Arab Middle Eastern world-The case of Dubai global hub port-city. *Cities, 60*, 343-352.

Alden, C., & Wu, Y.-S. (2014). South Africa and China: The making of a partnership.

Alden, C., & Wu, Y.-S. (2014). South African–China Relations: Evolving Cooperation, Collaboration and Competition. In: SAIIA.

Almawsheki, E. S., & Shah, M. Z. (2015). Technical efficiency analysis of container terminals in the middle eastern region. *The Asian Journal of Shipping and Logistics, 31*(4), 477-486.

Ames, H., Glenton, C., & Lewin, S. (2019). Purposive sampling in a qualitative evidence synthesis: A worked example from a synthesis on parental perceptions of vaccination communication. *BMC medical research methodology, 19*(1), 1-9.

Anderson, C. M., Park, Y.-A., Chang, Y.-T., Yang, C.-H., Lee, T.-W., & Luo, M. (2008). A game-theoretic analysis of competition among container port hubs: the case of Busan and Shanghai. *Maritime Policy & Management, 35*(1), 5-26.

Babica, V., Sceulovs, D., & Rustenova, E. (2019). *Digitalization in maritime industry: prospects and pitfalls.* Paper presented at the Workshop on ICTE in Transportation and Logistics.

Baird, A. J. (2006). Optimising the container transhipment hub location in northern Europe. *Journal of transport geography, 14*(3), 195-214.

Barker, R. T., & Gower, K. (2010). Strategic application of storytelling in organizations: Toward effective communication in a diverse world. *The Journal of Business Communication (1973), 47*(3), 295-312.

Barker, R. T., & Gower, K. (2010). Strategic application of storytelling in organizations: Toward effective communication in a diverse world. *The Journal of Business Communication (1973), 47*(3), 295-312.

Barros, V. H., Costa, T. S., Oliveira, A. C., & Lorena, L. A. (2011). Model and heuristic for berth allocation in tidal bulk ports with stock level constraints. *Computers & Industrial Engineering, 60*(4), 606-613.

Basias, N., & Pollalis, Y. (2018). Quantitative and qualitative research in business & technology: Justifying a suitable research methodology. *Review of Integrative Business and Economics Research, 7*, 91-105.

Bazzazi, M., Safaei, N., & Javadian, N. (2009). A genetic algorithm to solve the storage space allocation problem in a container terminal. *Computers & Industrial Engineering, 56*(1), 44-52.

Benoot, C., Hannes, K., & Bilsen, J. (2016). The use of purposeful sampling in a qualitative evidence synthesis: A worked example on sexual adjustment to a cancer trajectory. *BMC medical research methodology, 16*(1), 1-12.

Beresford, A. R., Kübler, D., & Preibusch, S. (2012). Unwillingness to pay for privacy: A field experiment. *Economics letters, 117*(1), 25-27.

Bichou, K., & Gray, R. (2004). A Logistics and Supply Chain Management Approach to Port Performance Measurement. *Maritime Policy & Management, 31*, 47-67. doi:10.1080/0308883032000174454

Bless, J. J., Westerhausen, R., Torkildsen, J. v. K., Gudmundsen, M., Kompus, K., & Hugdahl, K. (2015). Laterality across languages: Results from a global dichotic listening study using a smartphone application. *Laterality: Asymmetries of Body, Brain and Cognition, 20*(4), 434-452.

Board, N. R. C. M., & Terminals, N. R. C. C. o. P. o. M. (1986). *Improving productivity in US marine container terminals*: National Academies Press.

Board, N. R. C. M., & Terminals, N. R. C. C. o. P. o. M. (1986). *Improving productivity in US marine container terminals*: National Academies Press.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101.

Braun, V., & Clarke, V. (2012). Thematic analysis.

Braun, V., & Clarke, V. (2012). Thematic analysis.

Brooks, M. R., & Pallis, A. A. (2008). Assessing port governance models: process and performance components. *Maritime Policy & Management, 35*(4), 411-432.

Brooks, M. R., & Pallis, T. (2013). Considering the perspectives of port users. *Port Technology International, 60*, 27-28.

Burns, A. (2005). Action research: An evolving paradigm?

Camic, P. M., Rhodes, J. E., & Yardley, L. E. (2003). *Qualitative research in psychology: Expanding perspectives in methodology and design*: American Psychological Association.

Caschili, S., & Medda, F. R. (2012). A review of the maritime container shipping industry as a complex adaptive system. *Interdisciplinary Description of Complex Systems: INDECS, 10*(1), 1-15.

Chen, C., Hsu, W.-J., & Huang, S.-Y. (2003). *Simulation and optimization of container yard operations: a survey*. Paper presented at the Proceedings of international conference on port and maritime R and D and technology.
Chen, C. C., & Meindl, J. R. (1991). The construction of leadership images in the popular press: The case of Donald Burr and People Express. *Administrative science quarterly*, 521-551.
Chung, K. H. (1993). The Contingent-Claims Approach to Investment Decisions. *Decision Sciences, 24*(6), 1215-1221.
Clark, X., Dollar, D., & Micco, A. (2004). Port efficiency, maritime transport costs, and bilateral trade. *Journal of development economics, 75*(2), 417-450.
Clarke, V., & Braun, V. (2014). Thematic Analysis. In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 6626-6628). Dordrecht: Springer Netherlands.
Comtois, C., & Slack, B. (2019). *Ship Turnaround Times in Port: Comparative Analysis of Ocean Container Carriers*: CIRRELT, Centre interuniversitaire de recherche sur les réseaux d'entreprise ….
Creswell, J. W. (2013). Steps in conducting a scholarly mixed methods study.
Cullinane, K., Ji, P., & Wang, T.-f. (2005). The relationship between privatization and DEA estimates of efficiency in the container port industry. *Journal of economics and business, 57*(5), 433-462.
Cullinane, K., & Wilmsmeier, G. (2011). The contribution of the dry port concept to the extension of port life cycles. In *Handbook of terminal planning* (pp. 359-379): Springer.
Daganzo, C. F. (2007). Urban gridlock: Macroscopic modeling and mitigation approaches. *Transportation Research Part B: Methodological, 41*(1), 49-62.
de Monie, G. (1987). Measuring and evaluating port performance and productivity. *(UNCTAD) Monographs On Port Management, 6*.
De, P., & Ghosh, B. (2002). Productivity, efficiency and technological change in Indian ports. *International journal of maritime economics, 4*(4), 348-368.
Deephouse, D. L. (2000). Media Reputation as a Strategic Resource: An Integration of Mass Communication and Resource-Based Theories. *Journal of Management, 26*, 1091-1112. doi:10.1177/014920630002600602
Denzin, N. K., & Lincoln, Y. S. (2005). Introduction: The discipline and practice of qualitative research.
Ding, D., & Chou, M. C. (2015). Stowage planning for container ships: A heuristic algorithm to reduce the number of shifts. *European journal of operational research, 246*(1), 242-249.
Ding, Z.-Y., Jo, G.-S., Wang, Y., & Yeo, G.-T. (2015). The relative efficiency of container terminals in small and medium-sized ports in China. *The Asian Journal of Shipping and Logistics, 31*(2), 231-251.
Dolan, R., Conduit, J., Fahy, J., & Goodman, S. (2016). Social media engagement behaviour: a uses and gratifications perspective. *Journal of Strategic Marketing, 24*(3-4), 261-277.
Dolan, R., Conduit, J., Fahy, J., & Goodman, S. (2016). Social media engagement behaviour: a uses and gratifications perspective. *Journal of Strategic Marketing, 24*(3-4), 261-277.
Dowd, T. J., & Leschine, T. M. (1990). Container terminal productivity: a perspective. *Maritime Policy & Management, 17*(2), 107-112.
Du Plessis, C. (2004). Web-based communication: the need for more valuable on-line information: organisational, marketing and management communication. *Communicatio: South African Journal of Communication Theory and Research, 30*(1), 111-130.
Dulebenets, M. A. (2018). A comprehensive multi-objective optimization model for the vessel scheduling problem in liner shipping. *International Journal of Production Economics, 196*, 293-318.
Dwarakish, G. (2018). Measuring port performance and productivity.
Dwarakish, G. (2018). Measuring port performance and productivity.
Dyer, J. A. (2014). *Is Durban's Port Expansion Really Necessary*. Retrieved from
Emmel, N. (2013). *Sampling and choosing cases in qualitative research: A realist approach*: Sage.
Gamassa, P. K. P. o., & Chen, Y. (2017). *Comparison of port efficiency between Eastern and Western African ports using DEA Window Analysis*. Paper presented at the 2017 International Conference on Service Systems and Service Management.
Gamson, W. A., Croteau, D., Hoynes, W., & Sasson, T. (1992). Media images and the social construction of reality. *Annual review of sociology, 18*(1), 373-393.
Gans, H. J. (1998). What can journalists actually do for American democracy? *Harvard international journal of press/politics, 3*(4), 6-12.
Gentles, S. J., Charles, C., Ploeg, J., & McKibbon, K. A. (2015). Sampling in qualitative research: Insights from an overview of the methods literature. *The qualitative report, 20*(11), 1772-1789.
Gereffi, G., & Korzeniewicz, M. (1994). *Commodity chains and global capitalism*: ABC-CLIO.
Goodchild, A. V., & Daganzo, C. (2007). Crane double cycling in container ports: Planning methods and evaluation. *Transportation Research Part B: Methodological, 41*(8), 875-891.

Goodchild, M. F. (2005). GIS and modeling overview. *GIS, spatial analysis, and modeling. ESRI Press, Redlands*, 1-18.
Govender, T. (2018). *Design and analysis of a multi-trailer system for the Durban container terminal*.
Greco, S., Ishizaka, A., Tasiou, M., & Torrisi, G. (2019). On the methodological framework of composite indices: A review of the issues of weighting, aggregation, and robustness. *Social Indicators Research, 141*(1), 61-94.
Greenwood, R., Li, S. X., Prakash, R., & Deephouse, D. L. (2005). Reputation, diversification, and organizational explanations of performance in professional service firms. *Organization Science, 16*(6), 661-673.
Gregory, A., & Ronan, M. (2015). Insights into the development of strategy from a complexity perspective. *Journal of the Operational Research Society, 66*(4), 627-636.
Gregory, A., & Ronan, M. (2015). Insights into the development of strategy from a complexity perspective. *Journal of the Operational Research Society, 66*(4), 627-636.
Gumede, S., & Chasomeris, M. (2012). South Africa's Port Pricing Methodology and Financing Investment. In: University of KwaZulu-Natal: University Press.
Hart, K. (2019). *AN ANALYSIS ON CARGO HANDLING PERFORMANCE AND ITS EFFECT ON TURNAROUND TIME OF LINER SHIPS (A CASE OF TEMA PORT)*.
Helmick, R. E., Blair, W. D., & Hoffman, S. A. (1996). One-step fixed-lag smoothers for Markovian switching systems. *IEEE Transactions on Automatic Control, 41*(7), 1051-1056.
Herrera Dappe, M., Jooste, C., & Suarez Aleman, A. (2017). How does port efficiency affect maritime transport costs and trade? evidence from Indian and western Pacific Ocean countries. *Evidence from Indian and Western Pacific Ocean Countries (September 25, 2017). World Bank Policy Research Working Paper*(8204).
Hill, J., McGowan, P., & Drummond, P. (1999). The development and application of a qualitative approach to researching the marketing networks of small firm entrepreneurs. *Qualitative market research: An international journal*.
Howitt, D., & Cramer, D. (2008). Introduction to research methods in psychology . Harlow. In: Pearson/Prentice Hall.
Huynh, N., & Walton, C. (2005). Methodologies for Reducing Truck Turn Time at Marine Container Terminals. The University of Texas at Austin. *Center for Transportation Research*.
Jeffery, N. (2009). Stakeholder engagement: A road map to meaningful engagement. *Doughty Centre, Cranfield School of Management*.
Jiang, X., Chew, E. P., & Lee, L. H. (2015). Innovative container terminals to improve global container transport chains. In *Handbook of ocean container transport logistics* (pp. 3-41): Springer.
Jonker, T., Duinkerken, M., Yorke-Smith, N., de Waal, A., & Negenborn, R. (2021). Coordinated optimization of equipment operations in a container terminal. *Flexible Services and Manufacturing Journal, 33*(2), 281-311.
Kaparias, I., Bell, M., & Tomassini, M. (2011). Key performance indicators for traffic management and intelligent transport systems. *ISIS, 14*(06).
Karafa, J., Golias, M. M., Ivey, S., Saharidis, G. K., & Leonardos, N. (2013). The berth allocation problem with stochastic vessel handling times. *The International Journal of Advanced Manufacturing Technology, 65*(1-4), 473-484.
Kasozi-Mulindwa, S. (2013). *The process and outcomes of participatory budgeting in a decentralised local government framework: a case in Uganda*. University of Birmingham,
Kelly-Holmes, H., & Milani, T. M. (2011). Thematising multilingualism in the media. *Journal of Language and Politics, 10*(4), 467-489.
Kim, K. H., & Lee, J.-S. (2006). *Satisfying constraints for locating export containers in port container terminals.* Paper presented at the International Conference on Computational Science and Its Applications.
Koch, T. (1994). Establishing rigour in qualitative research: the decision trail. *Journal of advanced nursing, 19*(5), 976-986.
Kutin, N., Nguyen, T. T., & Vallée, T. (2017). Relative efficiencies of ASEAN container ports based on data envelopment analysis. *The Asian Journal of Shipping and Logistics, 33*(2), 67-77.
Kwet, M. (2017). Operation Phakisa education: Why a secret? Mass surveillance, inequality, and race in South Africa's emerging national e-Education system. *Mass Surveillance, Inequality, and Race in South Africa's Emerging National E-Education System (December 4, 2017)*.
Lee, J. J. (2013). *The Effects of Journalists' Social Media Activities on Audience Perceptions of Journalists and their News Products*: The Ohio State University.
Levitt, H. M., Motulsky, S. L., Wertz, F. J., Morrow, S. L., & Ponterotto, J. G. (2017). Recommendations for designing and reviewing qualitative research in psychology: Promoting methodological integrity. *Qualitative psychology, 4*(1), 2.
Li, X. (2014). Operations Management of Logistics and Supply Chain: Issues and Directions. *Discrete Dynamics in Nature and Society, 2014*, 701938. doi:10.1155/2014/701938

Liang, C., Huang, Y., & Yang, Y. (2009). A quay crane dynamic scheduling problem by hybrid evolutionary algorithm for berth allocation planning. *Computers & Industrial Engineering, 56*(3), 1021-1028.
Lin, W., & Ai, Q. (2020). 'Aerial Silk Roads': Airport Infrastructures in China's Belt and Road Initiative. *Development and Change, 51*(4), 1123-1145.
Liu, D., & Ge, Y.-E. (2018). Modeling assignment of quay cranes using queueing theory for minimizing CO2 emission at a container terminal. *Transportation Research Part D: Transport and Environment, 61*, 140-151.
López-Bermúdez, B., Freire-Seoane, M. J., & Nieves-Martínez, D. J. (2019). Port efficiency in Argentina from 2012 to 2017: an ally for sustained economic growth. *Utilities Policy, 61*, 100976.
Maibach, M., Schreyer, C., Sutter, D., Van Essen, H., Boon, B., Smokers, R., . . . Bak, M. (2007). Handbook on Estimation of External Cost in the Transport Sector. Produced within the Study Internalisation Measures and Policies for All external Cost of Transport (IMPACT) version 1.0.
Marlow, P. B., & Casaca, A. C. P. (2003). Measuring lean ports performance. *International journal of transport management, 1*(4), 189-202.
Meletiou, M. (1970). Improved port productivity through a partnership between human beings and technology. *WIT Transactions on the Built Environment, 39*.
Merckx, F., Notteboom, T., & Winkelmans, W. (2003). *Spatial models of waterfront redevelopment: the tension between city and port revisited.* Paper presented at the Proceedings of IAME 2003 Conference, International Association of Maritime Economists, Busan, Korea.
Merk, O. (2013). The competitiveness of global port-cities: synthesis report.
Merton, R. K. (1975). Thematic analysis in science: Notes on Holton's concept. *Science, 188*(4186), 335-338.
Meyiwa, A., & Chasomeris, M. (2016). Restructuring port governance in South Africa. *Journal of Economic and Financial Sciences, 9*(3), 854-873.
Mhaka, S., & Jeke, L. (2018). An evaluation of the trade relationships between South Africa and China: An empirical review 1995-2014. *South African Journal of Economic and Management Sciences, 21*(1), 1-15.
Mill, J. E., Allen, M. N., & Morrow, R. A. (2001). Critical theory: Critical methodology to disciplinary foundations in nursing. *Canadian Journal of Nursing Research Archive*.
Miller, R., Schmidt, K., Kirschbaum, C., & Enge, S. (2018). Comparability, stability, and reliability of internet-based mental chronometry in domestic and laboratory settings. *Behavior Research Methods, 50*(4), 1345-1358.
Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People, 7*(1), 23-48.
Mokhtar, K., & Shah, M. Z. (2006). A regression model for vessel turnaround time. *Tokyo Academic, Industry & Cultural Integration Tour*, 1-15.
Molale, T. B. (2014). *The extent of participatory communication in the IDP (Integrated Development Plan) context of the Jouberton township of the Matlosana Local Municipality.*
Mori, N. (2010). Roles of stakeholders in strategic decision-making of microfinance organizations. *International Business & Economics Research Journal, 9*(7), 51-64.
Morrow, J. D. (1994). *Game theory for political scientists*: Princeton University Press.
Motau, I. I. G. (2015). *An assessment of port productivity at South African container port terminals.*
Mouton, J., & Marais, H. C. (1988). *Basic concepts in the methodology of the social sciences*: Hsrc Press.
Moyo, N. (2019). *The effects of social media on setting the agenda of traditional media.*
Müller-Doohm, S. (2017). Member of a school or exponent of a paradigm? Jürgen Habermas and critical theory. *European Journal of Social Theory, 20*(2), 252-274.
Neuman, W. (2000). *Social Research Methods: Qualitative and Quantitative Approaches* (Vol. 30).
Neuman, W. L. (2013). *Social research methods: Pearson new international edition*: Pearson Education Limited.
Nikolic, M., & Bierlaire, M. (2017). *Review of transportation mode detection approaches based on smartphone data.* Paper presented at the 17th Swiss Transport Research Conference.
Notteboom, T. (2008). Bundling of freight flows and hinterland network developments. *The future of intermodal freight transport*, 66-88.
Notteboom, T., Coeck, C., & Van Den Broeck, J. (2000). Measuring and explaining the relative efficiency of container terminals by means of Bayesian stochastic frontier models. *International journal of maritime economics, 2*(2), 83-106.
Notteboom, T., & Vitellaro, F. (2019). The impact of innovation on dock labour: evidence from European ports. *IMPRESA PROGETTO*(3), 1-22.
Notteboom, T. E. (2004). Container shipping and ports: an overview. *Review of network economics, 3*(2).
Notteboom, T. E. (2006). The time factor in liner shipping services. *Maritime Economics & Logistics, 8*(1), 19-39.
Notteboom, T. E. (2010). Concentration and the formation of multi-port gateway regions in the European container port system: an update. *Journal of transport geography, 18*(4), 567-583.

Odeck, J., & Bråthen, S. (2012). A meta-analysis of DEA and SFA studies of the technical efficiency of seaports: A comparison of fixed and random-effects regression models. *Transportation Research Part A: Policy and Practice, 46*(10), 1574-1585.
Organization, W. H. (2005). Effective media communication during public health emergencies: a WHO field guide/Randall N. Hyer, Vincent T. Covello. In *Effective media communication during public health emergencies: a WHO field guide/Randall N. Hyer, Vincent T. Covello*.
Organization, W. H. (2005). *The World health report: 2005: make every mother and child count*: World Health Organization.
Paixao, A. C., & Marlow, P. B. (2003). Fourth generation ports–a question of agility? *International Journal of Physical Distribution & Logistics Management*.
Pallis, A. A., & Syriopoulos, T. (2007). Port governance models: Financial evaluation of Greek port restructuring. *Transport Policy, 14*(3), 232-246.
Pfeiffer, J. W. (1998). Conditions that hinder effective communication. *The Pfeiffer Library, 6*(2), 400-456.
Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International journal of nursing studies, 47*(11), 1451-1458.
Punch, K. F. (2013). *Introduction to social research: Quantitative and qualitative approaches*: sage.
Raballand, G., Refas, S., Beuran, M., & Isik, G. (2012). Why cargo dwell time matters in trade.
Raballand, G., Refas, S., Beuran, M., & Isik, G. (2012). *Why does cargo spend weeks in sub-Saharan African ports? Lessons from six countries*: The World Bank.
Radimilović, Z., & Jovanović, S. (2006). Berth occupancy at container terminals: Comparison of analytical and empirical results. *Promet-Traffic&Transportation, 18*(2), 99-103.
Rana, K. (2019). Role of Port Managements in Global Shipping. In.
Rezaei, J., van Wulfften Palthe, L., Tavasszy, L., Wiegmans, B., & van der Laan, F. (2019). Port performance measurement in the context of port choice: an MCDA approach. *Management decision*.
Rice, P. L., & Ezzy, D. (1999). Qualitative research methods: A health focus. *Melbourne, Australia*.
Robinson, D. (1999). *Measurements of port productivity and container terminal design: A cargo systems report*: IIR Publications.
Rodrigue, J.-P., Cooper, J., & Merk, O. (2014). The competitiveness of ports in emerging markets: The case of Durban, South Africa. *Country-Specific Policy Analysis*.
Sarwar, N. (2013). *Time-related key performance indicators and port performance: a review of theory and practice*. Høgskolen i Vestfold,
Saxton, G. D., & Waters, R. D. (2014). What do stakeholders like on Facebook? Examining public reactions to nonprofit organizations' informational, promotional, and community-building messages. *Journal of public relations research, 26*(3), 280-299.
Sinha, P. N., Inkson, K., & Barker, J. R. (2012). Committed to a failing strategy: Celebrity CEO, intermediaries, media and stakeholders in a co-created drama. *Organization studies, 33*(2), 223-245.
Sirimanne, S. N., Hoffman, J., Juan, W., Asariotis, R., Assaf, M., Ayala, G., . . . Premti, A. (2019). *Review of maritime transport 2019*. Retrieved from
Slack, B., Comtois, C., Wiegmans, B., & Witte, P. (2018). Ships time in port. *International Journal of Shipping and Transport Logistics, 10*(1), 45-62.
Smythe, L. (2012). Discerning which qualitative approach fits best. *New Zealand College of Midwives Journal*(46).
Steenken, D., Voß, S., & Stahlbock, R. (2004). Container terminal operation and operations research-a classification and literature review. *OR spectrum, 26*(1), 3-49.
Suárez-Alemán, A., Sarriera, J. M., Serebrisky, T., & Trujillo, L. (2016). When it comes to container port efficiency, are all developing regions equal? *Transportation Research Part A: Policy and Practice, 86*, 56-77.
Talley, W. K. (2009). *Port economics*: Routledge.
Terminals, T. P., & OPERATING, A. (2010). Transnet Port Terminals. *Transnet Ann. l Rep*, 198.
Tongzon, J., & Heng, W. (2005). Port privatization, efficiency and competitiveness: Some empirical evidence from container ports (terminals). *Transportation Research Part A: Policy and Practice, 39*(5), 405-424.
Tongzon, J. L. (1995). Determinants of port performance and efficiency. *Transportation Research Part A: Policy and Practice, 29*(3), 245-252.
TRADE, U. (2019). *DEVELOPMENT REPORT 2019: FINANCING A GLOBAL GREEN NEW DEAL*. Paper presented at the Proceedings of the United Nations Conference on Trade and Development, New York, NY, USA.
Tran, N. K., & Haasis, H.-D. (2015). An empirical study of fleet expansion and growth of ship size in container liner shipping. *International Journal of Production Economics, 159*, 241-253.
Trujillo, L., & Nombela, G. (1999). *Privatization and regulation of the seaport industry*: The World Bank.
UNCTAD. (2016). *Review of Maritime Transport 2017*.
UNCTAD, G. (1975). Marketing and distribution system for cocoa; report by the UNCTAD secretariat. *Marketing*

and distribution system for cocoa; report by the UNCTAD secretariat. (TD/B/C. 1/164, rev. ed.).
Vacca, I., Bierlaire, M., & Salani, M. (2007). *Optimization at container terminals: status, trends and perspectives.* Paper presented at the Swiss Transport Research Conference.
Valentine, V. F., & Gray, R. (2002). Competition of Hub Ports/A Comparison between Europe and the Far East. *해운물류연구, 35*, 197-213.
Vernimmen, B., Dullaert, W., & Engelen, S. (2007). Schedule unreliability in liner shipping: origins and consequences for the hinterland supply chain. *Maritime Economics & Logistics, 9*(3), 193-213.
Vernimmen, B., Dullaert, W., Geens, E., Notteboom, T., T'Jollyn, B., Van Gilsen, W., & Winkelmans, W. (2007). Underground logistics systems: a way to cope with growing internal container traffic in the port of Antwerp? *Transportation planning and technology, 30*(4), 391-416.
Vieira, G. B. B., Neto, F. J. K., & Ribeiro, J. L. D. (2015). The rationalization of port logistics activities: A study at port of Santos (Brazil). *International Journal of e-Navigation and Maritime Economy, 2*, 73-86.
Vis, I. F., & De Koster, R. (2003). Transshipment of containers at a container terminal: An overview. *European journal of operational research, 147*(1), 1-16.
Voinea, C. L., & van Kranenburg, H. (2017). Media Influence and Firms Behaviour: A Stakeholder Management Perspective. *International Business Research, 10*(10), 23-38.
Wan, C., Yan, X., Zhang, D., & Yang, Z. (2019). Analysis of risk factors influencing the safety of maritime container supply chains. *International Journal of Shipping and Transport Logistics, 11*(6), 476-507.
Wang, S., & Meng, Q. (2012). Sailing speed optimization for container ships in a liner shipping network. *Transportation Research Part E: Logistics and Transportation Review, 48*(3), 701-714.
Williams, S. J., Seale, C., Boden, S., & Lowe, P. (2008). Waking up to sleepiness: Modafinil, the media and the.
Woo, J.-K., Moon, D. S., & Lam, J. S. L. (2018). The impact of environmental policy on ports and the associated economic opportunities. *Transportation Research Part A: Policy and Practice, 110*, 234-242.
Woo, J.-K., & Moon, D. S.-H. (2014). The effects of slow steaming on the environmental performance in liner shipping. *Maritime Policy & Management, 41*(2), 176-191.
Woo, J.-K., & Moon, D. S.-H. (2014). The effects of slow steaming on the environmental performance in liner shipping. *Maritime Policy & Management, 41*(2), 176-191.
Woo, J.-K., & Moon, D. S.-H. (2014). The effects of slow steaming on the environmental performance in liner shipping. *Maritime Policy & Management, 41*(2), 176-191.
Wu, J., Yan, H., & Liu, J. (2010). DEA models for identifying sensitive performance measures in container port evaluation. *Maritime Economics & Logistics, 12*(3), 215-236.
Yap, W. Y., & Loh, H. S. (2019). Next generation mega container ports: implications of traffic composition on sea space demand. *Maritime Policy & Management, 46*(6), 687-700.
Yuen, A. C.-l., Zhang, A., & Cheung, W. (2013). Foreign participation and competition: A way to improve the container port efficiency in China? *Transportation Research Part A: Policy and Practice, 49*, 220-231.
Zangwa, A. I. (2018). A total factor productivity analysis of a container terminal, Durban, South Africa.
Zheng, X. B., & Park, N. K. (2016). A study on the efficiency of container terminals in Korea and China. *The Asian Journal of Shipping and Logistics, 32*(4), 213-220.