



*Port Infrastructure and Operational Efficiency,
and Port Productivity Management*

Zeph Ndlovu – Terminals Transformation Executive

Transnet Port Terminals



Program director, CEO's, Maritime Colleagues, Eminent dignitaries, Ladies and Gentlemen, All protocol observed. I greet you all.

Responding to the invitation to provide input on the challenges facing many of our ports on the subject of **Infrastructure and Operational Efficiency**, as well as on **Port Productivity Management**, in the PAEMESA region, it gives me pleasure to tap onto many of our experiences in South Africa that have both documented and acknowledged efforts in addressing these challenges.

My late father, Kayson, once said, 'if you spend too much time casting your mind on your trials and tribulations you will certainly remain a slave of the past and will miss the opportunity to pioneer your future' By these words I am not going to spend time lamenting the inaction of yesteryear in addressing the backlog of infrastructure we inherited in 1999. But I will share with you what we have done and are doing to get that right.

But before we look at infrastructure, let's look at developments in global cargo trends.

International trade especially of bulk scale takes place through ocean flotation best enabled by bulk carriers of goods.

From high volume trade to passenger travel we have a common thread in employing sea borne transport as means of connecting continents.

Since the end of World War 2, vast transportation networks have been built up, linking all the countries in the world by sea.

The networks rely on a series of 'hub and spoke' operations, where commodities from smaller countries are transported by small 'feeder' vessels to the nearest port which has a 'mainline' service to the area of final destination

Ports around the world which are key channels of sea borne trade, invariably, have to compete to attract high traffic density of ships by offering efficient methods of handling goods, at the most competitive cost and having well developed corridors linking major economic hinterlands of own country.

Therefore, turn around time in all elements of the logistic chain becomes more manageable in particular when there is coordination and integration in service offering.

For this reason, it is no surprise that the basis of global competitiveness have evolved from traditional economies of scale to innovative methods of improving TAT, boosting operational efficiency and shortening lead times.

South Africa's location, at the Southern tip of the continent, is one of the strategic spot mid way the pendulum swing between East and the West via the South axial route.

According to a recent announcement by SAECS service (group of 4 shipping lines, Safmarine, MOL, DAL and Maersk, sharing agreement for trade between Europe and Southern Africa) in Engineering News 23rd November, 2007, The international shipping container business, which is currently underpinning global trade, is growing at approximately 10 % a year. It is estimated that container volumes will double in the next eight years and that the global container shipping fleet will grow by 60% over the next decade. This leading shipping line will add yet more capacity to African routes. The question we should address as a network of East African Ports is, are we ready to take advantage of this boom?

Let's us scan Port infrastructure in South Africa, in attempt to answer this question. There are 7 commercial ports in South Africa, two on the West and five on the Eastern coasts of South Africa.

Port	Terminals	Berths	Sector	Draft	Q- length
Richards Bay (EC)	2	14	Bulk / B. bulk	17,5m	2964m
Durban (EC)	5	22	Containers, cars, BB	9 – 12.6m	5121m
Port Elizabeth (EC)	2	5	Cars, Cont, BB	9 – 12.2m	1940m
Port of Ngqura (EC)	1	2	Container	16.5m	1310m
East London (EC)	2	7	Cars and BB	8.5 – 10.5m	2136m
Cape Town (WC)	2	10	Containers, BB	12 – 14.5m	2900m
Saldanah (WC)	2	5	Bulk, BB	13 -21.5m	2070m

The ports have well reinforced quay walls that support quay aprons with carrying load of more than 130million tons of cargo, all inclusive.

Deep water berths to handle Cape Size Vessels and Post Panamax vessels. Back up space to absorb offloaded cargo as well as pre-assembled export cargo. Sheds and open stacks for transit storage purposes.

Over and above this infrastructure we have the latest generation STS G-cranes both Panamax and Post Panamax, Shiploaders and conveyor belts in excess of 65 km, Pneumatic offloaders, Mobile cranes with super grabs, Reach Stackers, HD Forklifts with different attachments. We have recently acquired a fleet of RTG's, for optimized vertical stacking in the container terminals.

Latest generation light houses and the control towers to guide ships on arrival. In two Ports we make use of helicopters to hoist pilots during vessel exchanges in and outside the port. This is another flexible means of accelerating change over time of vessels.

That inventory of infrastructure would not be complete without mention of Corridor network that makes access to the ports possible. These corridors are



supported by Rail links to the ports that make bulk transport of cargo possible from landlocked sources of mining and manufacturing hubs. We also have a well developed Road infrastructure that makes rapid transport of priority cargo possible from and to economic centers of Gauteng, JHB, Mpumalanga etc. Although the current market portion of Road and Rail is skew, we would like to steer more cargo onto Rail to alleviate the load burden borne by transport maintenance costs.

In spite of this legacy, we have not managed to keep up with the bullish growth in cargo movement, which touch our lives from one continent to the other. As the latest pronouncement by APL Moller, that unless we move with speed in addressing infrastructure backlog, one of the fundamental obstacles inhibiting further growth and efficiency in this sector will be the lack of port infrastructure capacity.

Well, what is Transnet doing to address the backlog? We are rolling out a capital investment program in the order of R78b for the Freight Transport infrastructure upgrade and to augment existing asset base in Ports, Rail and Pipeline. Bear in mind that the rail network extends throughout Southern Africa and beyond, thanks to harmonized rail gauge that makes it possible to reach Gaborone and Francistown in Botswana, Harare, in Zimbabwe, Matsapa in Swaziland and Maputo in Mozambique.

To give you a feel of work in progress in ports infrastructure

- Richards Bay – Two 20 000 sqm sheds have been built for the BB sector
 - Expanding the open slab to handle Granite and base metals
 - EIA assessment to build Anthracite shed
- Durban – Phase 1 Container expansion work just completed at Pier 1 (1m teu's)
 - Exploring options to carter for the 3m teu Throughput for the DCT
 - Just increased the capacity of car slots from 3000 to 6000 bays.
 - At new point Terminal, we have encroached onto another 4000 slots to push capacity to 10 000. That is still not enough, we are now looking at vertical parking bays at L and M square, to carter for the 14000 slots required by the OEM's.
 - We are widening the harbor mouth and deepening the draft of the entrance channel to allow latest generation super post panamax ships into the port.

- PE - Just increased the surface parking bays for cars, we are looking at further unutilized land in the port to meet VW and GM capacity demand
- ESL – excess capacity to handle DCSA and BB cargo
- Cape Town – We are expanding the backup stacking area by claiming about 300m of space from the ocean to cater for increased volume forecast.
- Saldanah – Increasing capacity as part of phase 2 expansion project to increase throughput from current 31 to 50 mil tons p.a.
- We are building terminals at Port of Ngqura to handle high volume containerized cargo. With time we will be extending to other sectors.
- As you heard earlier, we are dredging several ports in Durban, Cape Town, Richards Bay, to achieve maximum draft clearance for Cape Size vessels and Post Panamax vessels.

With that background, let's now look at how we can optimize current infrastructure through efficient performance to increase capacity.

Efficiency in sea borne trade, is it a critical Driver?

There are many schools of thoughts that have been advanced on this question, and we shall, for the purpose of this paper concentrate on the position of a customer. In the eyes of the customer, efficiency, speed, cost and security are the most important criteria that influence his decision of choice.

In classical transport economics, **Operational Efficiency is - what occurs when the right combination of people, process, and technology come together to enhance the productivity and value of any business operation, while driving down the cost of routine operations to a desired level. The end result is that resources previously needed to manage operational tasks can be redirected to new, high value initiatives that bring additional capabilities to the organization.**

That is why, many countries around the world now compete on the effectiveness and efficiency of their Supply Chain to access International Markets and gain the requisite competitive edge to win global contracts from (Multinational Companies) MNC to expand their global networks.

Achieving Business Agility through Operational Efficiency— A Challenge we must embrace.

In today's highly competitive and fragmented business environment, successful businesses must be absolutely customer-focused and market-driven. Otherwise customers will simply choose to take their business elsewhere. Organizations

have to be fully committed and pay considerable attention to what customers are asking for and actively demonstrate understanding and a willingness to change to meet customer needs.

Business agility is the ability of a business to adapt to a dynamic environment and provide solutions to ever-changing customer needs.

Ladies and Gentlemen, this is precisely why we should keep up with customer demand in line with our program of continuous improvement, in order to satisfy them, to meet and possibly exceed their requirements, and finally to graduate into a zone of delight. Partnership with customers arise when our service offering has risen to a level of reliability, cost effectiveness and dependability.

How then do we manage Innovative Methods of Upping Turn Around Time and at the same time Boost Operational Efficiencies?

1. Define Common performance measures

Starting with your small Supply Chain of own business, define those critical measures that best describe your business' effectiveness. In the hospitality industry, the greatest measure of financial effectiveness is "Bed Occupancy" rate i.e. 85 – 95%, which reaches 100% at peak season. The operational efficiency is the speed with which a guest is ushered into their room with top notch housekeeping standard. Repeat business will indicate the measure and extent of satisfaction on a defined scale (1 to 5).

Similarly, in the Maritime case, defining a common set of Key Performance Indicators (KPI), will lay foundation for the first step towards removing any blurred measures. These can be Turn Around Time of Ships in hours from outer Anchorage to berth and outbound voyage, turn around times of Trucks in minutes, Trains in hours, Documentation processing speed, Customs and Clearance speed, to mention but a few.

The next steps will be to measure the performance of different Supply Chain Partners from base line reference. Any deviation gabs must be addressed in line with the Continuous Improvement program and must be monitored on a frequent time period. There must be demonstrable intent to improve performance from one phase of the cycle to the next.

Therefore, Statistical and Mathematical evidence must exceed long winded verbiage.

2. Share Common Planning Platform

Global business by its nature, is an open borderless form of trade. Sharing planning information serves only the intended purpose of facilitating trade. Supply Chain partners therefore ought to be transparent in planning their logistics movement within the community of the Maritime industry. The advantage of this practice is to enable supply chain partners dependent on your service to anticipate their next timeous move. Any bottle neck in the

system can be addressed with predictable speed, before it results in a domino form of delays.

This is particularly crucial in view of the cost of shipping far outweighing Port related costs which could be born in multiple folds by either the Importer or Exporter. Supply Chain partners, in international trade, have of necessity, to share their planning information in order to facilitate trade, improve turn around time and boost efficiency.

3. Cooperative partnership

On an ongoing basis, clusters of different sectors in the commodity flows, ought to meet in a structured format to address common challenges in the Maritime Logistics Chain. These must be representatives of key stake holders having mandate to take critical decisions to improve performance, reduce cost and ensure safe integrity of cargo in transit.

To formalize such a partnership, it might be necessary to enter into a confidentiality agreement, as strategic information could be in the domain of possible competitors.

Such a partnership might require specific sub committees mandated to carry out functions geared towards supporting the integrated work of the chosen Supply Chain. These may be Technical, Audit, Advisory and Oversight committees reporting to a Plenary Body.

The frequency of meetings must be at least a month, with tangible action plans being realized. This partnership must be seen within a broader program of global benchmarking to stay competitive.

Benchmarking performance with other ports around the world has to assume the role of peer assessments partners of key KPI's common to your environment. This may require formal agreements to give it firm effect. The information exchange is a valuable tool to enable your organization to get onto the competition super highway and to gain the requisite competitive edge.

4. Integration of the Supply Chains

Supply chain management has become the primary competitive weapon in many industries. At the same time, there is growing recognition that supply chain management is dependent upon execution excellence to achieve the promise of planning applications, strip out millions of costs through superior operations, and achieve revenue growth.

As companies continue to move toward extended supply chains and evolve into new ways of doing business, collaboration among supply chain partners is more important than ever before. As supply chain networks compete, a highly effective supply chain will outpace the competition through more efficient operations and increased market share.

A truly integrated supply chain does more than reduce costs. It also creates value - for the company, its supply chain partners, and its shareholders. The foundation of integration is information sharing. Coordination is the next dimension. Then comes the organizational linkages that enable sharing of risks, costs, and gains.

Electronic Data Interchange (EDI) was perhaps the earliest generation tool for supply chain integration and is still being adopted by many Fortune 500s even today. EDI has been promoted in many countries from USA, EU, East Asia, and in South Africa, since the last decade but adoption was not really satisfactory, with the exception of mandatory customs declarations.

Feedback and supply chain integration are key instruments in a business. As feedback helps in analyzing the pulse of customers, similarly, supply chain integration also helps in judging the pulse of supply chain providers. Feedback is also important to make bottom-line decisions pertaining to marketing changes, developments and improvement.

Two success stories in South Africa

1. Magnetite Challenge. Mining company PMC Customer located approximately 12 hrs from the port of RCB, has Magnetite stock reserves for the next 20 years of this commodity. They are exporting to European markets. This company needed to increase their throughput from 600 000 tons pa to at least 3 million tons. Major bottleneck was rolling stock and the ports ability to help make this dream come through.

We formed a three tier steering committee comprised of Terminal Operator, Freight Rail Operator and Port Authority supported by agents and stevedoring company. We dedicated 8 blocked trains per day, 24/7.

Monitored dwell time and transit time, through support of NOC, firstly at customer site right up to the port, including time it took to offload the wagons, and shunting them out of port. From a baseline TAT of twelve hours, we have been able to reduce that TAT to 6 hrs, through placing dedicated resources to manage, supervise and take action against any form of delay. Port operator ensured equipment uptime was high,

handling of cargo was swift and loaded ship on time, Freight rail delivered wagons on time and Port Authority availed Marine service timeously to turn the vessel around with speed. The net result is that we are now handling 1.5million tons of Magnetite within 6 months, we are on target to achieve the 3million tons milestone. Managers get hourly updates as part of tracking performance.

2. Durban Container Terminal

With the exponential growth of container volume, the terminal is stretched to absorb volume beyond current capacity of 2million TEU's p.a. Obviously the only opportunity that exists to open up further capacity prospects is through efficient performance. Had to rally operatives at the terminal around the need to increase daily output from 4000 teu's per day to 6000 teu's per day. Gang deployment per shift was planned accordingly, which included operators, STS G-cranes, and the stevedoring service. Again a three tier approach was adopted, with Terminal operator, Port Authority and Freight Rail and Road playing key active roles. We had innovative operational prowess flowing from the marine service deploying two tug boats on the incoming vessel and placing it in the port or lay by berth, whilst two other tags were deployed to remove outgoing vessel from berth to outer Anchorage. The exchange time was reduced from 8 hrs to less than 3 hrs. This by the way was a safe operational practice. On the one hand port operator trained operators through the support of external service, PMS, to work with speed but safely. They brought in operating techniques such as hoisting a container by crane adopting a parabolic profile, which reduced hoist cycle time by more than 45% thereby boosting container handling frequency. They have now composed a rallying song which has become their "War Cry" around the target of handling 6000 containers. This program is called "6G". What was the role of rail operator in this? They ran dedicated trains from Gauteng – JHB to Durban on express service. Likewise collecting import containers on the return leg. The result of this effort is that we managed to reduce container dwell time, increased throughput and created capacity to handle additional volume. Trucking companies were encouraged to collect their containers during off peak hours to avoid congestion on the road. We are further exploring the high feasibility of a truck stop station with ablution and catering facilities.

This brings me to the last aspect of this paper, Productivity Management. As classical operational practice would tell us, what you measure, you can manage.

It's important to have on the coal phase quality forums in order to measure performance and get real time performance feedback so that you can take remedial action there and then.

There are many solutions to managing productivity. In the case of Richards Bay we have piloted the “War Room” concept. It is made up of the Planning department, facets of operations, marketing and engineering support. We also have resident representatives of the rail, and marine operators together with agents. The purpose of the War room is to manage performance in line with designed performance standards. Operations has to account for its performance against objectives, and to implement corrective actions timeously and to plan for the next 24hrs proactively. Any support required to rid operations of inhibitors is implemented without delay. This meeting takes place every morning at 10h00. The duration of it is only 1 hour if not less. The terminal executive members are compelled to attend these meetings on a rotational basis to raise sense of urgency.

On a weekly basis, this item has become a standing exco performance appraisal item. After all, this is the soul of the port terminal business. VPM program has been implemented to give feedback to all and sundry in the terminal. On a monthly basis, the BUE conducts feedback sessions with staff.

Ladies and Gentlemen: It's possible it can be done, as long as we remember that after all differences in outlook, the customer comes first. This is our rallying agenda through which we should converge all minds and thoughts to customer service.

By the same token we can employ these techniques as a region to serve our common customers who have to keep their sailing schedule between African Ports and European and American ports.

Macs and Gal lines have thrown the gauntlet at us to reduce sailing time between Africa and Europe which is currently 29 days to at least 18 days.

With your commitment and our commitment we can do it. The 21st century is the era of the African continent. We dare not fail our responsibility

Thank you for your attention.

May God bless you all.