

Title - How to Improve My Port's Productivity/Efficiency?
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Summary -

Main focus of this report is given to find out a suitable strategy to improve current productivity level up to the industry standard in Port of Colombo, ultimately minimizing the vessel stay at port as shipping industry is becoming competitive in every single day, with the expectation of high return of Investment. One of the major problems that hinders the improvement is identified as non-operational times included in the 24/7 operation and factors that create those issues are defined in this report with the objective of finding out a most suitable and practical solution.

Solution was defined as enabling 100% hot seat practice in the shift changeover by creating equipment pooling concept initiating with the prime mover operators, which is analyzed and expressed in detail throughout this report. Finally, the benefits and crane productivity improvement is measured to analyze the ratio of success in this resolution.

By writing this report, it is expected not only to define factors negatively affecting to the improvement of my port but also to redefine those issues with practical and appropriate elucidation to achieve its vision of becoming an iconic port in the whole maritime sector by being the most preferred hub port in South Asian region.

“How to Improve My Port’s Efficiency/Productivity?”

Introduction

Jaye Container Terminal (JCT) is a separate business entity attached to Sri Lanka Ports Authority which is one of few state owned container terminals in the world. It opens up the global gateway to Sri Lanka, an island surrounded by the Indian Ocean comprised of various natural wonders. Port of Colombo (Ranked 32nd) is the heart of Indian Sub-continent connecting transshipment cargo from East to West and vice versa. JCT is the main Container Terminal which accounts for more than 60% of 4.26M TEU handled within Colombo. As a transshipment hub it is mandatory to keep a smooth flow in operation and berthing agenda to avoid the discrepancies when connecting cargo from feeder to mainline & vice versa.

Productivity levels are measured mainly with the Crane Productivity which is clarified as gross moves handled by a certain crane within an hour. The current productivity level maintained in JCT is 21 Moves per hour for Mainline Vessels and 18 Moves per hour for Feeder Vessels. Compared to Previous four year records the Level of Service have upsized with the introduction of Terminal Management System and the purchase of new machinery.

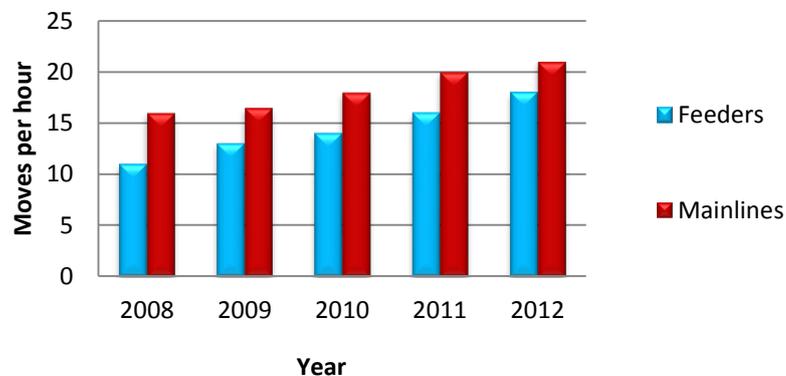


Figure 1 – Average Crane Productivity of Feeder & Mainline Vessels

But with the economic down turn all over the globe, shipping lines and vessel operators are seeking for cost reduction through scrunching vessel turnaround time. Therefore, the demand for higher vessel productivity is pressured to terminal operators directly. The competition among regional transshipment centers determined mainly through the quality of service which they can provide. For an instance vessel turnaround time is determined through Ship Waiting Time to occupy a Berth, Berthing/ Sailing Time and Vessel Productivity.

Problem Identification

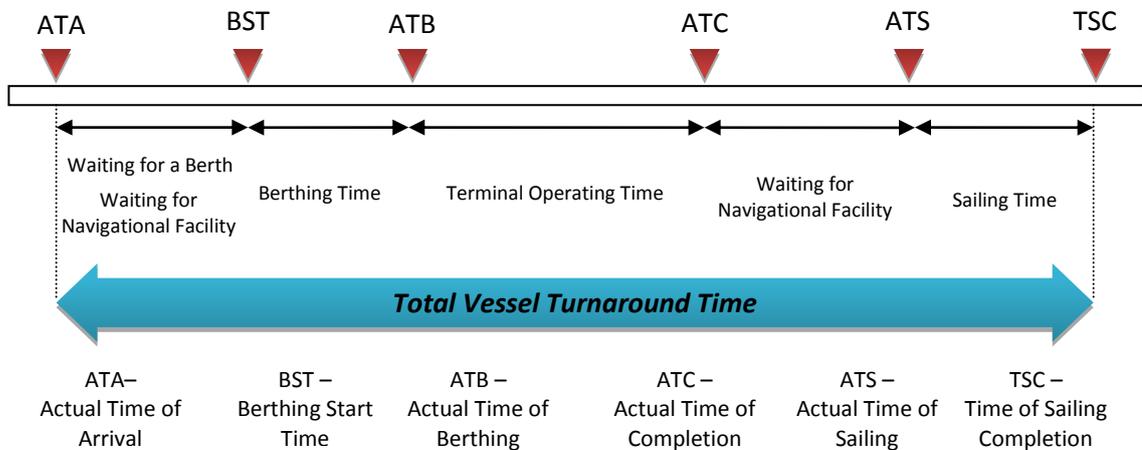


Figure 2 – Particulars Included in Total Vessel Turnaround Time

Vessel Operators always demand for minimum time between Actual Time of Arrival (ATA) to Time of Sailing Completion. As a Terminal operator the productivity of the vessel operation directly involved to the Terminal Operating Time and the Time Waiting for a Berth. Therefore by implementing new methodologies and innovative ideas, Jaye Container Terminal should approach continuous development concepts to upsize the productivity level. In south Asian region the expected crane productivity level varies around 25 moves per hour therefore the current productivity level of 21 moves per hour should be improved in JCT.

Identified Problem

Considerable Amount of Non-operational Time During the Vessel Stay Hinders the Overall Operation, Scrunching the Objective Crane Productivity 25mph.

Modern day container terminals has to operate 24/7 under hot seat practice, but JCT current operating procedure of Prime Mover (PM) Operators, Rubber Tired Gantry (RTG) Operators, and Quay Crane Operators cannot be claimed as a 100% hot seat operation. During Shift Changeovers, Meal times, and Tea times the operation lags behind in a significant manner. This phenomenon has to be modified under the continuous development plan of JCT. The nonoperational times of the JCT are as follows;

Table 1 – Non –Operational Times Included in 24 hour Operation in JCT

Non-Operational Time	Time	Duration(Mins)
Morning Shift Change	0700-0720	20
Changing for Lunch	1215-1235	20
Evening Tea Break	1500-1520	20
Evening Shift Change	1800-1830	30
Changing for Dinner	0900-0910	10
Midnight Snack	2400-2420	20
Staff Change	0200-0210	10
Early Morning Snack	0400-0420	20
Total		150 Mins

The Table 1 gives a clear indication upon the total nonoperational time proceeding in a particular 24hr clock, therefore it clearly illustrate that 2.5 hours or 10% of a certain day is lost due to this problem. In order to achieve the target productivity level of 25mph it is certain to mitigate above nonoperational time losses in a strategic manner. The nonoperational time during shift changeover is unavoidable because during that time operators are checking the oil and water level of the equipment, clean glasses and check for damages (Tire Punches) before starting the operation.

When monitoring closely, all the above nonoperational time indications are bounded by employee welfare related matters therefore the solution to mitigate those challenges should be tactful and compromised with a win-win approach to overcome them successfully.

Current Working Procedure at JCT

There are two shifts in a certain day, Day Shift (0700-1800) and Night Shift (1800-0700), two operators are manned for each dedicated equipment in a certain shift. The staff changeover in the day shift is at 1200hrs and in the night shift is 0200hrs. The time of change is most applicable to the PM operators because they park in-front of the muster point to change their partner.

The bottleneck comes when the operators are changing their shift because the two operators who are working for the same machinery are reluctant to change, therefore the first operator

park the equipment in the parking area and he goes to rest, only then the next operator comes and gets in to the machinery. By the time the second operator comes there are lots of PMs parked in the parking area therefore he will have to wait until other operators drive away from the parking lot creating huge gaps in the shift change over which hinders the 25mph crane productivity. The target productivity levels can be achieved only if the JCT can match the time difference when changing in the same shift.

Introducing Prime Mover Pool Concept to JCT

By the PM pool concept the PMs are manned by a PM operator pool which is assigned according to their time of arrival. A queue of PM operators should be formed and the driver who is in-front of the queue must get in to the first PM which is arriving to the parking area. By that the congestion in the parking area will be minimized in a huge manner enabling the PM operators to get their PM out of the parking area rapidly. But in order to apply pool concept, all the PMs should be nearly identical in facilities or in the same comfort level of driving, else the operators will hesitate to accept the implementation pool concept.

JCT overall PM fleet is not nearly identical to each other in comfort levels in driving or facilities; Therefore PM operators will hesitate upon working in a common pool. In order to make them agreeable to operate under pool concept, the environment and the tactic of implementation should be modified to suit the situation. In order to do that the total fleet should be categorized in to several groups based on the facilities they have. The PM operators also should be grouped according to the current PMs which they are operating. As per the data collected from the PM operators, their demand for facility category is as follows,



Figure 3 – Prime Mover Categories for the Pool Concept according to Facility Category

Separate four queues should be formed at the muster point according to their group and the first one in line should go for the first PM which comes according to their facility category. For an instance if the first PM is a Normal UD PM the first operator in the line at normal UD PM Queue should go for it. Stickers can be used to easily identify the category of the PM. Furthermore, to smoothen the changeover four lanes can be used extensively, through that the operator can swiftly get in to his machine and continue operation as soon as possible.

When implementing the custom pool concept to JCT initially, an awareness program should be conducted separately for operators and Muster supervisors. They should be well educated upon the methodology and they should be convinced as this is a win-win approach for both terminal and operators. A tactful approach should be taken when dealing with the unions in order to implement such measures. Two way communications is very much important when dealing with operators and supervisors prior implementing the concept. The muster supervisors have a major role when operating according to the concept where he has to always coordinate with employees upon making queues and parking PMs in the lanes.

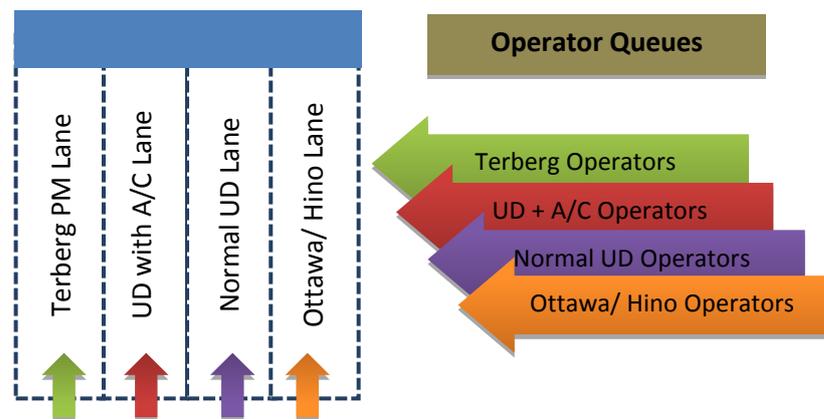


Figure 5 – Allocation Method of PM Pooling Concept

Expected Outcome

Currently it takes 40 minutes to complete the changeover per day, but with the pool concept the changeover will be negligible therefore the current productivity level of 21 mph will be increased by 4%, which the productivity at the end of the day will be little less than 22 mph. The continuous flow of PM operation not only reduces the operational time but also keep the momentum in operation at a steady rate.

The outcome can be upsized if the terminal can apply the same methodology for other major nonoperational times which will create an opening to achieve more than 25 mph. Furthermore as a benefit of this methodology, the idle time of the PM engine will be utilized directly towards efficient fuel consumption and indirectly to the lower maintenance costs. Most of all due to the good productivity the vessel turnaround time will be drastically reduced eventually.

Conclusion

With the overall cost reduction concepts emerged mainly with the economic downturn, every single person involved in shipping business is finding ways to minimize cost, which accounts for the minimum vessel turnaround time. In order to achieve that, first thing that any port should encompass is high level of productivity in operations at a sensible operational cost. Jaye Container Terminal, as a major container terminal in port of Colombo, developing transshipment hub in south Asia, should highly concern on improving its level of productivity. But, the scenario is still quiet lagging behind due to several reasons; one of the major factors identified is non operational times generated mostly in shift changeover and shift breaks which can be fixed.

In this report main concern is given to the prime mover operator change over, which is one of the major links of total operation. Current procedure is described and the non operational times are identified in order to find a suitable solution with the expectation of increasing to the expected level of productivity, 25 moves per hour. Concept is defined as Prime Mover Pool Concept, where operators are assigned to the prime movers categorized in to four, defined according to the type and the facilities of prime movers, avoid using same prime mover of his employment life time.

This concept can bring lots of improvements to the JCT operation since it will reduce the congestion in shift changing ultimately reducing the changeover time to a minimum and time saved by 4%. It will directly affect the vessel operation where waiting times for the Quay Crane Operators and RTG operators are avoided, improving the crane productivity. Finally, by implementing this method for other operator categories, non operational times involved in shift change over can be avoided which will result in improving vessel turnaround time, the prime factor considered in improving productivity of my port.