APPLICATION OF INFORMATION TECHNOLOGY IN CONTAINER TERMINALS IN SRI LANKA

By

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DECLARATION

"I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any University to the best of my knowledge and belief it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organisations"

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ABSTRACT

Applications of Information Technology in the cargo handling business in general and the container shipping industry in particular are numerous and have grown rapidly in recent past. Software systems for cargo manifesting, operation planning, container tracking, plant operation and billing for the services provided have been developed by reputed software companies and such systems are in place in many leading ports throughout the world.

The Port of Colombo started its container operation business as far back as 1979 and it is a pioneer in the Asian region. The Port of Colombo has two container terminal operators, namely Jaya Container Terminal, which is owned and operated by the Sri Lanka Ports Authority and the South Asia Gateway Terminal, which is owned by a consortium of P & O Shipping Line, John Keells Holdings and few other private organizations. Port of Colombo has maintained prominent rank (between 21st and 38th in the world) on the basis of container volume handled annually.

As a result of continuous development works carried out in the past with the assistance of the Japanese Government, total revenue of the Port of Colombo has increased from a mere Rs. **650 million in 1979** (about US$ 26 million at 1979 rate) **to Rs. 16 billion at 2003** (about US $ 160 million at today's rates) and this makes SLPA the **most profitable** institution in Sri Lanka. Almost all major container shipping lines use the Port of Colombo facilities; few examples, Mearsk Sealand Shipping Line (world largest container shipping line), P & O Shipping Line, Evergreen Shipping Line.

Terminal Operators today face challenges in providing speedy services requested by shipping lines that operate very large ships with capacity more than 8,000 TEUs (twenty foot equivalent units). Few examples are, limitations of infrastructure (e.g. depth of the port), providing quay cranes, which can handle many rows of containers across the ship, and providing high berth productivity levels (in moves per hour), so that ship will stay a short time in the port. To provide those service requirements container terminals have to invest on information technology systems such as automated container location and positioning, wireless LAN, efficient yard operation software etc.

The Port of Colombo depends on transhipment containers to maintain its current status as a recognised "Mega Container Port". But it has to face stiff competition form regional ports which are developing fast while Port of Colombo development work stagnating due to scarcity of capital. Also due to slow pace of development work, Port of Colombo finds that, it is very difficult to provide service levels requested by shipping lines.

One way to improve service levels is by using an efficient information system and it will help to increase current low level of yard utilisation and vessel productivity levels to industry norm levels. This will help to increasing annual throughput capacity of the JCT from current 1.7 million TEUs to 2.8 million TEUs. In addition, such a system can support better flow of information with clients (e.g. using industry standard EDI messages), and online information to the shipping community. Also this will help to increase the satisfaction level of the shipping community, which is at a low ebb now.

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ABBREVIATIONS

EDI	Electronic Data interchange
JICA	Japan International Cooperation Agency
JCT	Jaya Container Terminal
JPC	Japan Port Consultant
DGPS	Differential Global Positioning System
Dwt	Dead weight ton
GPS	Global Positioning System
IRR	Internal Rate of Return
ISL	Institute of Shipping, Economics and Logistics
LAN	Local Area Network
OCR	Optical Character Recognition
PSA	Port of Singapore Authority
RHDT	Radio Handheld Data Terminal
RMG	Rail Mounted Gantry Crane
RTG	Rubber Tired Gantry Crane
SAGT	South Asia Gateway Terminal
SLPA	Sri Lanka Ports Authority
TEU	Twenty Foot Equivalent Units
VMT	Vehicle Mounted Data Terminal
VPWS	Vessel Planning Work Station
YPCS	Yard Planning Computer System
YOCS	Yard Operation Control System
YOR	Yard Occupancy Ratio