AN EVALUATION OF ICT INFRASTRUCTURE AND ICT FAMILIARITY OF OPERATIONAL STAFF IN CONTAINER TERMINALS

A CASE STUDY BASED ON TWO SRI LANKAN CONTAINER TERMINALS

Master of Business Administration

in

Information Technology

W.M.D.B.Wijekoon

Department of Computer Science and Engineering

University of Moratuwa

December, 2005

AN EVALUATION OF ICT INFRASTRUCTURE AND ICT FAMILIARITY OF OPERATIONAL STAFF IN CONTAINER TERMINALS

A CASE STUDY BASED ON TWO SRI LANKAN CONTAINER TERMINALS

By

W.M.D.B.Wijekoon

The Dissertation was submitted to the Department of Computer Science & Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration.

Department of Computer Science and Engineering

University of Moratuwa

December 2005

Acknowledgment

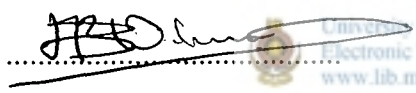
I wish to thank port officials of Sri Lanka Ports Authority, South Asia Gateway Terminal, Westport- Malaysia and Hamburg port-Germany for their contributions to this research by giving valuable information.

Also, I wish to thank Dr. Chathura De Silva, Dr Sarath Dassanayake and Mr. Kithsiri Samarasinghe for their guidance and others who supported for the completion of this report.

I also extend my heartiest gratitude to my wife Wasantha who encouraged me and helped me and to my daughters Semini and Sithmini for bearing my absence with them during the busy period I had working on this research.

Declaration

"I certify that this dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any University to the best of my knowledge and believe 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 organizations"



Signature of the Candidate

Date:

UOM Verified Signature

Dr. Chatura De Silva

Supervisor

Date:

ABSTRACT

It is important for container terminal operators and administrators to understand the key factors influencing the productivity due to competitive nature of the business. Growing competition among container terminal has forced the container terminal management to develop competitive strategies to attract and retain their customer base.

The shipping Alliances that have tremendous command over selection of seaports always set standards and expect very high productivity indicators and service level. The shipping lines and freight forwarders always demand faster response, on-line data availability, online billing and online payments. It is therefore important to have these functions be processed and managed by using an infrastructure with proper Information and Communication Technology (ICT).

For the port of Colombo as it is facing severe competition from the seaports in the South Asian region and ports in Far East and Persian Gulf, it is extremely important to have the seaports facilities to meet international standards. At the same time emergence of new terminals, construction of new generation ships, mergers and alliances of shipping lines are also happening. This dissertation analyzes the implementation level of information technologies used in some of the container ports in the region as well as in Sri Lanka.

The operating staffs' IT skill is one the factor for productivity since they have to interact with sophisticated ICT systems. It is important to study the actual impact of this factor to the performance of the terminal. The research compares the effect of ICT and IT skills to final productivity in two container terminal in Sri Lanka. It was not found any research done on this area and this is a useful area for future research.

LIST OF ABBREVIATIONS

ATM	Automatic Teller Machine
ATM	Asynchronous Transfer Mode
CFS	Container Freight Station
CSMA/CD	Carrier Sense Multiple Access / Collision Detect
DGPS	Differential Global Positioning System
DP	Data Processing
DR	Disaster Recovery
ECS	Electronic Container Seal
EDI	Electronic Data interchange
FC	Fiber Channel
FCL	Full Container Load
FF	Freight Forwarder
GPS	Global Positioning System
GUI	Graphical User Interface
HHT	Handheld Terminal
HIT	Hong Kong International Terminal
ICT	Information and Communication Technology
IP	Internet Protocol
ISL	Institute of Shipping, Economics and Logistics
ISM	Industrial Sciencetific and Medical
ISO	International Standard Organization
IT	Information Technology
ITT	Inter Terminal Transfer
ITV	Industrial Television (=CCTV)
JCT	Jaya Container Terminal
JNPT	Jawaharlal Nehru Port Trust
LAN	Local Area Network
LCL	Less than Container Load
MDT	Mobile Data Terminal
MF	Main Frame
MM	Multi mode
OCR	Optical Character Recognition
OSI	Open System Interconnection
PC	Personal Computer
PDS	Position Detecting System
PM	Prime Mover
PSA	Port of Singapore Authority
PTP	Port of Tanjung Pelapas
QEQ	Queen Elizabeth Quay
RAID	Redundant Array of Inexpensive Disks
RDBMS	Relational Data Base Management System

RFID	Radio Frequency Identification
RHDT	Radio Handheld Data Terminal
RMG	Rail Mounted Gantry Crane
RTG	Rubber Tired Gantry Crane
SAGT	South Asia Gateway Terminal
SAN	Storage Area Network
SLPA	Sri Lanka Ports Authority
SM	Single Mode
SNA	Simple Network Architecture
TCP/IP	Transmission Control Protocol and Internet Protocol
TDR	Terminal Departure Report
TEU	Twenty Foot Equivalent Units
TMS	Terminal Management System
TSA	Terminal Service Agreement
UCT	Unity Container Terminal
UN/EDIFACT	United Nations/EDI for Administration, Commerce and Transport
UPS	Uninterruptible Power Supply
UTP	Un-shielded Twisted Pair
VDU	Video Display Unit
VLAN	Virtual Local Area Network
VMT	Vehicle Mounted Data Terminal
VPWS	Vessel Planning Work Station
WAN	Wide Area Network
XML	eXtensible Mark-up Language
YOCS	Yard Operation Control System
YOR	Yard Occupancy Ratio
YPCS	Yard Planning Computer System
YPS	Yard Planning System

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES