5. CONCLUSIONS AND RECOMMENDATIONS

The general objective of this research was to assess the implementation level of ICT infrastructure in container terminals and its impact on the productivity. And also IT skills of the operational staff were assessed in this regard. To accomplish the objectives, primary and secondary data and information were used. Even though there are only two sets of data, the result of the research shows clearly a positive relationship between ICT level and productivity as well as familiarity level and productivity.

A clear upward trend in shipping volumes in the Asian region can be seen and more vessel traffic is also expected. At the same time ports and terminals in Asian region are developing at a faster rate. That suggests the improvements in ICT in container terminals have to be done in an essential basis without further delaying. ICT infrastructures have to be continuously upgraded to meet industry standards and fulfill the port users' expectations.

Meantime ICT skills of operational employees, who operate the newly implemented ICT systems, have to be improved by giving a proper training. Specially, with the proposed system for JCT, IT skills of prime mover drivers have to be improved as they have to interact with the new system. Their skill levels have to be assessed continuously to maintain a high standard.

Although this study has a small sample size, its results do provide insight into the importance of the use of ICT infrastructures with latest technologies. Also, findings from this analysis can prove useful in continued analyses of these data and in the development of future research projects.
REFERENCES

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25. Operations Manager (Planning)-JCT, Interview by author
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29. Scott Wilson Consultants (2001), *Colombo Port South harbour Development Project-Final Report*
30. Senior System Analyst of IS Division-JCT, Interview by author.
APPENDIX 1 - SURVEY QUESTIONNAIRE

This questionnaire was designed to collect the information on Operational staff of Container Terminals for a Research Project conducted by W.M.D.B. Wijekoon, a student of MBA/IT 2002/2004 group of the University of Moratuwa.

1. Organization: _____________________________________________

2. Job Description (Please mark the relevant box)

<table>
<thead>
<tr>
<th>Job Description</th>
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<tbody>
<tr>
<td>a Quey crane operator</td>
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<tr>
<td>b Quey crane assistant (Signalman)</td>
<td></td>
</tr>
<tr>
<td>c Yard crane operator</td>
<td></td>
</tr>
<tr>
<td>d Yard crane assistant (Signalman)</td>
<td></td>
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<tr>
<td>e Prime mover driver</td>
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<tr>
<td>f Yard assistant</td>
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<tr>
<td>g Tally clerk</td>
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<tr>
<td>h Yard superintendent</td>
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<td>i Superintendent</td>
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<tr>
<td>j Yard planner</td>
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<tr>
<td>K Ship planner</td>
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<td>L Control room staff</td>
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<tr>
<td>m Managers</td>
<td></td>
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<tr>
<td>n Other (Pl specify)</td>
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</table>

Please mark the relevant box.


6. Highest Education Qualification obtained
   1. [ ] Up to 8th standard
   2. [ ] Up to Ordinary Level
   3. [ ] Passed Ordinary Level
   4. [ ] Up to Advanced Level
   5. [ ] Passed Advanced Level
   6. [ ] Degree
   7. [ ] Post Graduate Diploma or Degree
7. Computer courses followed (Please mark the relevant box)

<table>
<thead>
<tr>
<th>Computer Course and Duration</th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Short term certificate courses ( 2 weeks or less)</td>
<td>[ ] No</td>
<td>[ ] Followed</td>
<td>[ ] Completed</td>
</tr>
<tr>
<td>Long term certificate courses ( 2 weeks to 3 months)</td>
<td>[ ] No</td>
<td>[ ] Followed</td>
<td>[ ] Completed</td>
</tr>
<tr>
<td>Diploma courses</td>
<td>[ ] No</td>
<td>[ ] Followed</td>
<td>[ ] Completed</td>
</tr>
<tr>
<td>Higher Diploma courses</td>
<td>[ ] No</td>
<td>[ ] Followed</td>
<td>[ ] Completed</td>
</tr>
</tbody>
</table>

8. Other courses followed which are relevant to your job (Please specify)

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Duration</th>
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</table>

The choices you make in answering in following questions are:

- **Not clear** - means you don’t know what is meant by the question.
- **I can’t do** - means you have tried it and you feel that you cannot do it at all.
- **Very difficult** - means you have tried it and you feel that it is very difficult for you.
- **Can manage** - means you feel that it is difficult. But you can do it with some effort.
- **Easy** - means you feel that you can do it without any extra effort.
- **Very easy** - means you feel that you are very comfortable with it.

Please read each question carefully and then mark the appropriate box. Do not spend too much time on any question.

**In general life**

9. Do you have a bank ATM card?  [ ] Yes  [ ] No

If yes, 9.1 Use of an ATM card to withdraw money from a bank:

- [ ] Not clear  [ ] I can’t do  [ ] Very difficult  [ ] Can manage  [ ] Easy  [ ] Very easy

10. Do you have a mobile phone with SMS facility?  [ ] Yes  [ ] No

If yes, 10.1 Use of special features in a mobile phone:

- [ ] Not clear  [ ] I can’t do  [ ] Very difficult  [ ] Can manage  [ ] Easy  [ ] Very easy

10.2 Use of a mobile phone to send a SMS:

- [ ] Not clear  [ ] I can’t do  [ ] Very difficult  [ ] Can manage  [ ] Easy  [ ] Very easy

10.3 Use of mobile phone to play games:

- [ ] Not clear  [ ] I can’t do  [ ] Very difficult  [ ] Can manage  [ ] Easy  [ ] Very easy

**In the work place**

11. Do you have to do any data entry for your job?  [ ] Yes  [ ] No

If yes, 11.1 Data entry using the given key board:

- [ ] Not clear  [ ] I can’t do  [ ] Very difficult  [ ] Can manage  [ ] Easy  [ ] Very easy

...
IT Skills

12. Have you ever used a normal computer? [ ] Yes [ ] No
   If yes, 12.1 Working with the standard computer keyboard:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy
   12.2 Operating a pointing device (Mouse):
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

13. Have you sent an email? [ ] Yes [ ] No
   If yes, 13.1 Sending an email:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

14. Have you gone to a website in the Internet? [ ] Yes [ ] No
   If yes, 14.1 Surfing the Internet:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

15. Have you played a computer game? [ ] Yes [ ] No
   If yes, 15.1 Use of a PC to play a computer game:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

16. Have you used computer to listen to a music CD or to watch a movie VCD? [ ] Yes [ ] No
   If yes, 16.1 Use of a PC to listen to a music / watch a movie:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

17. Have you sent an email? (If specify) [ ] Yes, for ........................................ [ ] No
   If yes, 17.1 Doing that work:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

18. Do you have a computer in your home? [ ] Yes [ ] No
   If yes, 18.1 Setting up of a PC (Connecting of keyboard, monitor and speakers etc):
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy
   18.2 Working in Windows environment:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy
   18.3 Installation of a new software package in your computer:
   [ ] Not clear [ ] I can't do [ ] Very difficult [ ] Can manage [ ] Easy [ ] Very easy

Following questions are based on some statements. The choices you make in answering are:

Strongly Agree - means you feel strongly in favour of this statement
Agree - means you are in favour of this statement
Undecided - means you are not sure or do not know about this statement
Disagree - means you are not in favour of this statement
Strongly Disagree - means you feel strongly against this statement
Please read each statement carefully and then place appropriate number out of five choices given. Do not spend too much time on any one statement.

Choice Types

1 = Strongly Disagree (means you feel strongly against this statement)
2 = Disagree (means you are not in favour of this statement)
3 = Undecided (means you are not sure or do not know about this statement)
4 = Agree (means you are in favour of this statement)
5 = Strongly Agree (means you feel strongly in favour of this statement)

19. “An employee with proper education background can do his work efficiently” [ ]
20. “A skilled / well trained employee can complete the assigned task efficiently” [ ]
21. “An employee who has some familiarity with IT can do his work efficiently” [ ]
22. “Team work concept, make us more productive” [ ]
23. “Incentives paid are/were more effective to improve productivity” [ ]
24. “Competition among the terminals makes us more productive” [ ]
25. “Discipline of the employee is more important to increase the productivity” [ ]
26. “Attitudes of the employee are much helpful to increase productivity” [ ]
27. “Productivity is inversely affected by trade union actions (Picketing, Strikes etc.)” [ ]
28. “A correct leadership and guidance is provided by the top management” [ ]

Your suggestions to further improve the productivity of the container terminal

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Name (Optional): 

Telephone: 

FAX:
APPENDIX 2 - SINHALA TRANSLATION OF THE QUESTIONNAIRE

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7. ආකාර කළ නාමාංකය:

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8. එමේකාංගය ඉංගුම් සිරසී : (ඇංග්‍රීසි එළුත් කළඟකය)

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9. එමේකාංගය ඉංග්‍රීසියන් ATM සංඛ්‍යාවේ කැටිවී? [ ] ඒ [ ] එක කැටිවීන්, "ATM ඉංග්‍රීසියන් ATM ඉංග්‍රීසියන් කැටිවීයාමක්" [ ] එක්ක් කැටි [ ] එක්ක් කැටි [ ] ගොං කරන්නේ. [ ] ගොංකරන්නේ. [ ] ගොංකරන්නේ. [ ] ගොංකරන්නේ.

10. එමේකාංගය ඉංග්‍රීසියන් විශාලතාවක් කැටිවී? [ ] ඒ [ ] එක කැටිවීන්, 10.1 “එයින් විශාලතාව ඉංග්‍රීසියන් කොටස් (Phone book සංඛ්‍යාවක්) කැටිවීය” [ ] එක්ක් කැටි [ ] එක්ක් කැටි [ ] ගොං කරන්නේ. [ ] ගොංකරන්නේ. [ ] ගොංකරන්නේ. [ ] ගොංකරන්නේ.
10.2 "docos _<5e>«3s)(5c3s>' SMS £ss>s3 cS{S©".

10.3 "docos _<5e>«3s)(5c3s>' Games coo.Ssacs"

11. "docos _<5e>«3s)(5c3s>' Games coo.Ssacs" (data entry) வழி விளக்கம் ? [ ] டி [ ] காக

12. "docos _<5e>«3s)(5c3s)' (Personal Computer) பொருளாதார விளக்கம் ? [ ] டி [ ] காக

12.1 "docos _<5e>«3s)(5c3s)' (Keyboard) பொருளாதார விளக்கம் வழி விளக்கம் ? [ ] டி [ ] காக

12.2 "Mouse வழி விளக்கம்"

13. "docos _<5e>«3s)(5c3s)' (E-mail) பொருளாதார விளக்கம் ? [ ] டி [ ] காக

14. "docos _<5e>«3s)(5c3s)' (Internet) பொருளாதார விளக்கம் ? [ ] டி [ ] காக

15. "docos _<5e>«3s)(5c3s)' (CD) குறிப்பிட்டல் வழி விளக்கம் ? [ ] டி [ ] காக

16. "docos _<5e>«3s)(5c3s)' (VCD) குறிப்பிட்டல் வழி விளக்கம் ? [ ] டி [ ] காக
17. What is the purpose of a computer? What are the main components of a computer system? [ ]

18. What is the purpose of a computer system? [ ]

18.1 What are the main components of a computer system? (CPU, Monitor, Keyboard, Mouse, Speaker) [ ]

18.2 What is the purpose of “Windows” in a computer system? [ ]

18.3 “Software Installation” [ ]

19. [ ]

20. [ ]

21. [ ]

22. [ ]

23. [ ]

24. [ ]

25. [ ]

26. [ ]
27. මෙමෙන්ම අති නිර෣ම කොටස අපේක්ෂ මට්ටමේ දක්නට අයත් නි.[ ]

28. කුමාර අව෉කදේශීයව සිදුවුට මතාවකට මෙමෙන්ම කොටස අපේක්ෂ මට්ටමේ දක්නට අයත් නි.[ ]

කමුන්සල මෙමෙන්ම කොටස අපේක්ෂ මට්ටමේ දක්නට අයත් නිසායේ මෙමෙන්ම අපේක්ෂ මට්ටමේ දක්නට අයත් නි.