A STUDY ON THE IMPACT OF IT TOOLS IN YARD MANAGEMENT IN MAJOR PORTS

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Abstract

This study focuses on yard management of shipping industry with the utilization of IT tools. For this study major players in Kerala were selected and the IT tool used by them was considered. This study concentrated on the employees handling the IT tools in the different companies.
Index Terms: Yard Management, Zodiac (IT Tool)

INTRODUCTION

Information Technology, IT, highly impacts company efficiency and quality of service. It also contributes to decreasing the percentage of errors and the total time used for companies' operations. Nowadays, IT became fundamental on differentiating one company from the others by increasing competitiveness. However, investments on IT involve risks and high costs. Therefore, when it comes to restructure and automate a container terminal, it's fundamental to understand WHEN, HOW and WHAT is applicable in each case. It's important to analyze and find out some basic considerations regarding the current and eventually the future situation at the port.

ROLE OF INFORMATION TECHNOLOGY

Information technology (IT) has become a vital and integral part of every business plan. From multi-national corporations who maintain mainframe systems and databases to small businesses that own a single computer, IT plays a role. The reasons for the omnipresent use of computer technology in business can best be determined by looking at how it is being used across the business world.

IMPLEMENTATION OF INFORMATION TECHNOLOGY

The implementation of information systems is seen to be a gradual organizational process in which the learning and innovation steps taken by the applying organization and its different actors play a crucial role for the success of the implementation process. The implementation of an information system in an organization is a complicated process, which involves issues involving technical and organizational changes. This forms an innovation design dilemma. The implementation of information systems consists of three main activities. These are planning activity, implementation activity, and use and development activity.

FACTORS OF IT IMPLEMENTATION:

- **Environmental factors**
a. Globalization
b. Environmental dynamism
c. Competition

- **Factors about internal organizational structure**
a. Strategic alignment between organizational infrastructure and IT infrastructure
b. Top management support and commitment to IS
c. User participation in IS project
d. Matching IT capabilities to organizational needs and goals
e. Organizational structure context
f. Enough managerial and technical skills

- **Factors about project team structure**
a. Project leader feedback to team
b. Experience of project leader
c. Project monitoring and control
d. Adequate training for team members
e. Peer review on project progress
f. Experience of team members
g. Team member commitment
h. Team member self control

- **Appropriate technology and project methodology**
a. Clearly stated objectives
b. Detailed project plan
c. Proper project scope
d. Utilizing effective methodology
e. Use of appropriate technology
f. Effective system implementation

- **After project support**
a. Training of users
b. Software support
c. Training of it staff
d. On time help to users

There is close relationship between environmental factors and IT success and failure level in company because external environment often encourages or requires a firm to utilize strategic IS applications in order to survive. The environmental dynamism is an effective factor because environmental uncertainty affect the IS applications of the firm. In a stable and simple environment firms generally peruse defensive strategies based on high efficiency and cost effectiveness.

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However in an uncertain environment firms should have a high level of strategic because a strategic IS application is one having a great effect on companies' success by influencing or shaping the company's strategy or playing a direct role in the implementation of company's strategy (Choe, 2003). If the firm is a global company, it must adjust the original IS project to its subsidiaries in order to fit subsidiaries' conditions. If company does not achieve to fit the specific needs, IS project may fail with high probability.

Literature Review:
John Ward and Marchand: John Ward in Principles of Information Systems Management describes the evolution of information systems by delineating MIS into three eras: Data Processing 1960-1970; Management Information Systems 1979-1980; and Strategic Information Systems 1980-1990's. Marchand describes a similar evolution identified in four stages, however he begins his discussion with information management practices before the use of information technology, which began around the turn of the 20th century.

There is a strong relationship between the success of project and the technology and methodology selected in order to develop and implement the needed IT project. If companies are fail to select appropriate technology and methodology it is most probable for them to come across with failure at the end of the project duration. To gain the success the firm should start to think on the project by clearly defining the objectives which may also help them to define proper project scope. With well defined objectives and project scope, they can be able to select the appropriate technology and methodology that accompanied with their objectives and scope. This may increase the chance of implementing successful IT projects. However if these factors are not complemented with a detailed project plan the success may not be gained. Because if predefined objectives are not reached within the planned project duration it does not mean that the project is successfully finished. (Sohal and Moss, 2001) After selecting the proper methodology if the firms are able to successfully implement it the selected IT project may catch the desired success level. The applicability of selected methodology may be related to the managerial and technical ability of firm as well as the general capability of project team. In order to be successful the company should select the methodology that is appropriate for its scope and also for its general capabilities.

Otherwise the great methodology may bring them to a certain failure if they can not implement it.

IT and SCM:
(Burt, 1996): Supply-chain management is a process responsible for development and management of the total supply system of a firm, both the internal and the external components (Burt, 1996). During the past two decades, the maritime industry has witnessed the evolution of one of the most important trends in the history of port community ± the increasingly sophisticated use of computers. Although these devices and electronic commerce have found applications in port/transport industry, the business sector is a major beneficiary.

E-commerce and SCM:
(Heffernan, 1998): Port/transport industry, the business sector is a major beneficiary (Burt, 1996). Electronic commerce (EC) may be defined as the use of technology to facilitate the exchange of information in commercial transactions among enterprises and individuals, enhancing growth and profitability across the supply chain.

Based on the estimates produced by the US Government, the global free market of information technology and telecommunications via Internet is doubling every 100 days by individuals and businesses (Phillips, 1999). As a transaction payment method and delivery medium, the cost-effectiveness of the Internet and EC is now disputable.

Internet and CRM
(Geiger and Martin, 1999, Avlonitis and Karayanni, 2000: The Internet can have various uses ranging from an ornamental web presence to a relational presence where the web is used to actively develop relationships with customers. Interestingly, Geiger and Martin (1999) also suggested that most companies had failed to develop their web sites beyond virtual brochures.

Deeter-Schmelz and Kennedy (2002)
They provide another aspect to this debate, in their research they found that the Internet is still not perceived to be as influential as other traditional.

Internet and SCM:
(Wunderman, 1998, Hollensen, 2001) : It is often suggested that the Internet will eliminate intermediaries from the supply chain, a process usually referred to as disintermediation However, Hollensen (2001) argues that a process of complete disintermediation is a myth. He believes that while the Internet may eliminate the traditional 'physical' distributors in the transformation process of the value chain new types of intermediaries may appear. So a re-intermediation force will balance the disintermediation process.

(Royston, 1999): Disintermediation has been discussed at length in the context of shipping brokers. One view casts doubts among the current service providers such as agents and brokers about what their role is going to be Another view is that irrespective of whether e-platforms exist the choice will always be in favour of the broker (Stopford, 2002) and the role of the Web is not to replace the middlemen; rather the aim is to build online networks alongside the personal business networks of the broker and improve the quality of the service they provided to the clients (Blankenhorn, 1997, Zolkos, 2001).

Research Methodology:
The study is concerned with critical analysis on contribution of information technology in container management in the yard of major ports in Kerala and how information technology helps in the productivity increasing and cost reduction at major ports .The percentage on productivity and utilization of space in the yard at major ports is studied.

This study was conducted by using survey method. The survey was conducted by undertaking questionnaire, which was done by face to face interview with the employees working with IT tools in ports like Cochin port trust, DP World, Wilhelmsen Ship Management Ltd, Aspinwall Ltd. and Transasia Global logistics.The survey included the employees of planning and operation department at DP World for the following reasons like to understand the impact of information systems on employee work in using information systems. Percentage analysis technique was taken to analyze the census results.

The universe of the study consists of scheduled employees and department heads in DP World. The scheduled employees and department heads are from different departments such as, planning and operation, documentation, information technology, buble gate, engineering. For the data collection, only operations and planning department is considered.

Variables taken for the study:
1) Application Familiarity
2) Time Delay
3) Yard Productivity
4) IT Tool efficiency

DATA ANALYSIS :
Familiar applications to the employees:

Applications	No. of respondents	Percentage
Zodiac	90	100%
Sparks	90	100%
Any other, specify	Nil	Nil

Expert decking of import export and transshipment containers

The table shows the opinion of the employees about the efficiency of the Zodiac in the expert decking of export and transshipment containers in the terminal.

Opinion of respondents	No.of respondents	Percentage
Strongly agree	0	0
Agree	90	100%
Neutral	0	0
Disagree	0	0
Strongly disagree	0	0
Total	90	100%

Automatic positioning of containers in the yard

Opinion of respondents	No.of respondents	Percentage
Strongly agree	0	0
Agree	60	67%
Neutral	10	11%
Disagree	20	22%
Strongly disagree	0	0
Total	90	100%

Delay in getting container slot :

Opinion of respondents	No.of respondents	Percentage
Strongly agree	30	33%
Agree	20	22%
Neutral	40	45%
Disagree	0	0
Strongly disagree	0	0
Total	90	100%

Destination wise stacking of import containers

Opinion of respondents	No.of respondents	Percentage
Strongly agree	50	56%
Agree	40	44%
Neutral	0	0
Disagree	0	0
Strongly disagree	0	0
Total	90	100%

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Real time monitoring of container

Opinion of respondents	No.of respondents	Percentage
Strongly agree	10	11%
Agree	10	11%
Neutral	70	78%
Disagree	0	0
Strongly disagree	0	0
Total	90	100%

Restriction of scattered allocation

Opinion of respondents	No.of respondents	Percentage
Strongly agree	10	11%
Agree	10	11%
Neutral	30	33%
Disagree	40	45%
Strongly disagree	0	0
Total	90	100%

Yard productivity increasing

Opinion of respondents	No.of respondents	Percentage
Strongly agree	10	11%
Agree	40	45%
Neutral	40	44%
Disagree	0	0
Strongly disagree	0	0
Total	90	100%

Working efficiency of zodiac

Opinion of respondents	No. Of respondents	Percentage
Strongly agree	0	0
Agree	10	11%
Neutral	10	11%
Disagree	40	45%
Strongly disagree	30	33%
Total	90	100%

Findings:

Zodiac is not working with its maximum efficiency in different areas. It need improvements for the efficient working.Zodiac makes delays in getting slots for the containers in the yard it makes ITV work slow down and also makes accidents between ITV in the yard It is not getting automatic position for the containers in the yard using Zodiac,if it is not getting automatic positioning the employees in the terminal will assign the position of each containers which will take too much time.Stacking of containers at different height depending upon the equipment is not happening. Equipments having different heights due to these problem all equipments cannot be assigned to the container handling.

Manual intervention is important in expert decking in spite of Zodiac.Zodiac cannot be control the scattered allocation automatically. Scattered allocations make distractions in between the containers in the yard. That is differ height containers will be allocated in the same positions.Comparing with sparks Zodiac is not better than Sparks because Some of the additional features are missing in the Zodiac application.Zodiac considers the off load distance of import containers, it will make the easiness to assign the ITV for that containers.

It is not employee friendly like sparcs.The display and the slowness of these software affects the employee satisfaction.Real time monitoring is not accurately possible using Zodiac. The real time movement of containers

will help to track next containers allocation in the yard.

Conclusion:

There are many areas of improvements like automatic expert decking ,container allocation etc. will increase the efficiency of Zodiac better than current working efficiency.The delay can be reduced by enhancing the process by using computerized planning with manual intervention.

Once the vessel reaches the inbound containers has to be managed and arranged without any time delay. So prior planning should be done before the arrival. When the outbound containers reaches to the documentation process the allocation of containers should be planned.

To make automation in the container handling equipment can be improve this area.Defining automatic stacking rules for import, export, and transshipment containers will give better results.The scattered allocation makes defaults in allocating other containers. Due to more technical error the expected efficiency is not met.. Visibility is an important issue occurred in the planning department. More clarity in the users friendly and reduce confusion.

Collecting container handling order information including the loading list from shippers before the arrival of containers in terminal, Determining storage locations for unloading moves, carrying-in moves, and re-shuffling moves, Decision making considering driving distances of cranes/vehicles and workloads updating will increase productivity .Monitoring real-time problem identification for re-scheduling, warning for the violation of time constraints by various operation schedules etc will give better results.

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