FACTORS AFFECTING CARGO HANDING PROCESS IN PORTS OF SAHATHAI TERMINAL, THAILAND.

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ABSTRACT

The objective of this research was to explore factors affecting cargo handing process in ports of Sahathai Terminal. This research was qualitative and was conducted by interviewing personnel of the ports and studying the work process of cargo handling at the ports of Sahathai Terminal. The 3 ports on which the research was conducted were BMTP Port, Suksawat Terminal and Sahathai Terminal in Samut Prakan, Thailand. The analysis of cargo handling process was carried out in order to determine factors and problems which affect cargo handling process at the 3 ports. The results showed that the main factors affecting the cargo handling process were improper use of machinery, multiple roles of ship operation officers, use of part-time foreign stevedores, communication issues and utilization of port areas. From the results, a guideline has been created to reduce the problems in order to improve cargo handling process in the ports of Sahathai Terminal.

Keywords: Cargo Handling Process, Ports in Thailand, Sahathai Terminal

INTRODUCTION

'Port' or 'seaport' can be defined as areas with man-made structures which allows safe shelter, docking, anchorage, discharge and loading of goods and people. In ports, there are facilities and amenities which help facilitate activities between the ship and the coast. These activities are loading goods from the coast to the ship or unloading goods from the ship to the coast. In other words, 'port' can be defined as areas in which contact is made and activities are carried out between the ship and the coast [1]. Various old ports have gone through different development and have become technologically advanced. These ports help increase goods transport and prevent environmental problems arising from port activities. At present, there is the high number of export in Thailand. In Bangkok ports, there are approximately 1 million inbound-outbound containers per annum. In Laem Chabang port, there are approximately 2.9- 3million inbound-outbound containers per annum. Sahathai Terminal is a port operated by a private company. It was established in 2007. It is located on the bank of Chao Phraya River and provides one-stop service in cargo handling. The company has an operation area of 315,000 m² which includes container maintenance area and custom clearance area. The port is fully equipped with state-of-the-art maritime terminal equipment and professional personnel. In the beginning, Sahathai Terminal had the capacity to handle 500,000 containers per annum. At present, Sahathai Terminal has been able to increase its capacity by 29% comparing to 2016. Sahathai Terminal handles 351,973 TEU (Twenty-Foot Equivalent Unit) inbound-outbound containers and 48,144 empty containers per annum [2]. Therefore, careful planning and management, conducive work environment, suitable workforce and technology, and proper equipment and machinery are required to

handle cargo efficiently. If good management and proper use of machinery are implemented in work process, operational costs and productivity loss can be reduced enabling the port to increase its capacity in goods handling.

OBJECTIVE

1. To explore factors affecting cargo handling process in ports of Sahathai Terminal.
2. To create a guideline to improve cargo handling process of Sahathai Terminal.

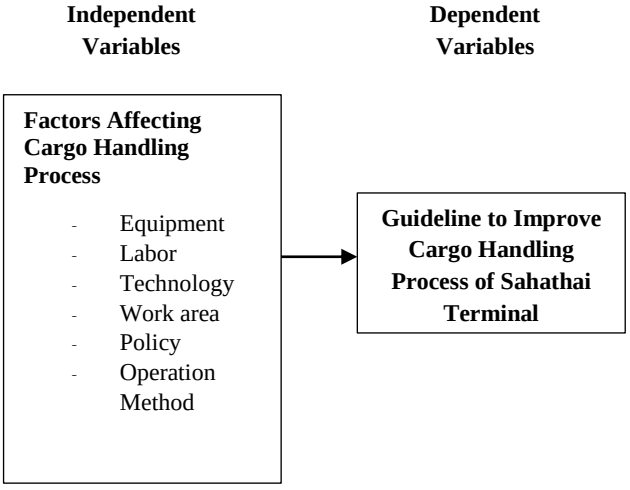
LITERATURE REVIEW

According to Insorn [3], cargo handling is based on the principle of material handling. In material handling, handling time can be minimized through suitable equipment used. Moreover, use of suitable equipment can lead to increased work performance and efficiency. Port management can be defined as 'operational aspects of port functions, from financing, legal concerns and planning to competition, equipment and marketing' [4]. In order to maximize the profit potential of port, utilization of assets needs to be increased to raise productivity. Better utilization of machinery and labor in operation process can lead to effective operation process resulting in increasing value of products and services and competiveness in the market [5]. The theory of 4M1E was used in this research to identify causes of problems in cargo handling process [6]. 4M1E are the following:

- M - Man which is workers, employees or personnel both internal and external;
- M - Machine which is machinery, equipment or facilities;
- M - Material which is products, services, raw materials or other equipment parts;
- M - Method which is work processes;
- E - Environment which is weather, location, lighting and work atmosphere.

4M1E can be applied to cargo handling process and used to analyze problems affecting operation process. From the theory of 4M1E and the literature review, factors affecting cargo handling process were identified. The factors are equipment, labor, technology, work area, policy and operation method.

Research Framework



METHODOLOGY

Population and Sample Groups

This research was conducted using qualitative method. Purposive sampling was used to select sample groups. Ports studied were BMTP Port, Suksawat Terminal and Sahathai Terminal. 3 employees working in cargo handling were selected for each port.

Research Tools

In-depth interview was employed to collect primary data. Content analysis was used to identify issues arising from cargo handling process.

RESULTS

1. Problems in Cargo Handling in Front Area of Port

1.1 Use of mobile harbor crane causes more blind spots. Use of mobile harbor crane allows for more movement than quay crane which can cause delay in cargo handling.

1.2 Errors in operation due to improper use of machinery. High quay crane is used which causes visibility issues.

1.3 Multiple roles of ship operation officers which can cause confusion in work.

1.4 Communication issues with foreign stevedores. A mediator is needed to convey messages and instructions.

1.5 There are no full-time stevedores. Stevedores are hired part-time as needed. At times, there are insufficient stevedores in cargo handling.

1.6 Communication issues between machine operators. For example, when miscommunication between crane and crane trailer operators occurs, crane trailer is not in the position. As a result, crane operator is not able to move the container.

1.7 There are large spaces in port area. Long distances between container yard to gate and container yard to front area of port increase cargo handling time.

1.8 Part-time stevedores are not experienced and do not have required skills in cargo handling which causes errors and delay in operation.

1.9 Sahathai Terminal port does not have empty container yard. Empty containers are moved to BCDS (Bangkok Container Depot Service), which is the subsidiary of Sahathai Terminal, to solve this problem.

1.10 Sahathai Terminal port is sometimes used as a secondary port to Bangkok port. As a result, issues in custom clearance occur as cargo should be unloaded in Bangkok port, but Bangkok port is not available. Hence, Sahathai Terminal port is used and confusion and errors in custom clearance occur.

1.11 Insufficient custom officers in the ports.

1.12 Late payment of cargo dues or unpaid cargo dues owed to Port Authority of Thailand causes delay in cargo handling.

2. Guideline to Improve Cargo Handling Process

2.1 Regular checks, maintenance and repair of equipment and machinery need to be carried out by engineers. When equipment and machinery problems occur, engineers have to be ready to fix the problems.

2.2 Bi-annual checks and maintenance of equipment and machinery. Structure, sling and lifting tests should be performed to ensure that machinery is in working condition.

2.3 Regular checks according to the maintenance schedule.

2.4 Full-time team of mechanics to ensure regular maintenance of machinery and equipment.

2.5 Work trial needs to be implemented so that prospective employees can be trained before they can be hired.

2.6 Regular training such as ISO standard training needs to be organized.

2.7 Briefing before work to prioritize tasks.

2.8 Hiring experienced workers.

2.9 Outsourcing stevedores who are skilled in cargo handling.

2.10 Reduce roles of ship operation officers to eliminate confusion.

DISCUSSION

1. Use of mobile harbor crane causes more blind spots. Use of mobile harbor crane allows more movement than quay crane which can cause delay in cargo handling. Based on the principle of material handling, time must be reduced to increase efficiency and productivity [7]. Errors in operation occur due to visibility issues caused by high quay crane. To solve this problem, experienced crane operators are required to operate quay crane to improve cargo handling. The factor of machine (equipment) in 4M1E theory can be applied in this case as improper use of machinery can essentially affects work process.

2. Multiple roles of ship operation officers which can cause confusion in work. Use of part-time, inexperienced stevedores can cause delay and errors in cargo handling. According to 4M1E theory, the factor man (labor) can cause problems in work process. In this case, skilled stevedores are needed and ship operation officers need to be specialized only specific areas of work.

3. Communication issues with foreign stevedores and communication issues between operators cause errors and delay in work process. Effective communication process is needed to solve this issue in order to improve work process. The factor of method (operation method) in 4M1E theory can be applied as the work process is not suitable resulting in errors and increased time in cargo handling.

4. Use of part-time stevedores contributes to insufficient stevedores comparing to workload. This can cause delay in cargo handling. Moreover, insufficient custom officers in the ports significantly slow down customer clearance process which affects cargo handling process.

5. As there are large spaces in port area, different work areas are far from one another. As a result long distances between work areas can increase cargo handling time. Lack of empty container yard in Sahathai Terminal port can increase cargo handling time and empty containers have to be moved to BCDS (Bangkok Container Depot Service).

Use of Sahathai Terminal port as secondary port to Bangkok port causes issue in custom clearance due to change of port in cargo unloading. These issues occur from the factor of Environment [work area] in 4M1E. Environment has to be in line with the process. Work area redesign needs to be done to eliminate bottlenecks and reduce distance travelled from one work area to another so that cargo handling time can be decreased.

6. Sahathai Terminal port needs to pay cargo dues on time to avoid delay in cargo handling. The port needs to follow rules and regulations of Port Authority of Thailand.

CONCLUSION AND FUTURE WORK

1. As the research was conducted using in-depth interview with Sahathai personnel, not all data and information is disclosed. Certain information is confidential. Therefore, full insights to cargo handling issues might not be discovered. In addition, primary data collection was difficult and challenging due to unwillingness of personnel in disclosing important information.

2. The number of ports used in research is limited. Data collected might be insufficient resulting in an incomplete picture of issues in cargo handling process. Moreover, strengths of the cargo handling process are not fully explored which makes it difficult make comparison between ports.

3. As this research was qualitative and descriptive analysis was used, there is no statistical data to support certain findings. Quantitative research should also be conducted to provide better insights and perspectives to factors affecting cargo handling.

4. Different cargo handling processes should be studied so that they can be adapted and applied to different ports.

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