



## Study of the Effectiveness of Trainings for Port Logistics Workers in Improving the Safety Level of Ports (Case study: Chabahar Port, Iran)

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### ABSTRACT

Ports act as the main bottlenecks for imports and exports of goods, and thus they require special attention. To achieve high yield and efficiency in a port, a number of factors should be taken into consideration. A port is considered successful and attractive for investors when it can offer a controlled and logical level of risk. A major factor in this respect is the workplace safety of ports for their workforce. Workforce-related mishaps not only create severe problems for the port but their impact extends beyond the port boundaries. Improving the safety level for port logistics workers is directly related to the effectiveness of their training. The main goal of this article is to study the effectiveness of the training offered to port logistics workers and its impact on enhancing workers' safety. This paper is based on the findings of a qualitative case study research. A major finding in this study is the incompetency of port logistics workers' training system. The present research covers three areas, namely, financing, raising awareness, and operational issues; and a number of solutions have been offered to address these factors in order to resolve the impediments that hinder the increasing effectiveness of training.

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### 1. Introduction

Ports and harbors are inherently hazardous work environments for their workers. Therefore, paying special attention to these environments is necessary for preventing and/or reducing the number of incidents. These can be realized by raising personnel awareness and increasing the workers' professional competency through conducting appropriate trainings compatible with their job description and type of activities. The importance of such issues is evident in the emphasis on the necessity of the aforementioned trainings as indicated in national regulations and conventions.

The issue of manpower training and competency development is a priority in every progressive system. Since training process takes a lot of time and incurs great expenses for companies and organizations, determining and implementing appropriate training in accordance with the organization's goals

is a vital issue. Nevertheless, a number of research such as Roth & Emad (2008) showed that many of the offered instructions have not been truly effective for organizations in achieving their goals. Therefore it is necessary to measure the effectiveness of training programs. As a matter of fact, the effectiveness of training can solely be measured by evaluating its outcome. Through an evaluation scheme, the useful feedback can be extracted from the system which can be utilized for advancing the organizational goals. Therefore, investigating the workers' training system not only may be effective in improving organizational performance but also could be used to reduce or even prevent accidents and incidents resulting from activities of an organization.

### 2. Methodology

In this article, we investigate the effectiveness of training courses on safe port operations. To do that we conducted a case study at Chabahar port which is located at the Iranian southern coasts. The Chabahar is a fast growing port as it is located on the pathway of evolving Iranian transit corridors. This port will

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soon become a multipurpose port with several berths and the capability to accommodate high-capacity ocean liners.

This research is a qualitative case study which conducted during the year 2013 and 2014. To conduct the research initially we studied the related literature and reviewed regulations, laws and documents pertaining to the training offered to the port logistics workers. The main data collected through interviewing managers (at different levels and categories), and officials and experts of departments, superintendents and workers, and also by training organizations and instructors. Data also collected related to incidents in ports especially those which caused injury to port logistics workers. For a better understanding of the conditions and quality of training courses and enriching the collected data, one of the researchers participated in a specialized maritime training course for port logistics workers during the period of conducting this study to collect data and have a better understanding of the context of the training system.

Through coding and analyzing the text information resulting from filed notes, reports, interviews, and focus groups; the factors affecting the efficacy of specialized maritime training courses were evaluated. Ultimately, some suggestions for improving the quality and effectiveness of the specialized maritime training courses were presented.

In this study, Lincoln and Guba's four evaluative criteria (1985) were used for evaluating our research results, namely, Credibility, Transferability, Dependability, and Confirmability. The fourth generation evaluative criteria presented by Lincoln and Guba (1985) include: long-term interaction and constant field observation, peer review by researchers who have no stakes in results, negative case analysis, progressive subjectivity, and review of the final results by participating members of the research.

### 3. Background and Literature Review

Port industry is vast and advancing, and it shares many common features with all other industries. In the present research we first investigate the port of Chabahar base on a general perspective of the industry. In this section, we point out a number of research conducted pertaining to effectiveness of training.

In a study of 471 incidents that have occurred in the ports throughout the world between early 20th century and 2004 the results shows a traceable increase in the frequency of incidents. The study revealed that most of the incidents occurred while workers engage in loading and discharging of cargo and work in warehouses (Dabara & Casal, 2004). The research which was conducted on the evaluation of effectiveness of training offered to the workers of Ports & Maritime Organization of Iran also revealed many shortcomings in this sector and the fact that the quality of maritime training in Iran requires serious attention (Ghassemi Damani, 2013). These happens when the IMO, national maritime organizations and industry are aware of the fact and provide regulations which asks for ports to provide quality training for their workers to be more competent.

There have been a multitude of research into evaluation of the quality of training to reduce incidents and improve safety

level in ports which shows the need for systematic approach at management level (Khavandkar et al., 2006). Research shows that from the executives' point of view, the training courses have been effective in improving technical and cognitive skills; better management and leadership performance; and improving accountability of managers (Mohammadi, 2009). Generally, training courses are effective across the criteria of increasing personal knowledge, conformance between training and expected outcomes, and altering the professional outlook overall (Mehralizade, 2005). Overall, training have a positive impact on workers' performance; but to improve the effectiveness of training courses, hands-on and practical courses has to accompany the training programs (Jazayeri Bazaz, 2005).

In most of the industries a main section of training of employees are consider to be on-the-job training. There are many studies conducted to evaluate the effectiveness of the on-the-job training (Mirzaeeyan, 2003). Most of these research results indicate that on-the-job training has enhanced the accuracy, quality of work, and increased workers' knowledge and professional skills (Beheshti, 2005). For instance, research into long-term and short-term on-the-job training showed that the training courses can result in high success and efficiency of the process of expediting organization's structure completion, keeping workers' knowledge up-to-date according in the fast pace of technical changes and developments, sound utilization of manpower, qualitative and quantitative improvement of organization's products and services, prevention of occupational incidents, stabilizing the organization, embedding flexibility in times of need, reducing overseeing job, and boosting workers' morale (Pilhuriyan, 1998).

Many studies pointed that the nature and type of incidents in ports are mainly due to human error and work environment factors. The most obvious and frequent factors related to human consisted of aspects such as fatigue and psychological stresses. The revision of the healthy workplace and safety standards and effective communication was deemed to be necessary for establishing a suitable work environment (Azila & Dehlor, 2011). Studies show that human psychological characteristics such as feeling incompetent and unfamiliarity of the workers with the safety factors in their work environment as one of the main effective factors in initiating incidents (Abedi et al., 2006). Statistical study of human factors and occupational incidents at ports pointed to the fact that most incidents involved inexperienced and young workers (Fabiano & Others, 2009). Research on the relationship between the rate of unsafe behaviors and incidents showed that nearly a third of workers who do not received proper and effective training behave unsafe. The same study showed that 1% increase in unsafe behavior due to ineffective training resulted in a triple rate of incidents (Mohammadfam & Fatemi, 2008).

### 4. Research Results

In this research, generally the data were collected by direct observation, interviews, participation, focus group formation, online and library resources, documents, enactments and ratifications. In the present research, coding of data started from the

first days of conducting the research and it gradually led to better targeted interviews. The coding process continued until their saturation, i.e. when the codes started to repeat themselves and no new code could be found. After ascertaining that there are a sufficient number of data to support the code, we moved to new codes. After careful review of interviews and documentations, we ended up with a number of basic codes. Next, by identifying the main codes among obtained ones, we grouped them and started to investigate the most important groups. In this paper we introduce two of the main findings of our research.

#### 4.1. *Employing Inexperienced Port Logistics Workers*

Loading and discharging of cargo in Iranian ports are carried out by private companies. That is, the Ports & Maritime Organization (PMO) own and supervises the ports but has assigned cargo operation to private companies and contractors.

One of the problems of Chabahar port is the lack of routine ship traffic at the port. The lack of enough cargo operation to sustain a stevedoring company causes the lack of their investment in full time human resource employment and thus their training. Therefore, when a ship arrives, the workers are usually gathered by stevedoring companies that are party to the cargo operation contract, and undertake the loading and discharging operations. Particularly on arrival of bulk carriers this problem becomes more salient since the number of workers required to unload bulk cargo such as wheat, rice and fertilizer is very high. As a result, these companies have to gather novice and inexperienced workers from downtown Chabahar or even surrounding townships and villages. One office manager put it this way:

“One of our problems in Chabahar port is that the cargo loading and discharging is the exception. Therefore, the private companies have to employ workers on a daily basis and most of the time incidents occur among them. In the past some workers that had no knowledge of the job had been stuck between trailer trucks or in other things such as hoppers and have died in some instances”.

His statement highlights the points that ad-hoc cargo operation in Chabahar port, employing inexperienced and casual workers, which are the main reason for incidents that occurs. That is, most of the incidents that occur among lay workers, are rare among competent fulltime workers.

Our research shows that there are some variables factors engaged in the incidents that are external to the port environment. There are factors such as untrained truck and trailer drivers who are the main cause of some of accidents in ports because they are not aware of the hazardous situation of port environment. The incidents that caused by these elements are considers to be more serious as in many cases they caused serious injuries or even death of port logistics workers. Also our research shows that for many truck drivers that enter into Chabahar port for loading or discharging cargo, this is a first-time experience. Thus, they have very little awareness about the place and its potential dangers. As a matter of fact, the truck and trailer drivers are a large community and training them is beyond the port's

task description. However, based on reports, some accidents in the port have been due to the ignorance of this group.

The same situation has been observed among port officials too, as one of them mentioned: “There are other workers who receive daily wages”. A veteran foreman at the port affirmed it this way: “The worker works today and will not be back tomorrow, worker is casual, not on the payroll”, and added: “we're in shortage of worker. Everything else is ready, the workers are not experienced”. Another foreman described casual workers as such: “These are workers, not permanent, ships arrive occasionally, and we need a lot of workers to take turn”.

We have two issues here. The first is that the private contractor, due to occasional ship traffic, and limited amount of cargo for loading and discharging, is unable to employ many fulltime workers since it is costly to have to pay monthly salaries and insurance premiums and use them only for short time. On the other hand, there have been workers that come for a short period of time, e.g. one week, when a ship is at the port, and as soon as the cargo operation is finished, they also leave the port. The term casual worker as it is used in the context of port logistics workers means such workers who are inexperienced and without specialty and come to the dock for loading and/or discharging of cargo from ships for a limited time. Research shows that most casualties occur among this group. For example, in a case that the fingers of a port logistics worker had been cut off, it became evident that it was his first day and early working hours as a worker at the port.

#### 4.2. *Specialized Port Logistics Workers*

The specialized workers include container loading and discharging workers, and port machinery operators like tower crane, tractor, etc. Since this sector affects the port's capital investment and any damages to the PMO properties incurs loss to the organization; therefore there has been more emphasis on expertise of such personnel. As a result, these workers are permanent, experienced and trained, and consequently fewer accidents occur among them. Since Loading and discharging of container-ships requires sufficient experience and expertise, in such cases experienced and professional permanent workers are used. However, the number of such workers is very few. According to an expert: “Only crane operators are permanent members of the companies. Others are miscellaneous, i.e. the contractor brings them in from outside”. He also emphasized that: “They are all from outside, I mean simple lay workers”.

As we explained earlier, the lack of experienced port logistics workers are the main cause of incidents. Since there are fewer incidents among the experienced port logistics workers, it seems that employing workers permanently which leads to gaining experience and expertise as the time goes by, may reduce mishaps in the future. The reason is permanent workers can be trained regularly in appropriate time intervals according to their needs and the feedback of their training outcomes can be regularly checked and by this means, the effectiveness of conducted training can be evaluated.

## 5. Conclusion and Recommendations

In this research, after studying the problems related to the port logistics workers the outcomes were grouped in three categories. Therefore by focusing on these three areas, the pivotal problems can be resolved. These three categories are: financial, raising awareness, and operational; which will be discussed in detail. At the end of each section, some recommendations are presented to resolve the existing problems.

### 5.1. Financing Aspect

#### 5.1.1. Prioritizing the Problems According to Financial Cost and Benefit

Our research shows that one of the problems that reduces the training effectiveness, and consequently increases incidents and lowers the safety level of port environment is prioritizing of port issues based on cost benefit and financial issues in contrary to the port safety. It is evident that the activity of every port includes cargo operation and increase of the tonnage amount thus maximizing profitability and to thrive in the competition with other ports. However, it must be noted that the need for support of human resources which are the main organizational capital asset is an undeniable fact since the organization will not be able to pursue its goals without its competent human resources. Also, losing an experienced workforce means losing expenses spent for its training and spending more to train the new staff. One of the reasons we found in our research for the shortage of expert workforce is the limited financial resources that the stevedoring companies assigned for training their port logistics workers. Therefore, the port lacks competent logistic worker and it causes the need to employ inexperienced and casual workers at the time of need.

Cost saving at port is not limited to stevedoring companies. Our research shows that the PMO employees also follows the same policy. During our visits to the port we noticed that the officials and representatives of PMO while on dock areas never used safety clothing such as helmet and safety shoes. Although according to regulations it was necessary to wear protective clothing while in dock area but it was not done in practice. This practice apart from the danger imposed to the employees we believe that it promotes the unsafe culture in the port.

#### 5.1.2. Recommendation

Paying more attention to effective safety training issues through educating employers and training expert staff in the port logistics field inside the port boundaries can be very effective for improving the safety level at ports. As for external factors such as truck drivers, the concise short training courses along with informative leaflet and brochures can help to reduce incidents. Along with this the clear and effective directive and hazardous area sign and placards in the port area is necessary.

In addition the port officials as the foremost responsible authority for port safety has to promote safety culture through practicing the safety in their port areas.

### 5.2. Raising Awareness Aspect

#### 5.2.1. Negligence to Inform all Workers about Incidents Occurring at the Port Area

Informing port logistics workers of the dangers of their workplace is one of the effective training methods that can be implemented and utilized. In our research we observed that the logistic workers that had previous experience with incidents were more vigilant and cautious at work. For instance, in an incident, a worker's leg was severely damaged by walking on a conveyer belt. In the aftermath, it was observed that the workers would not walk even on the offline conveyer belts. In another incident, after a worker lost his fingers as his hand got stuck between the container and the trailer floor, it was noticed that the workers that were present at the scene of incidents take care of their fingers and most of the times use gloves. It should be noted that such methods of raising workers' awareness are very time consuming and costly.

#### 5.2.2. Recommendation

As part of their training programs, informing port logistics workers of the past incidents can help them to be aware of future dangers not only at the port which they work in, but also at other ports. This awareness enhancement can be realized locally at the port or across all ports by incorporating the case study of incidents as part of their training programs and by publishing the related journals, brochures, and leaflets with incident analysis and guidelines to prevent the occurrences and repetition of such mishaps.

#### 5.2.3. Risk Ignorance

Inexperienced and naïve workers learn from their superior workers on the job. Research showed that ignoring risks is also rife among experienced workers. Their excuse for ignoring the risks manifests like: "It has not happened before, so it will not happen in the future". This same behavior might be exemplified by the lower ranking inexperienced workers. In addition some incidents happened with the knowledge of the victim about the danger and risks involved. For example, an incident resulting in burns by electricity on a worker's right hand while he was aware that the wire was live, he admitted: "If we had totally cut off the power, people would suffer from heat and their foodstuff would spoil in their fridge". Such incidents shows that while workers are aware of the risks, there are external factors and reasons that play a role in ignoring the risks. In the above mentioned example to prevent future complain from others who may affect by cutting power during heat hours the worker decided not to cut the power and work with dangerous live equipment. These factors also should be included and observed to prevent potential incidents in the future.

#### 5.2.4. Recommendation

Training is not only for inexperienced newcomers but experienced people also should be re-trained frequently. In addition the magnitude of risks and their associated danger has to be made clear to workers through proper training. If these people can be educated through regular training, the safety culture will be promoted with an accelerating rate.

### 5.3. Operational Aspect

#### 5.3.1. Independent and Negligible Training

In our research we observed that the workers usually learn the basic principles of their field of activities from their foremen within one to two hours of their first day of work. Thereafter, they learn through practice and gradually become skillful by working along experienced workers. However, our research shows that most of the incidents for workers occurred during their first days of the work.

We also observed that the content of many training courses are irrelevant to the workers' categories and the course programs were not scheduled based on availability of the workers. One issue that mentioned by one of the instructors was the low interests of participants to attend the courses consistently. For example, sometimes courses started with 40 people and finished with just 5 or 6 participants. A worker, who had enrolled in a course, expressed his reasons about not attending the course to its end: "Most of these classes are held at office hours, but the work volume is such that we cannot attend the classes".

#### 5.3.2. Recommendation

The training programs that is offered for the port logistics workers requires a comprehensive review. These trainings must match the requirements of the activities of participants. Also, for busy workers who are mostly involved in port area operations, the training courses must be held after their working hours. It should be noted that employees and workers' training can make use of modern educational methods that are related to instructional subject matter.

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