THE COMPETENCIES REQUIRED BY PORT ECONOMISTS, STEVEDORES, TECHNOLOGISTS: A PILOT STUDY

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Abstract

Port companies require employees characterized by specific professional competencies and at the same time – by general, i.e. social and personal ones. The European higher education system in terms of the Bologna Process should provide opportunities for students to develop their professional competencies needed. The scientific content of a competency usually includes knowledge, abilities, skills and attitudes in relation to the documents of the Bologna Process and national legislation. The goal of the research is to characterize the need for the competencies required by port economists, technologists and stevedores by assessing both – the need for professional competencies required by port terminal employees, and the importance of personal and social competencies required by port terminal employees. This is a pilot study. It allows to prepare for the future complex diagnostic study of the competencies required by Klaipeda State Seaport employees.

Key words

Port, competencies, economists, technologists, stevedores

JEL Classification: O15, D61, D60

Introduction

Port companies require employees characterized by specific professional competencies and at the same time – by general, i.e. social and personal ones. The European higher vocational education system in terms of the Bologna Process should provide opportunities for students to develop their professional competencies needed. Students of modern port curriculum attend maritime academies in order to be future employees of port companies.

The scientific content of a competency usually includes knowledge, abilities, skills and attitudes in relation to the documents of the Bologna Process and national legislation. Specific investigations of the competencies, required by port personnel, have emerged over the past two decades (Murphy, Poist, 2006; Ahn, McLean, 2008; Thai, 2012, 2012a; Hooydonk, 2013; Thai, Yeo, Pak, 2016; Jugovic, Stumpf, Schiozzi, 2017 etc.).

Regular analysis of the competencies, required by port companies, can assist improving the academic content of relevant maritime study programs related to the seaport.

Goal and Methodology

The goal of the research is to characterize the need for the competencies required by port economists, technologists and stevedores in order to prepare for the complex diagnostic study of the competencies required by Klaipeda State Seaport employees.

The object of the research is competencies required by port economists, technologists and stevedores.

The objectives of the research are as follows:

1. To reveal the theoretical background of the study.
2. To assess the need for professional competencies required by port terminal employees.
3. To assess the importance of personal and social competencies required by port terminal employees.

Methods such as scientific literature analysis, questionnaire survey of port experts, statistical analysis, data interpretation, comparative analysis and synthesis were used.

The type of the research is a pilot study.

The methodological principle, on which the research is based, is a comprehensive development. It highlights the importance of the universal personal development in relation to the physiological, psychological and spiritual needs of the personality in terms of his/her vocational education from the point of view of the port work reality, i.e. economic, managerial and technological functions, psychological self-management, communication and cooperation, leadership and self-leadership.

Organization and validity of the research. The questionnaire was prepared according to the scientific literature, to the competencies developed in study programs such as Maritime transport logistics technology, Port and shipping management, Port and shipping finance at Lithuanian Maritime Academy, and to the port scientific, academic and practical experience of the coauthors of this article. The questionnaire consists of closed questions in two groups called Professional competencies of port terminal employees related to positions of economists, technologists and stevedores, and Personal qualities, abilities and social competencies necessary for the professional activities of port economists, technologists and stevedores.

The study data was developed using *Microsoft Office Excel*. The sample size is homogenous and statistically insignificant (30 port experts, who improve their competencies attending the port study programs at Lithuanian Maritime Academy, answered the questionnaire) but it is enough for the problematical pilot study. Ethical communication with the experts increased possibilities to get real and correct answers. The purpose of the research was explained to the experts. Confidentiality, anonymity and sharing the results, which are only applicable to the selected population, were guaranteed for them.

1. The theoretical background of the study

Before identifying the trends in competencies required by port economists, technologists and stevedores, it is appropriate to note some points. Scientists have noted that the content of EU directives on higher education and its implementation are too formal, standardized and too much based on control. Specialists, developed by controlling, are characterized by narrow thinking and limited competency. Rapid technological and social changes require rapid response. Professionals, who are able to think analytically and creatively, are able to react to the demand of skills rapidly. Globalization fosters resistance to the development of narrowly defined competencies. This requires more thinking about the preparation of an analyst and a creator. This is completely contrary to standardization (Duoblienė, 2010).

Modern ports have become a part of an integrated logistics chain. Thus, port employees need competencies not only in the narrow context of cargo handling in terminals but also in a whole logistics chain, ensuring interaction between the port and other participants in the transport chain (Thai, 2012; Rodrigue, Comtois, Slack, 2016; Nicolae et al., 2017).

Different scientists determine the need and elements of competencies required by port employees. However, there is no unified competency analysis system. Of course, this is due to the fact, that there are no two same ports or terminals worldwide. Functional connections between port subjects and transport system participants are dependent on the internal and external factors for port activity.

Thai (2012, 2012a) and Thai, Yeo (2015) offered a competency system for marine transport logistics professionals. This system consists of three areas of their activities related to business, logistics and management. Core professional and specific professional competencies are distinguished in each area. According to this system, marine transport logistics professionals in the port should be characterized by 63 abilities, knowledges and skills, which include understanding of port, shipping, logistics, business planning, management and control (Thai, 2012, 2012a; Thai, Yeo, 2015). The proposed system was specified and the core professional competencies were supplemented by *Port Management* and *Port Business* ones. The core of specific professional competencies of a port specialist should consist of three groups of competencies, i.e. *Port Logistics, Port Engineering, Port Operations* (Thai, 2012, 2012a; Thai, Yeo, 2015; Thai, Yeo, Pak, 2016).

Ahn, McLean (2008) investigated the need for professional competencies required by employees in the port of Busan. They distinguished 6 groups of professional competencies (planning, service

management, service organization, service marketing, use of information systems, ability to work in global market conditions) and 16 sub-competencies. The results of the study revealed the need to develop the ability to work with IT in global market conditions in order to maintain the competitiveness of port services (Ahn, McLean, 2008).

The professional competencies and their elements, necessary for the effective management of multimodal transport services, were analyzed by Ngamvichaikit (2017). It was stated, that the elements of competency of this field of logistics are related to the functions of service planning, observation, control and evaluation. They include managing relationships to customers and suppliers, and the use and development of IT by improving the quality of service. 10 professional competencies and their 27 elements, which are necessary for the employees of freight forwarding companies, were highlighted (Ngamvichaikit, 2017).

It is appropriate to notice, that along with the development of the economic productivity of port companies, it is very important to create a strong team with the required qualifications, based on professional skills in terms of personal abilities and knowledge, related to the necessary qualifications in the labor market (Nicolae et al., 2017).

According to the changes, the employees of the port terminal should be considered not only as "dockers" but also as logisticians, who should be comprehensive:

- To know management functions and have managerial skills by organizing the process of cargo handling;
- To have knowledge in the field of logistics, attitudes and the ability to apply them by making logistic decisions in the activities of the port terminal;
- To have special knowledge, attitudes and the ability to plan, carry out and control cargo handling operations.

The analysis of scientific literature has created the understanding, that the professional competencies of port employees should be investigated in accordance with three areas of activity by distinguishing between the *core* professional competencies related to the Port Business and Management, and *specific* professional competencies of the port specialist.

Three areas are as follows:

- Professional competencies of a port *economist* consist of the *specific* competency (Port Economics, Finance) and *core* competencies related to Port business and management;
- *Technologist's* professional competencies comprise the *specific* competency elements of Port technologies, and *core* competencies related to Port business and management;
- Professional competencies of a *stevedore* consist of the *specific* competency (Port Operation), and *core* competencies related to Port business and management.

2. The need for professional competencies required by port terminal employees

A survey of 30 respondents revealed, that the specific financial competencies of a port economist were assessed as more significant (4.05) than core professional abilities (3.29) (Table 1).

Table 1. Professional competencies of a port economist

Competency group (a)	Economist's competency elements (b)	Mean (a)	Mean (b)	Moda	Var	ST.Dev
Port finance	Port terminal income/cost sources	4.05	4.19	5	1.46	1.21
	Financial indicators of the port terminal activity		4.10	5	1.69	1.30
	Terminal employee wage structure		3.95	5	2.05	1.43
	Port terminal accounting		3.95	5	1.85	1.36
Port business, management	Port terminal operation	3.29	3.62	3	1.35	1.16
	Cargo handling resources		3.62	5	2.25	1.50
	Port terminal performance assessment methods		3.67	3	1.13	1.06

	Cargo features		3.24	5	2.49	1.58
	Dangerous cargo transportation requirements		3.10	4	2.29	1.51
	Cargo handling organization forms		3.10	2	1.69	1.30
	Ship types, structure		2.67	2	1.83	1.35

Respondents noted, that for an economist it is most important to know the income/cost sources of the port terminal (4.19). This response had the lowest variation between responses in the group (1.46). Assessing the core professional knowledge and abilities, the respondents distinguished the cargo handling resources and port terminal operation.

Respondents rated the professional competencies of a technologist (Table 2).

Table 2. Professional competencies of a technologist

Competency group (a)	Technologist's competency elements (b)	Mean (a)	Mean (b)	Moda	Var	ST.Dev
Port technologies	Cargo handling operations to/from ship	4.18	4.33	5	1.13	1.06
	Cargo handling technology to/from land vehicles		4.19	5	1.16	1.08
	Preparation of cargo for loading on board		4.10	5	1.19	1.09
	Port terminal material handling equipment and mechanisms		4.10	5	1.39	1.18
Port business, management	Cargo features	3.94	4.38	5	0.85	0.92
	Dangerous cargo transportation requirements		4.19	5	1.26	1.12
	Safety requirements for stevedoring companies		4.14	5	1.23	1.11
	Ship types, structure		4.10	5	1.29	1.14
	Port terminal operation		3.81	5	1.86	1.36
	Cargo handling resources		3.76	5	1.29	1.14
	Legal regulation of port activity		3.67	5	1.33	1.15
	Environmental requirements for stevedoring companies		3.48	5	2.06	1.44

Respondents distinguished the knowledge of cargo features (4.38) and cargo handling operations to/from ship (4.33). They marked the knowledge of environmental requirements for stevedoring companies as a less significant competency (3.48). It is appropriate to note, that the respondents assessed the core (3.94) and specific (4.18) professional competencies of a technologist. Thus, the knowledge and abilities required by the technologist activity should relate to the general activity of the port terminal.

Respondents rated the professional competencies of a stevedore (Table 3).

Table 3. Professional competencies of a stevedore

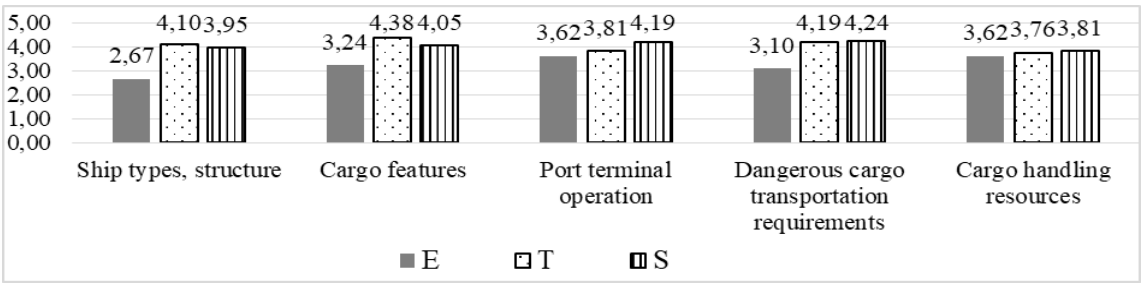
Competency group (a)	Stevedore's competency elements	Mean (a)	Mean (b)	Moda	Var	ST.Dev
Port operation	Preparation of cargo for loading on board	4.06	4.38	5	1.25	1.12
	Port terminal material handling equipment and mechanisms		4.29	5	1.21	1.10
	Dispatch/demurrage conditions		4.05	5	1.45	1.20
	Cargo handling process documentation		3.52	4	1.86	1.36
Port business, management	Dangerous cargo transportation requirements	3.88	4.24	5	1.29	1.14
	Port terminal operation		4.19	5	1.46	1.21
	Safety requirements for stevedoring companies		4.14	5	1.83	1.35
	Cargo features		4.05	5	1.75	1.32
	Ships types, structures		3.95	5	1.35	1.16
	Cargo handling resources		3.81	5	1.56	1.25
	Environmental requirements for stevedoring companies		3.71	5	2.01	1.42
	Port terminal income/cost sources		2.90	3	1.89	1.37

The skills of cargo preparation for loading on board (4.38; var. 1.25) and knowledge of the port terminal material handling equipment and mechanisms (4.29; var. 1.21) were distinguished. The knowledge of the environmental requirements for stevedoring companies (3.71; var. 2.01) and of the port terminal income/cost sources (2.90; var. 1.89) is rated as less important competency.

Specific professional competencies were assessed at 4.06 and core professional competencies at 3.88 by analyzing the data of professional competencies by groups. These results suggest, that the activity of a stevedore as well as a technologist require knowledge and abilities related to the comprehensive understanding of port terminal activities.

The core professional competencies of the employees were examined (Graph 1).

Graph 1. The core professional competencies of the employees



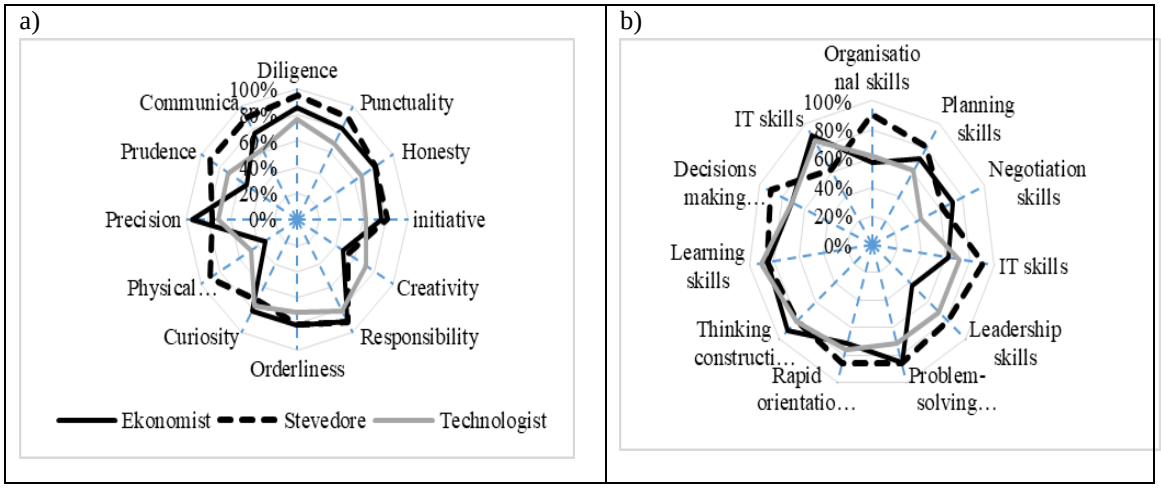
Comparison of the ratings of five general core competencies for different functions in the port in terms of a port economist (E), a technologist (T) and a stevedore (S), revealed a similar importance of the ability to perform the port terminal operation (mean: 3.62; 3.81; 4.19), and of knowledge of cargo handling resources (mean: 3.62; 3.76; 3.81). The general professional competencies required by a stevedore and a technologist are similar. A technologist should know the features of cargo and ship types better. Knowledge of ships, cargo features and requirements for the transport of

dangerous goods is less important for a port economist because his/her competency core should be composed of specific competencies.

3. The importance of personal and social competencies required by port terminal employees

Questions of personal and social competencies were formulated after partial adaptation of the universal typology of managerial competencies (Martinkienė, 2012). Respondents have evaluated 12 personal characteristics and skills that are mainly required by port economists, stevedores and technologists (Fig. 1a).

Figure 1. a) Personal characteristics of the port staff; b) Personal skills of the port staff



They noted, that 7 qualities such as diligence, punctuality, honesty, responsibility, initiative, curiosity, orderliness are necessary for the mentioned groups of port employees regardless of their functions. A stevedore should be characterized by physical endurance, prudence and communicability. A technologist should be the most creative and may be less communicable. An economist should be the most precise and may be less precautious because he/she is not involved in creative decision-making.

Eleven personal skills were evaluated (Fig. 1b). According to the respondents, the ability to thinking constructively, to learning and rapid orienting is necessary for three mentioned groups.

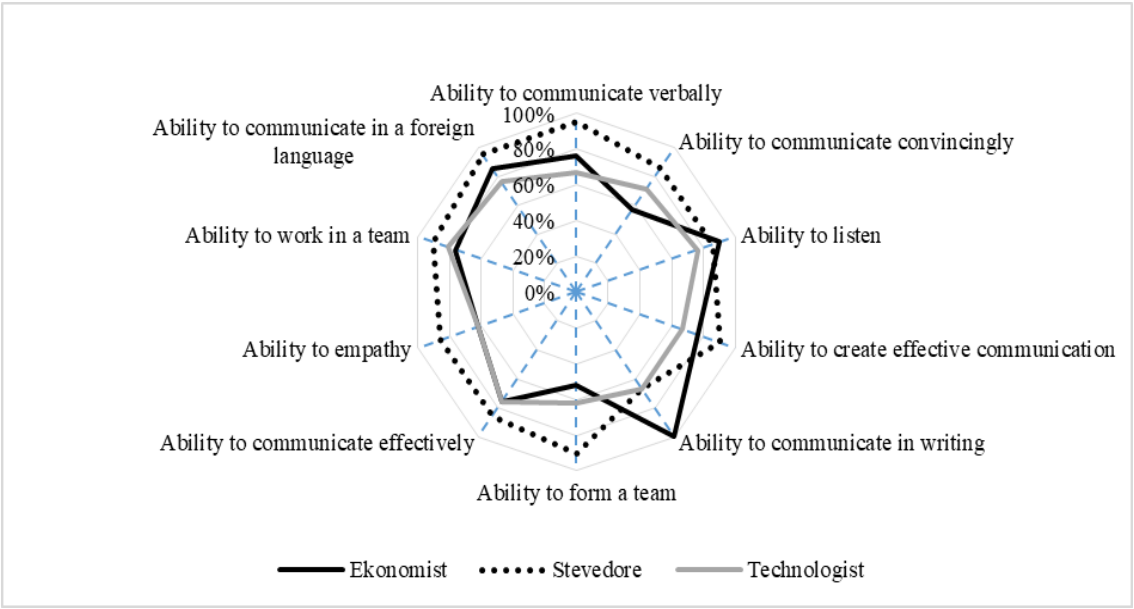
Significant differences characterize the personal skills of a stevedore – he/she should be able to make decisions independently (90%), to organize (90%) and plan (80%) and manage him-/herself in a stressful situation (90%) and lead (81%). However, the skills to apply IT (62%) and negotiate (62%) are less significant.

An economist should be able to manage problems (90%), apply IT (90%), negotiate better than others (71%) and think constructively (90%). However, his/her activity is less marked by the ability to lead (43%) and organize (62%).

The personal abilities of a technologist are similar to those of a stevedore; the ability to lead (71%) is more significant but the ability to negotiate (43%) is less necessary.

The social competencies of the port staff were examined (Fig. 2). It is appropriate to note the competencies required for a stevedore. Most of them ranged between 86% and 95%. Only the ability to communicate in writing (67%) is less significant. The social competencies of a technologist ranged between 67% and 80%. The competency to work in a team (81%) is marked as more significant.

Figure 2. Social competencies of the port staff



The respondents also rated the social competencies of an economist, who should be able to communicate in writing (100%) and verbally (76%), be able to listen (90%), but he/she may work without a team (52%).

Conclusion

Narrowly thinking specialists, characterized by limited competency, do not fit the needs of the modern port. Professional competencies of the terminal staff should include general knowledge of business, management and logistics, as well as specific knowledge of the port, shipping and port finance, and attitudes and abilities. Rapid technological and social change requires a specialist, who can react to the demand for skills rapidly, think analytically and be creative. This is determined by his/her personal characteristics, skills and social competencies.

The professional competencies of a port economist should consist elements of specific competencies of the port, shipping, finance and economy; general professional competencies should be related to terminal operations and sources of cargo handling activities. The professional competencies of a stevedore and a technologist should similarly include specific and general knowledge, skills and abilities. Their activity requires a comprehensive understanding of port operations, emphasizing the cargo handling technologies, equipment and cargo features, including dangerous cargo.

The main personal characteristics such as diligence, punctuality, honesty, responsibility, initiative, curiosity and orderliness are necessary for three groups of employees, regardless of their functions. The personal abilities of a technologist and a stevedore can be similar but a stevedore should be able to manage, organize and make decisions. A port economist should be precise, responsible and able to apply IT and think constructively by managing problems. The social competencies of a stevedore are most significant because his/her activity requires teamwork, directly related to customer service.

This pilot study can be regarded as a preparation for the further comprehensive study of the competencies required by Klaipeda State Seaport employees.

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