SECURITY ENHANCEMENT FACTORS: NAVAL FORCE'S OFFICERS' PROFESSIONAL COMPETENCE

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Abstract. Considering the rapid change of work and life as well as the increasing requirements of professional competences for personnel, this article, based on scientific literature, examines the concept *competence* and its component parts. Through an integrated multi criteria approach, the authors of this work assessed competences and their deciding factors of the naval officers of the Lithuanian Navy and, respectively, developed a complex assessment model. On the basis of the model development principles, competences and their component parts of any other profession can also be assessed. According to the results, the authors proposed adapted competence-building measures for a specific vessel that would develop missing skills and increase officers' work optimization in the existing work environment.

Keywords: security, ability, competence, assessment model, multi criteria evaluation, naval officer, ship's officer

1. Introduction

Security of countries and regions, their sustainable and secure functioning and development is affected by a whole interrelated system of factors (Smaliukienė *et al.* 2011; Stańczyk 2011; Vosylius *et al.* 2013; Čepėnaitė, Kavaliūnaitė 2013; Tvaronavičienė, Grybaitė 2012; Laužikas Mokšeckienė 2013; Raudeliūnienė *et al.* 2014; Ciemleja *et al.* 2014; Smaliukienė 2014; Caurkubule, Rubanovskis 2014; Figurska 2014). One strand of these factors is related to behavioral patterns (Raudeliūnienė *et al.* 2014; Tarabkova 2014; Caurkubule Rubanovskis 2014; Figurska 2014; Išoratė *et al.* 2014; Prause, Hunke 2014; Bileišis 2014; Wahl, Prause 2013; Laužikas, Mokšeckienė 2013; Korsakienė *et al.* 2011; Radović Marković 2011), which ultimately impact work efficiency.

Work optimization means that optimal results are obtained by using the minimum resources within a set timeframe. This is the improvement of the relationship between the effectiveness of processes and the efficiency of resource utilization. The utilization of the resources in each organization (material, financial and human) should be highly effective and optimized in order to achieve the organization's objectives, i.e. product development, production and marketing while assuring maximum profits. The less resources are used in order to achieve the maximum results, the less are the costs to compensate them; consequently, the profit is higher. One of the most important resources is human resources; as a result, their competences and

skills must be cultivated for them to adapt to constant change more easily. It is said that there is a direct correlation between rapid adaptation and better performance, i.e. the faster the employee adapts due to his/her development or self-development in the work environment to the changed circumstances, the faster the results of the employee and the organization are optimal. Although adaptation consists of several components, the employee's development is one of its most important parts which can give the best results only when it is targeted. Therefore, in order to optimize the performance of the employee in the organization, it must be customized for each of them.

The employee's development is a continuous process in the organization. It does not end with the recruitment of the employee or with the end of the adaptation period which is specifically designed to adapt to a new workplace. Broadly speaking, this period never ends because the employee works in a constantly changing work environment where the environment has to adapt to the person and vice versa. Moreover, work as well as the requirements of individual job performance are also constantly changing and this inevitably leads to the need of adaptation. The review of scientific publications only confirms the fact that there are a lot of individual, organizational and environmental factors that affect the staff's ability and willingness to adapt to the work environment (Yeatts *et al.* 2000).

Individual development is favorable in that it distinguishes missing or the most vulnerable competences; therefore, developing them the employee adapts to the work environment and gets familiar with work processes more quickly. For instance, a naval officer after starting to work on a warship must understand the technology as soon as possible, the specifics of navigating the ship, managerial functions and personnel management for optimal performance of the tasks. Thus, the identification of the weakest competences and skills and their subsequent development is particularly important when improving work optimization. However, scientific literature does not fully and unambiguously analyze which method should be employed to identify weak competences and which of the competences are more significant than others. For example, many authors, such as Vaicekauskienė (2007), Adamonienė *et al.* (2010), Diskienė *et al.* (2010), Liučvaitienė and Paunksnienė (2011), Raudeliūnienė (2012), have described competences and qualifications; however, there is no unified and comprehensive opinion about the set of competences for a commanding officer. In addition, there is no model to identify weak competences or important and less important ones in the specific place, at a particular time, for a particular commanding officer. Therefore, after reviewing a number of scientific articles and publications on skills and targeted development, the main problem of this article is that neither a list with the competences and skills of a commanding officer nor a model how to assess or develop them exist.

As for the practical side of individual development, it should be noted that to optimize the commanding officer's performance, organizations do not use any models of competence development when the need for certain development is determined on the basis of his/her lacking competences. However, in each separate case, the employee, his/her competences and the situation itself are unique and individual; therefore, it is necessary for the professional development to be related to the job, the person and his/her competences.

The purpose of this article is to determine groups of competences and skills of a commanding officer which could be used at work of a naval officer. This article identifies important competences and skills of an officer as the commanding officer for working as a ship's officer.

2. The summary of competences and their deciding factors in scientific literature

The term *competence* has been used since the fourteenth-fifteenth century; however, so far there is no single definition. The concept in scientific literature (Lepaitė 2003; Jucevičienė 2007; Lobanova 2009, etc.) is interpreted in very different ways. Some authors use it to describe the abilities to perform certain activities which are based on the individual's knowledge, skills, attitudes, experience, tendencies, personality traits and values while others describe competence as skills, abilities, knowledge and characteristics that manifest themselves when dealing with people in certain circumstances (Rodzevičiūtė 2006). Examining the definition of the concept, a number of scientific works (see Table 1) see it as a combination of human knowledge, skills and ex-

perience. A dictionary of international words (2001) defines competence as 'a functional ability to adequately perform certain activities'.

Table 1. Definitions of the concept *competence* in scientific literature in Lithuania

Author	Conception
Rimkevičienė 1998	it is an ability to apply knowledge, skills and understanding while doing the job in accordance with the standards required by the employers
Kasiulis and Barvydienė 2001	it is a combination of knowledge and skills as well as the ability to adapt them to specific circumstances; it is the performance of management functions, taking into account environmental and situational constraints
Adamonienė and Ruibytė 2001	it is unique self-expression at work, based on professional and personal skills
Daukilas 2002	it is a domain which a certain person has knowledge and experience of
Stasiūnaitė *et al.* 2005	it is an ability to perform a certain function, the quality and use of the ability in practice
Jucevičienė 2007	it is an ability to assess a new situation, select appropriate methods as well as always integrate subject and professional knowledge
Lobanova 2009	it is a functional human ability to perform a certain part of professional activities in a real or simulated situation
Laužackas 2008	it is a combination of knowledge, skills and abilities that are required for the performance of certain activities or tasks
Skaržauskienė 2009	it is a set of abilities that in one way or another are related to excellence, specialization, problem solving
Jucevičienė 2010	it is a combination of personal knowledge, skills, abilities, attitudes, values that emerge in a form of successful work performance

Source: authors

Classification of competences in scientific literature is not unanimous and clear either. Many scientists classify competences rather individually. For example, Raudeliūnienė *et al.* (2012) distinguishes social, personal, methodical, professional, and managerial competences. Diskienė *et al.* (2010) talks about strategic, functional, social, professional, and managerial ones. Kazlauskienė (2003) highlights performance, functional, content, social, subject, communication, and professional competences. Stanišauskienė (2004) offers the following ones: personal, social, educational, and professional. Pikūnas and Palujanskienė (2000) distinguishes physical, intellectual, emotional, social, work, moral, and religious competences. Building on the concept of theoretical classification of competencies into knowledge, skills, abilities, and attributes advanced by Mühlbacher *et al.* (2009), the current paper presents five competence classes in sequence and hierarchical form: functional competencies, generic management competencies, social skills, cognitive skills and personal characteristics. These five competence classes represent wide range of skills, knowledge, and attributes from personal to social aspects (Janjua *et al.* 2012).

As stated by Diskienė *et al.* (2010), competences of a commanding officer consist of 27 competences altogether, including such as strategic, market, essential, functional, cognitive, productivity ones. However, different scientists distinguish a different number of required competences. Most often scientists name competences on the basis of the type of skill. For instance, management skills are reflected in a form of managerial competence while the ability to integrate socially, knowing how to present themselves are reflected in the form of social competence, etc. After analyzing the types of competences that prevail in scientific articles and their multifaceted classification, a generalized table of competence classification based on the occurrence was compiled (see Table 2).

Table 2. A generalized table of competence classification based on the occurrence

Authors	Competences															
	MANAGERIAL	SUBJECT	TECHNOLOGICAL	PHYSICAL	PROFESSIONAL	SOCIAL	PERSONAL	EMOTIONAL	COGNITIVE	EDUCATIONAL	LEARNING	METHODICAL	INTERCULTURAL	INTELLECTUAL	RELIGIOUS	MORAL
Reetz (1990)		*				*	*				*					
Barnett (1992, 1997)					*					*						
Pikūnas and Palujanskienė (2000)				*	*	*		*						*	*	*
Bitinas (2000)			*		*	*	*									
Kasiulis, Barvydienė (2001)	*		*			*										
Adamonienė *et al.* (2001)	*		*		*	*	*									
Danilevičius (2002), Laužackas (2005)	*					*	*									
Weert and Biemans (2003)	*				*											
Kazlauskienė (2003)	*				*	*										
Stanišauskienė (2004)					*	*	*				*					
Diskienė and Marčinskas (2007)	*					*										
Williams (2009)														*		
Mühlbacher *et al.* (2009)	*					*	*		*							
Raudeliūnienė *et al.* (2012)	*				*	*	*						*			

Source: authors

The table above shows that such competences as managerial, professional, social or personal occur in many scientists' works; thus, there are fewer objections or disagreements regarding them. However, they are not as valuable when trying to reveal a variety of competences. Compiling the table above (see Table 2), the focus was on less referred competences, which scientists classify their own way, as when there are more competence groups, strong and weak competences of the employee can be expressed in more detail.

In order to compile a comprehensive list of competences distinguished by scientists, an initial list of competences of a commanding officer and their constituent factors was composed. The list of competences was drawn using a bracketing method, i.e. the types of competences which had already been mentioned in other scientific articles and already included in the list were no longer put on it whereas the absent ones were. The names of competences differ in works by different authors; however, the essential criteria remain adequate. Therefore, if competences had different names but meant the same, they were included in the same category and named the same way.

Determining the types of competences and their deciding factors, scientific theories (Rychen and Salganik 2003; Jokinen 2005; Cardy and Selvarajan 2006; Suter *et al.* 2009; Diskienė *et al.* 2010; Raudeliūnienė *et al.* 2012 and etc.) and most often recurring groups of factors in the said theories were taken into consideration. The factors were applied to encourage optimization of a commanding officer's performance while causality (directly or indirectly) was analyzed in relation to its improvement. The main criterion in choosing the factors of competences was the factors determining the improvement of a commanding officer's performance. Compiling the initial list, 15 types of competences (managerial, strategic, technological, professional, social, personal, emotional, cognitive, learning, methodical, linguistic-communicative, intercultural, intellectual, ethical and physical) were distinguished, supplemented by 79 factors.

3. The research of a ship's officer's competences and their deciding factors

Methodology of the research. Based on the initial list of competences and factors, a study evaluating competences and their deciding factors of a ship's officer of the Lithuanian Naval Force was carried out. The study aimed to distinguish a ship's officer's competences and factors that determine the efficiency of his/her performance, to create an evaluation tool as well as to perform the assessment of some ship's officers' competences and factors of a selected warship. Chosen correct and rational methods as well as identification of the strongest and weakest competences of an officer lead to preconditions to create an adapted and individual development program for each officer separately. Therefore, the relevance of the study is based on this assumption.

A case study was used in this research in order to clarify and understand processes and causes found in the development of a naval officer. Its purpose was to narrow down the number of the subjects of the study and to understand the relevance of its raised problem regarding them. One of the ships of the Lithuanian Naval Force - Dzūkas (a Flyvefisken class patrol vessel) - was chosen for the case study. The study used in-depth, semi-structured interviews. As a result, 5 officers of the ship were interviewed. A complex multi criteria assessment method, consisting of an expert assessment, in-depth group interview and mathematical analysis, was used to, firstly, identify competences and factors determining efficiency of the ship's officer's performance and, consequently, to compile a list of them. This method belongs to a group of decision-making methods and is used to evaluate complicated and complex phenomena or processes. Most commonly used multi criteria methods are a combination of expert assessment and mathematical analysis. They are based on professional competences of the experts and the use of mathematical analysis methods (Raudeliūnienė 2012).

The aim of this method is to identify sub-indicators of the research object, calculate their values and significance, then integrate them into a summative criterion which also integrates a set of sub-criteria. The criterion is calculated by the following formula:

$$R = \sum_{i=1}^{n} \omega_i \cdot R_i \qquad (1)$$

here R_i = normalized values of sub-criteria; ω_i = significance of sub-criteria; n = a set of sub-criteria;

Determining the significance of the assessment criteria shows the importance of each criterion in relation to other criteria. In order to determine the significance, differentiation of the significance of the criteria was carried out. Moreover, to get more objective and accurate assessment, the criteria was differentiated according to the specifics of the organization as well as to the context of the problematic domain, the subject of the study.

$$\sum_{i=1}^{n} \omega_i = 1. \qquad (2)$$

Determining the significance of the criteria on the basis of the criteria significance scale, different size scales were used ([0,1], [0,100], etc.); however, in this stage to determine the significance of the criteria, the most common criteria significance scale in the interval [0,1] was used instead (Ginevičius 2006):
here ω_i = significance of sub-criteria; n = a set of sub-criteria;

Expert assessment method is a survey of a specially selected group of people who are experts of a certain area. This method is widely used in sociological research to obtain empirical data of the relevant field. In this study, 7 experts were selected that met special requirements: to have worked for at least 7 years, to have served on a warship for at least 5 years, to have experience as a commanding officer of no less than 5 years, etc. Their function is to evaluate the list of competences and skills and to determine their significance.

On the basis of the adapted list of a ship's officer's competences and factors, the experts were asked to identify the quantitative criteria and their significance of the factors. It was agreed that the factor values would be assigned to the scale interval from 1 to 3. Values of the adapted factors would be evaluated as follows: 1 - low

(ability), 2 - medium, 3 - high. Certain criteria of the factors could not be evaluated on the basis of such scale; therefore, they were adapted to the assessment interval taking their context into consideration.

In order to check if the evaluation tool and the values of the adapted criteria were adequate, officers of one warship of the Lithuanian Naval Force were assessed according to the adapted list of competences and factors. Therefore, one of the warships of the Lithuanian Naval Force - Aukštaitis (a Flyvefisken class patrol vessel) - was chosen after applying a stochastic method. The management of the ship consists of two commanding officers while 3 officers belong to a group of lower-rank management. The assessment of the officers was based on the set of criteria of competences and factors determined by the experts (see Table 3). In addition, an evaluation form was made. Also, the officers' assessment was carried out using a 360 ° feedback approach, i.e. the assessed one was evaluated by everyone related to his/her work: commanding officers, subordinates and colleagues who work with him/her in close proximity. This assessment method was used to collect optimally objective data. Officers x1 and x2 were assessed by 4 colleagues, officer x3 - by 7 colleagues while officers x4 and x5 - by 11 colleagues.

The assessment data were summed and for each competence and factor arithmetic mean was found. Firstly, the results of each officer's assessment were calculated separately, then all the data were summed up and the cumulative result of the ship *Aukštaitis* was generated.

Interpretation of research findings. The results acquired during the interview coincided with the problems analyzed in scientific literature. The ship's officers agreed with the presented ways to solve these problems. Interviews revealed a similar ship's officers' approach and their understanding of the development problems. Also, the interviews revealed examples of practical problems and possibilities to solve them. Summing up the results, the following can be noted:
- The development of competences is an integral part of the work optimization. The development also directly affects work results. While developing missing competences, productivity increases and work is optimized.
- The ship's officers' efficiency would improve if their development was targeted and customized rather than formulaic. Every ship's officer needs such development.
- The weakest competences and factors must be taken into account while customizing their development.
- At a ship's officer's work there are competences and factors that are more significant than others. None of the interviewed officers know or have seen the list setting out competences and factors according to their significance.

After the assessment of competences and their constituent factors of a ship's officer of the Lithuanian Naval Force, all the experts provided their significance that was calculated finding the arithmetic mean for each criterion separately (see Table 3).

Table 3. The table of significance of a ship's officer's competences and their constituent factors

Competences	Significance	Skills	Significance of factors
Managerial	0,16	ability to manage	0,28
		ability to organize	0,22
		ability to plan	0,15
		ability to be a leader, authority	0,23
		ability to solve conflicts	0,12
Strategic	0,05	global thinking	0,11
		systemic thinking	0,31
		rational thinking	0,26
		ability to predict	0,09
		ability to focus on the goal	0,23
Technological	0,08	technical and technological skills	0,25
		ability to use databases	0,3
		digital literacy	0,45

Professional	0,18	knowledge of legislation	0,12
		professional knowledge	0,23
		professional curiosity	0,17
		higher education	0,18
		professional experience	0,2
		work experience abroad	0,1
Social	0,06	ability to listen to and understand the interlocutor	0,14
		ability to express one's thoughts and opinion clearly	0,2
		ability to work in a team	0,16
		ability to integrate into the community	0,1
		responsibility to the others	0,16
		respect of the universal ethical principles	0,16
		empathy	0,08
Personal	0,13	honesty	0,21
		initiative	0,25
		diligence	0,15
		a sense of duty	0,13
		self-confidence	0,14
		flexibility	0,06
		observation	0,06
Emotional	0,06	emotional strength	0,48
		enthusiasm	0,28
		job satisfaction	0,24
Learning	0,05	ability to identify learning objectives	0,17
		ability to organize and evaluate one's own learning	0,19
		ability to systemize information	0,35
		ability to acquire knowledge	0,29
Methodical	0,03	ability to make decisions	0,41
		ability to manage time	0,18
		ability to manage stress	0,41
Linguistic-communicative	0,05	literacy	0,37
		verbal communication skills	0,4
		non-verbal communication skills	0,23
Intercultural	0,1	foreign language acquisition	0,62
		awareness and tolerance of different cultures	0,38
Physical	0,05	fitness	0,4
		hygiene habits	0,25
		physical self-improvement	0,35

Source: authors

Based on the evaluation criteria and their values attributed to a ship's officer competences and factors, a list of the most significant factors leading to work optimization was compiled (see Table 4). For the rating to be optimal and objective, values of factor significance were equalized. The values then were added up with the maximum values of the competences.

Table 4. A list of the most significant values leading to work optimization

Place	Factor	Counting the value of significance
1.	initiative	0,88+0,39=1,27
2.	professional knowledge	0,69+0,54=1,23
3.	ability to manage	0,7+0,48=1,18
4.	professional experience	0,6+0,54=1,14
5.	honesty	0,74+0,39=1,13
6.	higher education	0,54+0,54=1,08
7.	ability to be a leader, authority	0,58+0,48=1,06
8.	professional curiosity	0,51+0,54=1,05
9.	ability to organize	0,55+0,48=1,03
10.	systemic thinking	0,78+0,15=0,93

Source: authors

Analyzing the findings that were based on the expert assessment method, a set of the most remarkable features of an efficient ship's officer - initiative, honesty, professional - were distinguished. Professional experience which takes the 4th place in the table above would further strengthen the officer's work optimization. Initiative, which takes the leading position in the experts' assessment, highlights one important aspect. As ship's officers' level of intelligence and education is high; moreover, they complete a number of job-related professional courses and trainings, initiative is the single most important factor of personal competence that directs work optimization to one side or the other. An initiative ship's officer, who meets other necessary requirements for a ship's officer, contributes to increasing work efficiency more greatly than that who does not show any initiative at all. Therefore, this factor is closely linked to personality, experience and personal psychological state.

During the assessment of competences and their factors using the questionnaire, a dual assessment system (method) can be applied:
a) adding up the total amount of points, using a value point for a separate criterion value, for instance: low ability - 1 point, average ability - 2 points, high ability - 3 points.
b) finding the average score of a common assessment of competences and factors, on the basis of the evaluation scale used in this study ranging from 1 to 3, wherein 1 means low, 2 - average, 3 - high.

Assessing *Aukštaitis'* ship's officers separately, both assessment methods were used. The assessment (without integrated criteria values) is presented in Table 5.

Table 5. The assessment of competences and their factors of ship's officers of *Aukštaitis*

A ship's officer	Total amount of points (max. 153)	Average score on a scale from 1 to 3
Officer x1	143	2,8
Officer x2	133	2,6
Officer x3	140	2,7
Officer x4	100	2,0
Officer x5	98	1,9

Source: authors

After the assessment of the competences and their factors of *Aukštaitis'* ship's officers, a calculation of integrated criteria value was done by combining the values into a single generalized value. Subsequently, the obtained value was integrated into the general coefficient of competence significance. The maximum sum of coefficients of competence significance is equal to 3. The overall assessment of competences of *Aukštaitis'* ship's officers is 2.33 out of 3 - slightly higher than average. Now we can distinguish their weakest competences and skills (see Table 6).

Table 6. The weakest competences and skills of the ship's officers of *Aukštaitis*

No	Missing skills	Missing competence	%
1.	professional knowledge and experience	professional	23%
2.	ability to be a leader, to manage and solve conflicts	managerial	15%
3.	English comprehension, awareness of other cultures	intercultural	15%
4.	initiative, self-confidence	personal	12%
5.	digital literacy, work with computers	technological	9%
6.	emotional strength	emotional	9%
7.	fitness and physical self-improvement	physical	6%
8.	ability to integrate and work in a team, responsibility to the others	social	5%
9.	ability to organize and evaluate one's own learning	learning	3%
10.	ability to manage stress	methodical	3%

Source: authors

Based on these improvable skills, the perspective of competence development and measures for developing individual competences or skills were revealed. Considering the results, a list of the measures was drawn up according to the work environment, costs of time, human and financial resources. Among the offered training tools there are individual classes, English courses, seminars, psychologist-led classes, computer literacy courses, sports activities. The use of these measures is likely to increase the ship's officers' quality of work and results; however, it requires more research and observations.

Conclusions

After analyzing the latest theories on training human resources, it became clear that the concept *competence* in scientific literature is interpreted in very different and conflicting ways. It is hard to find one comprehensive definition or classification of the competences. In this study to define the concept, Jucevičienė's (2010) definition, saying that it is personal knowledge, skills, abilities, attitudes and values that emerge in a form of successful work performance, was used.

The analysis of scientific literature revealed the lack of consensus on the classification of competences and their factors. Therefore, the study authors, using the expert assessment method, identified the following core groups of competences and factors: managerial (ability to manage, organize, plan, solve conflicts), strategic (global, systematic, rational thinking, ability to predict and focus on the goal), professional (professional knowledge, curiosity, experience, knowledge of legislation, higher education), social (ability to express thoughts and opinions clearly, work in teams, listen to and understand one's interlocutor, follow the universal ethical principles), personal (honesty, initiative, diligence, a sense of duty, self-confidence), emotional (emotional strength), intercultural (foreign language acquisition, tolerance of culture differences), learning and methodical (ability to systemize information, acquire knowledge, make decisions, manage stress), physical (fitness, hygiene habits, physical self-improvement), technological (technological skills, digital literacy, ability to use databases), linguistic-communicative (literacy, verbal and nonverbal communication skills).

After the research, it became clear that competence development directly affects work results. Developing missing competences, work efficiency increases along with work optimization. A ship's officer's efficiency would improve if his/her training was targeted and customized rather than formulaic. All ship's officers need individual training that would focus on their weakly expressed competences. Selecting individual training in the workplace, the process is optimized which ensures the optimal performance of the tasks of the ship.

After the multi criteria assessment of a ship's officer's competences and factors, it was found out that different competences and their factors are not equally important to a ship's officer's work. Based on the most significant factors for a ship's officer identified in the study, the most desirable ones are: initiative, honesty, ability to be a leader, great working experience. Improvement of these forms the core training objectives of ship's officers of the Lithuanian Naval Force and, therefore, forms the basis in their training program.

The assessment of competences and skills of *Aukštaitis'* officers showed that their professional, managerial and intercultural competences are the weakest. The officers must improve their English skills and knowledge. The study found that the graduates of foreign military academies have more pronounced skills and stronger abilities.

Individual classes in the workplace would allow the ship's officers to improve professional knowledge, leadership skills, teamwork skills, leadership formation, computer work, the ship's technical knowledge. Psychologist-led classes would allow them to strengthen personal qualities, develop emotional strength, curiosity, improve time and stress management. English courses would allow them to improve English skills. Sports activities would lead to physical development and a better officers' physical shape.

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