Investigating seafarers' hard and soft skills in maritime logistics: an overarching approach

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Abstract

The seafarers' labour market is exposed to continuous changes in terms of requested skills. This trend imposes to seafarers a growing flexibility to face the changing factors that characterize the maritime and logistics cluster. These rapid changes in requested competences, jointly with severe working conditions at sea, lead seafarers to reasoning on potential job opportunities, for an ashore "second life". The paper provides an overview of seafarers' hard and soft skills. Then it proposes an ad-hoc framework for disentangling main issues related to competences in the shipping industry. Finally, the theoretical model proposed is used for scrutinizing those skills developed aboard that are expected to support ex-seafarers when searching satisfactory jobs ashore. The manuscript investigates skills in the maritime sector for the development of our conceptual framework. Moreover, it tests and validates this conceptual model, grounding on both anecdotal evidences and insights from experts and practitioners involved in the industry.

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1. Introduction

Workforce and workplaces of tomorrow will be very different from those of today. The changes in production models and work organization systems affecting the global economy– namely automation and digitalization - are directly influencing labour, jobs and tasks (World Economic Forum, 2018).

All these transformations are requiring workers to be able to integrate heterogeneous experiences, formal and informal dimensions, to show growing readiness and adaptability (Fugate et al. 2004). Moreover, these "professional challenges" influence indirectly both the demand and supply side of the labour market, obliging workers to new discontinuous working careers (De Vos, Soens, 2008).

In this context, the maritime and logistics industry seems to be an interesting context to deepen. It imposes, perhaps more than many others, to its employees a growing flexibility and higher adaptability in order to face the rapid transitions in requested competences and skills (Notteboom, 2010; 2012). Moreover, the peculiarity of maritime labour also consists of endogenous factors such as the detachment from life on land and risks faced during the seafarer's seagoing experience (e.g. natural disasters) (Carol-Dekker, 2018).

These elements, jointly with the severe working condition at sea, trigger several seafarers to search for potential job opportunities ashore; in this vein, the first professional life experienced as a seafarer could not be the unique one and it becomes necessary to build a perspective of working continuity, grounding on the competences developed during the prior seagoing experience. The willingness for a "second life" ashore and the search of viable options include a large number of seafarers; hence, this phenomenon represents a valuable empirical field, given the size of this labour market. In fact, according to EMSA 2017 the total number of masters and officers holding valid certificates of competences (CoC) at EU level was 182,662. Sorting them by department, the number of master and officers holding valid CoCs amounted to 112,566 in deck departments and 75,493 in engine departments. Out of this number, 3.59% holds CoCs entitling them to serve both deck and engine department (EMSA, Seafarers' Statistic in the EU, 2017).

All the qualifications required for seafarers to carry out maritime work is an indirect proof that this work requires high professional and technical skills; this implies an activity of constant training that becomes even more relevant in view of the continuous change trends of the labor market.

Despite the relevance of issues related to seafarers' skills, competences and training, both the related literature and human resources' embedded studies are scarce. Given the above, the paper investigates the seafarers' professional features, aiming to disentangling main issues related to competences within the maritime and port industry. Contextually, the paper aims to provide managerial and organizational insights to firms involved in maritime industry (e.g. shipping companies, manning agencies, etc.). In this perspective, it proposes an ad-hoc conceptual framework addressed to investigate hard (or technical) and soft (intra-personal and inter-personal) skills characterizing seafarers, belonging both to deck and engine

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departments, and scrutinize the possibility of their usefulness for a "second life" ashore.

2. Hard and soft skills: theoretical background

Hard and soft skills play a key role into the human resources management processes and have been deeply studied and considered by scholars both in this field and in Organizational Behaviour area (Le Deist & Winterton, 2005; Chouhan & Srivastava, 2014). In fact, the analysis of these competences enables to define and "categorize" every single worker into a specific job profile, and it helps as well to understand his/her working background.

Given the importance of hard and soft skills (Laker, Powel, 2011), we investigate academic literature in order to underline the relevance of such skills also in the maritime labour market (. Therefore, we start from the definition of hard and soft skills (Figure n. 1), focusing on the different authors' interpretations and methods of classification of labour competences. Next to this, the paper investigates training programs and skills transfer in order to point out the main differences between hard and soft skills-trainings. Finally, the manuscript examines the main implications of the abovementioned theories in the maritime labour market.

Figure n. 1 - Theoretical background.

Hard and soft skills in labour market

Training programs and skills transfer

Examination of maritime labour market
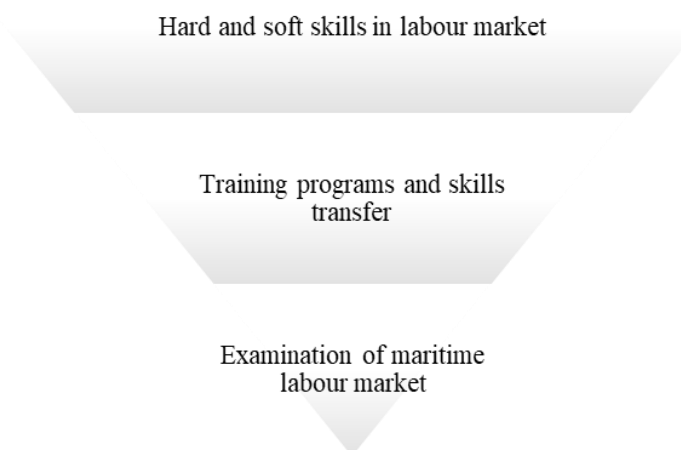
Source: authors' own elaboration

Briefly, hard skills are technical competences related to specific occupations and tasks; for this reason, they can be easily defined and measured. They can be defined as those achievements included on a résumé, such as education, work experience, knowledge, and level of expertise. Soft skills are the intangible, nontechnical, personality-specific competences that works as reinforcement for technical

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competences and influence strongly organizational behaviors, helping the possibility for a worker to become a leader, facilitator, mediator and negotiator (Robles, 2012).

Unlike hard skills, soft skills are applicable to a wider level, in all types of activities and, for this reason, they are defined as "transversal", and can represent a driving force for workers who want to reconvert their work experience in a perspective of flexibility.

An accurate definition and analysis is essential in order to understand their relevance for business performance and to be able to assess the effectiveness of the tools available to companies, aimed at developing these skills.

The definition of soft skills has been object of several studies by the academic world. McClelland first (1973) identified the limits of the evaluation test conducted by schools and universities in the publication "Testing for competence rather than intelligence". This test aimed at measuring the subject's IQ (e.g. test on the IQ or school performance) and it was criticized because it took into account only part of the performance that the individual could achieve.

The failure of the prediction was due, from the author's point of view, to the fact that this tests did not measure the skills and competences that had a practical impact on the working life of the subjects, neglecting skills such as communication, result orientation and interaction with customers (McClelland, 1973), the importance of which he remarked.

A further contribution was proposed by Boyatzis who defined the competences as "related but different sets of behavior organized around an underlying construct, which we call intent" (Boyatzis, 2009; 2007). Here, behaviors are considered alternate manifestations of the intent, as appropriate in various situations or times.

Most authors (e.g. Boyatzis, Kotter, Campbell, Spencer & Spencer, Goleman) agree with the proposal that identifies three macro categories of expertise (Boyatzis, 2011):

i) *Cognitive competencies*, such as system thinking and pattern recognition;
ii) *Emotional intelligence competencies*, including self-awareness and self-management competencies, such as emotional self-awareness and emotional self-control;
iii) *Social intelligence competencies*, including social awareness and relationship management competencies, such as empathy and teamwork.

Competencies can be considered to be a behavioral approach to emotional, social, and cognitive intelligence as used in ESCI-U (Boyatis, Gaskin 2010) can provide valuable data about human resource capability.

In this model 5 clusters are considered to include competences:

- *Self-awareness*, the ability to understand own emotions and their effects, to know abilities and limits;
- *Self-management*, the ability to manage and use own emotions to be more effective;
- *Social awareness*, the ability to understand what people feel, their point of view, cultivating positive relationships;
- *Relationship management*, the ability to manage emotionally intrapersonal relationship, clearly read social situations and relationship, interact without friction;

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- *Cognitive competencies*, the ability to understand complex phenomena and recognize the underlying patterns in situation or events.

Considering the sharing between academic world and consultancy field, the inclusion according to 5 clusters above will be used in the analysis of soft skills applied to the case study of seafarers presented in the following paragraph 5.

Hard skills are technical knowledge and/or content (Culpin and Scoot, 2011) applicable to a specific type of task or activity and have a mode of acquisition characterized by standardized training courses that can be those of school, training and through the experience on the job, otherwise, soft skills can be transferred to any environment in which the person is operating, both at work and in private life.

Given the importance of soft skills is interesting to analyze the strategies for teaching social and emotional intelligence and the difference between hard and soft skills and their impact on training transfer. This focus on soft skills may be warranted by the specific difficulty in transferring soft skills (intra-personal and inter-personal) rather than hard skills (technical). Scholars claim that behavioral skills need to be taught, adopting non-traditional methods in which the person is involved in an emotional and experiential context (Dwyner, 2001).

By involving participants in a process of reflection, interactive engagement, and practice, experiential learning techniques stimulate the cognitive, behavioral, and emotional dimension of learning and behavioral change that are necessary to acquire emotional and social competencies (Hoover et alii, 2010).

3. Empirical research

3.1 Short presentation of the project

The project "Second Life: seafarers work and live better having alternatives of a future job ashore" (2018) has been developed by the Italian Centre of Excellence on Logistics Transports and Infrastructure (CIELI) of the University of Genoa. Its main aim was to identify, for each category of formers seafarers, the most suitable carrier opportunities ashore This because the potential prospect of a satisfactory job ashore at the end of the career as seafarer, when the worker abandons seagoing before the retirement age, is a key driver for his decision to undertake this job carrier (BIMCO, 2016).

As shown by several works from different associations (i.e. BIMCO, ILO or ECSA), the most of actual seafarers don't consider remaining at sea for the rest of their careers. Moreover, there is uncertainty amongst seafarers about the possibility of having a successful career at shore following time at sea. Increased information on the change to shore from a sea-based career would assist in providing seafarers with the precision needed on the steps towards a successful transition (ILO, 2019). For this reason, the project Second Life had to focus contextually on the main needs and skills requested by the demand side of the labour market.

The project was divided in 5 different phases:

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a) analysis of the supply side of the labour market

b) analysis of the demand side of the labour market

c) development of the "on board skills and competences-professional profiles ashore matrix"

d) modeling private employment services capable to support former seafarers

e) final report and public delivery.

For the aim of this study, the paper is mainly focused on the first phase of the research that identifies 119 onboard professional profiles considering the main three departments aboard of a ship; subdividing them by deck, engine and hotellerie, according to table 1 (Second Life, 2018).

3.2 Method and data

From the methodological point of view, researchers (Satta et alii., 2018) researchers have deeply studied all the entire seafarers labour market, creating an ad-hoc sheet for every professional profile. For each onboard professional profile an ad-hoc sheet has been created. Sorted by department, every profile sheet includes a task description that explains the general role and its classification aboard of the ship, as well as the main responsibilities and allocations. In table below a list of professional profiles by department is offered.

Table n. 1 - Overview of onboard professional profiles sorted by department.

DECK FIGURES	ENGINE FIGURES
- Ship Master	- Chief engineer
- Executive officer	- I assistant Chief engineer
- First mate	- II assistant Chief engineer
- Second mate	
- Third mate	- III assistant Chief engineer
- Safety officer	
- Security officer	- ETO (Electro Technical Officer)
- Environmental officer	
- Medical director	- Refrigeration engineer
- Boatswain	- Motorman
- Able seaman	- Oiler
- Ordinary seaman	- Wiper
- Pumpman	- Fitter
- Plumber	- Electrician
- Carpenter	- Refrigeration technician
- Cabinetmaker	- Electrical technician

Source: adapted from Satta et alii (2018).

This job profiles' subdivision considers as well peculiar tasks available only aboard specific types of ship, (e.g. security officer aboard cruise ships) and examines the different capabilities owned by seafarers boarded on distinct ships (e.g. different tasks for the pumpman profile on gas tankers, oil tankers and chemical tankers).

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Hotellerie department was not considered in this context, because of the employment similarity of these professional profiles. Working into "food and beverage" sector aboard or, for instance, working as an accountant. seafarers can apply for job opportunities ashore in the same field because they own the requested skills and moreover they own specific licenses related to the safety aboard of the ship, finding a direct match among ashore and land-based profiles. Every capability and activity developed during seagoing experience was analysed and catalogued, sorted by hard competences and soft competences.

In order to make a correct partition, all knowledge and abilities gained through education, training programs, certifications, and on-the-job training were inserted in hard skills; rather all the skills related to the personal attributes, personality traits, inherent social cues, and communication abilities needed to perform efficiently the activities that fall within the role held, were inserted in the soft competences. Every professional role and profile was profoundly analysed, basing on an online market research and all skills and characteristics, from the lowest level of detail up to highest one, were described. In this matter a different path was followed respectively for the hard competences and soft competences (Satta et alii, 2018). Due to the very nature of the hard skills, more fragmented and variegated, each hard competence has been articulated and split in more accurate skills. This has permitted to identify two main levels: a MACRO-level and a MICRO-level.

To reduce complexity and to facilitate the comparison among different professional profiles, MICRO-level hard competences have been additionally regrouped into macro and subdivided into intermediate competences, the so called MESO-level. Doing so it becomes possible to sort and catalogue all hard competences defining a structure that is attributable to a "Russian nesting doll"; every single hard skill belongs simultaneously to a MICRO, MESO and MACRO level.

Figure n. 2 - A sample of an ad-hoc profile (macro and micro levels highlighted).

Source: Satta et alii (2018).

Therefore, depending on the purposes, it is possible to take in consideration one of these levels that enables a more precise mapping as well as represents the most suitable link for an analogy between aboard and land-based jobs.

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Considering the onboard professional profiles belonging to the deck or engine departments, the following total amount of hard and soft skills has been defined (Satta et alii, 2018):
- 48 macro-level competences (26 hard; 22 soft)
- 131 meso-level competences (109 hard; 22 soft)
- 784 micro-level competences (762 hard; 22 soft).

In order to make a parallelism between ground profiles and seafarers, it was shown that meso-level competences permits the most precise comparison. Nevertheless we can reasonably affirm that, among the three different levels of analysis, the macro-level skills consents the easiest and most rapid comparison with ground profiles because they represent a lower detail level and provide a general and immediate classification of their competences.Table n. 2 lists the most frequent macro-level competences in order to introduce the seafarers' competences useful for a land-based requalification, as presented in the next sections, and to have an insight of their capabilities.

Table n. 2 - The most frequent seafarers' macro-level hard and soft skills

HARD SKILLS (MACRO LEVEL)		SOFT SKILLS
DECK	ENGINE	DECK – ENGINE
-Command and supervision of maritime navigation -Weather Forecast -Search and Rescue operations -Monitor of ship's operations -Propulsion and steering system control -Trim and stability control -Safety and security operations, environmental protection and crew training -Seamanship -Cargo stowage and handling -Mooring and anchoring operations -On-board equipment maintenance -Watch on the bridge, wheelhouse, lookout	-Direction, performance evaluation, safety maintenance -Bunkering, lubrication and ballasting operations -Management, maintenance and repair of safety systems, security and environmental protection -Direction and management of human resources -Operation of electrical, electronic, communication and control systems -Management, performance evaluation, safety maintenance, repair of the on-board electrical system -Management, performance evaluation, safety maintenance, repair of the refrigeration and air conditioning systems -Direction and management of human resources	-Leading Others -Commitment to the Job/work ethic -Attention to details -Balanced decision making -Organizational skills -Long range planning -Problem solving -Teamwork -Accountability for others -Goal orientation -Ability to work under pressure -Negotiation and conflict resolution

Source: authors' own elaboration.

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4. Hard skills

The hard skills represent a significant and essential tool, able to compare seafarers' competences to the ones requested for professional profiles within the maritime industry (Satta et alii, 2018).

Therefore, hard skills play an essential role into the "land-based requalification process" of seafarers, because they represent a direct link to measure the seafarers' suitability for a selection of onshore professional profiles across various maritime and port-related industries. Thus, this section provides the whole picture of these competences developed aboard.

4.1 Hard skills quantitative assessment

This study has identified a total amount of 897 hard skills sorting them by deck department and engine department and considering them at a micro, meso and macro level. In this regard, table 3 shows the amount of the micro-level hard skills for the sample professional profiles (Satta et alii, 2018).

Table n. 3 - Total amount of hard skills for each professional profile

DECK		ENGINE	
Ship Master	76	Chief engineer	66
First mate	66	I assistant Chief engineer	54
Second mate	41	II assistant Chief engineer	46
Third mate	32	III assistant Chief engineer	40
Boatswain	47	ETO (Electro Technical Officer)	43
Able seaman	33	Refrigeration engineer	45
Pumpman	33[1]	Motorman	41
Plumber	27	Electrician	39
Ordinary seaman	15	Refrigeration technician	25
Carpenter/cabinetmaker	13	Oiler	25
		Fitter	19
		Electrical technician	17
		Wiper	4

Source: Satta et alii (2018).

Considering the total amount of hard skills shown in table 3 per every profile, it is possible to notice how the relative quantities are close connected to the seniority and to the experience gained aboard; they are higher for profiles that request a greater experience and more profound preparation (i.e. officers/boatswain or chief engineer/motorman) and fewer for "young" and junior profiles (i.e. ordinary seaman/wiper)

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[1] For the pumpman profile this amount is obtained from the average of hard skills, considering his different tasks aboard on gas tankers, oil tankers and chemical tankers.

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Nevertheless, these hard skills represent also the "direct expression" of all obtained certifications and all professional training courses attended. It is therefore evident how, for most profiles, the total amount is directly proportional to the rank held. However, there are some examples that negate the validity of the previous assumption; considering, for instance, two different profiles within the deck department: the second mate, an officer on board that is usually the third in command, and the boatswain, the highest rank among non-commissioned officers of the Deck Department and focusing only on the total amount, it is worth to observe how they are more developed for the boatswain (47) rather than for the second mate (41) who is, in fact, an officer with a higher theoretic preparation and a higher degree of responsibility.

Actually, similar analogies exist as well within the engine department. That can be observed between the III assistant Chief engineer (40), officer in charge of the maintenance and repair work on the naval systems, and the motorman (41), whose tasks concern the operation and daily maintenance of the main engines and auxiliary machineries.

In the light of all the above, a different key to reading is feasible for hard competences owned by seafarers and for all personnel that work aboard of a ship. The number of hard skills is not strictly related to the theoretical preparation or to the degree of responsibility, but rather it depends on the autonomy and specificity of their own duties aboard. This roles' segmentation is possible due to the experience gained aboard (15/20 years spent aboard is the average time in order to become boatswain or motorman) that renders seafarers high skilled professionals and, for the specific sector they belong to, fully autonomous.

Based on the foregoing, I i's eloquent how their professionalism is deeply correlated to their usual working environment. Often, at sea, they are unique profiles able to guarantee the management, the safety maintenance and the repair of specific equipment in order to provide a regular and safe navigation. All this represents a guarantee in terms of reliability and autonomy for a possible transition from the previous on-board job to an eventual future employment ashore.

4.2 Meso-level hard skills

From another viewpoint, taking into account meso level hard competences, it is worth to encounter significant results regarding the peculiarities of seafarers skills.

As reported in the previous Sections, meso level represents an intermediate grouping obtained by the subdivision of macro-level competences. This transitional retail level permits to discover common features among professional profiles that belong to different ranks or, as well, to different departments (Satta et alii, 2018).

The meso level analysis permits to investigate the shared competences in order to better investigate viable opportunities for an ashore "second life" for ex-seafarers.

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Table n. 4 shows the most meaningful examples that explain, in spite of diverse seafarers' expertises, how some traits are frequently repeated among various professional profiles.

Table n. 4 -Samples of meso level hard skills spendable for job opportunities ashore

MESO LEVEL HARD COMPETENCES	DECK DEPT. PROFILES	% WITHIN DEPT	ENGINE DEPT. PROFILES	% WITHIN DEPT
Emergency management	10	63%	11	79%
Human resources management	7	43%	6	43%
Damage and claims assessment	7	43%	8	57%
Project management	9	56%	7	50%
Safety management (procedures and devices)	8	50%	9	64%

Source: adapted from Satta et alii (2018).

Regardless of what is the main belonging department and regardless the different ranks of the professional profiles involved, the examination of the frequency enables to highlight the presence of highly developed skills. Due to the very nature of the working environment aboard of a ship, the competences associated to the "emergency management" are present on a vast scale. This meso hard skill includes in the round the knowledge linked to the fire prevention rules but also the deep understanding of the actions to be taken to protect and safeguard all persons and equipment aboard. These competences cover also the preparation of intervention plans and the capability to handle all the actions to be taken to limit the damage and save the ship following a fire, explosion or collision. Every seafarer, both belonging to deck or engine department, owns within his duties and responsibilities the capability to deal with these kinds of situations. Nevertheless, due to the "proximity" to the intervention area, it is possible to notice how this hard skill is more developed for engine' members who work below decks (79% versus 63% deck dept.).

The aforementioned competence, although limited to the ship working environment, plays an important role if we take in consideration that seafarers daily deal with this additional chore. Also, during the performance of their own institutional duties, they show to have a general and complete situational awareness. All this makes them an attractive feature for the labor market ashore.

Another peculiar characteristic that arises from the interpretation of table 4 is the HR management competence; this issue is crucial in order to obtain future potential

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management positions (i.e. site manager, shipping company manager, project manager for a terminal etc.). As shown, percentage is around 43% both for deck and engine departments. Such value is directly connected to the rank held by those profiles; in fact, this competence is owned by all officers aboard, though it is present in some noncommissioned profiles (i.e. motorman or boatswain) that could aspire to team leading positions as well. The personnel management appears to be then an essential issue that finds a direct response for ashore job opportunities in the light of their previous intense experience matured aboard, in a 24-hours relationship with their crew members.

4.3 Hard Skills as "testers" for on-shore requalification.

Hard skills represents a helpful tester to evaluate the correspondence between possessed competences and those requested for a proper land-based requalification.

Relaying on the project "Second Life: seafarers work and live better having alternatives of a future job ashore" (Satta and Parola 2018) and analyzing the onboard professional profiles, it has been possible to compare them with the skills requested within the maritime cluster industry. This permits to understand how much the seafarer is suitable for specific positions or, in case, if he/she needs additional training programs to apply for the desired job positions ashore.

Table below gives an example of this kind of evaluation, taking in consideration part of hard skills owned by the first mate and the ones requested for an ashore professional profile, such as the ship planner for a terminal.

Table n. 5 - Comparison between aboard profile and ashore profile competences.

FIRST MATE	SHIP PLANNER
Stowing and lashing knowledge	Stowing and lashing knowledge
Safety standards in the workplace	Safety standards in the workplace
Damage and claims assessment	Damage and claims assessment
Anchoring and mooring	Anchoring and mooring
Trim and stability	Trim and stability
Management of working groups	Management of working groups
Nautical terms knowledge	Nautical terms knowledge
HR management	HR management
Management of equipment faults	Management of equipment faults
Inventory management	Inventory management
Long range planning	Long range planning
Ship planning	Ship planning
Knowledge of containers characteristics	Knowledge of containers characteristics
Knowledge of tax and customs procedures	Knowledge of tax and customs procedures
Journey and navigation planning	Port terminal communications
Damage assessment evaluation	Port infrastructures knowledge
Knowledge of propulsion systems and auxiliary machinery	Integrated logistics knowledge

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Monitor of deck operations	Knowledge of logistics planning
Vessel maneuvering	
Management of security operations	

Source: Satta et alii (2018).

Carrying out the survey for several different profiles, we notice how some specific characteristics owned by seafarers seem to guarantee them a rapid and suitable ashore requalification. This is due to the uniqueness of the sectors in which they were employed. One clear example is the knowledge of international regulations, standards, codes and recommendations regarding the transport of dangerous cargo, including the International Maritime Dangerous Goods (IMDG) Code and International Maritime Solid Bulk Cargoes (IMBSC) Code. Several seafarers have the appropriate background related to the use of safety equipment and fire risk devices associated with cargo handling and the transport of dangerous and noxious bulk liquids. This knowledge makes them attractive for the demand side of the labour market ashore, for example as terminal operator or operations specialist in a shipping company or, as well, in a freight forwarding company.

Another clear case is represented by all aspects linked to the cold chain of reefers container, regarding temperature monitoring, maintenance, storage and handling, Moreover, seafarers with a solid experience in this field result able to manage all standards and regulations concerning the logistics.

The aforementioned competences show how a deep knowledge in niche sectors may permit to seafarers a quicker ashore relocation. At the same time, these are the evidence of the helpfulness of hard skills as tester for land-based requalification.

5. Soft skills

The study focuses on the analysis of the soft skills owned by seafarers belonging both to deck and engine departments, too. A total of 22 soft skills (as shown in table n. 6), sorted by department, have been defined. The soft skills owned by seafarers results to be less numerous in terms of quantity than hard skills. However, they look more homogeneous and equally distributed among the deck and engine department, because soft skills present a more transversal nature. Regardless of the department of belonging, every single seafarer develops peculiar characteristics due to the daily life spent aboard, in a small and confined work environment marked by a 24-hours relationship among departments and within the crew.

For this reason, as previously mentioned in paragraph 2, soft skills show the peculiarity of being transversal and not closely related to a single profession or task aboard.

Similar statements arise considering the quantitative distributions of soft skills within the two departments and among different profiles. In this regard, table n. 7 shows how many of these skills, defined by the research, are owned by the professional profiles of the deck and engine department.

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Table n. 6 - Soft skills found both in deck and engine department.

SOFT SKILLS – DECK AND ENGINE	
-Leading Others	-Ability to work under pressure
-Commitment to the Job/work ethic	-Time management
-Attention to details	-Negotiation and conflict resolution
-Balanced decision making	-Customer orientation
-Organizational skills	-Personal relationships
-Following directions	-Business acumen
-Long range planning	-Critical thinking
-Problem solving	-Flexibility
-Persuading other	-Accurate listening
-Teamwork	-Objective listening
-Accountability for others	-Goal orientation

Source: adapted from Satta et alii (2018).

Just analyzing the total amounts, it appears that the amount of soft skills is directly linked to the belonging category: officers of different departments, and not-commissioned officers present, within them, a comparable numbers of soft skills (e.g. Master and Chief Engineer present the same number, also if they belong to different departments and also if they have different seniority).

This highlights how soft skills, especially in maritime sector, are related to the class they belong to (e.g. officers, petty officers) and, indirectly, are based on the ability to manage other people.

Table n. 7 - The total amount of soft skills for each professional profile

DECK		ENGINE	
Ship Master	18	Chief engineer	18
Executive officer	18	I assistant Chief engineer	18
First mate	18	II assistant Chief engineer	18
Second mate	18	III assistant Chief engineer	18
Third mate	18	ETO (Electro Technical Officer)	16
Safety officer (cruise)	13	Refrigeration engineer	16
Security officer (cruise)	13	Motorman	11
Environmental officer (cruise)	15	Oiler	8
Medical director	9	Wiper	8
Boatswain	9	Fitter	8
Able seaman	9	Electrician	9
Ordinary seaman	9	Refrigeration technician	9
Pumpman	9	Electrical technician	10
Plumber	8		
Carpenter/cabinetmaker	8		

Source: authors' own elaboration.

Taking in consideration all competences listed for every professional profile (Satta et alii, 2018), it appears that all seafarers of both deck and engine department all have 4 soft skills:

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- attention to detail;
- organizational skills;
- ability to work under pressure and time management;
- teamwork.

Table n. 8 - The soft skills that all seafarers have.

Attention to detail	Is the ability to pay attention to details, to verify the correctness or inappropriateness of separate parts or entire procedures.
Organizational skill	Is the ability to understand the immediate and concrete needs of a situation and to establish an effective action plan to meet these needs.
Ability to work under pressure and time management	Is a strong ability to think clearly, as well as an ability to work in "watertight compartments" by putting stress aside. Time management is strongly linked to the ability to work under pressure, as well as respecting precise deadlines; seafarers who manage their time are able to efficiently prioritize tasks and organize their agendas. The development of this approach permits to take on new tasks with new deadlines.
Teamwork	Is the ability to form relationships of a personal nature with the people you work with, finalized to reach assigned and shared goals.

Source: authors' own elaboration.

Therefore, all seafarers in the deck and engine department have a marked presence of skills that fall within the ESCI-U model, proposed in section 2, within the cluster *Self-management - Relationship management*. This shows that they have a strong propensity and ability to manage and use their own emotions in order to be more effective and that they result able to manage emotionally intrapersonal relationship, to clearly read social situations and relationship, interacting without friction, acting as leaders in a context in which hierarchy plays a dominant role (Harlaftis, Theotokas, 2009). On the basis of the above arguments, shipping and maritime logistic can became an exemplar field to deepen the role of soft skills having regard to the lack of previous studies on these issues, considering the dimension of intensity. The paper is willing to reach a specific theoretical model for the shipping industry that increases the soft skills and, at the same time, reinforce re-use of hard skills.

6. Theoretical model

Once investigating maritime labour market and pointing out the main differences between hard and soft skills, the paper proposes an original conceptual framework to evaluate how seafarers can achieve a "second life" ashore (see figure above).

Box A in Figure 3 reports "second life opportunities", which represent the pursuit of seafarers of a new potential ashore working career. Notably, two critical drivers are currently pushing seafarers towards a career ashore: first, rapid changes in competences and skills demanded by maritime labour market, which requires increasingly specific technical skills and tends to cut jobs in favor of higher

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automation, and second, severe working conditions and poor life expectancy at sea. In this perspective, the skills acquired and developed during their former seagoing experiences are pivotal to pave the way for new "life" ashore.

Figure 3. Conceptual framework: evaluation of "second life" opportunities
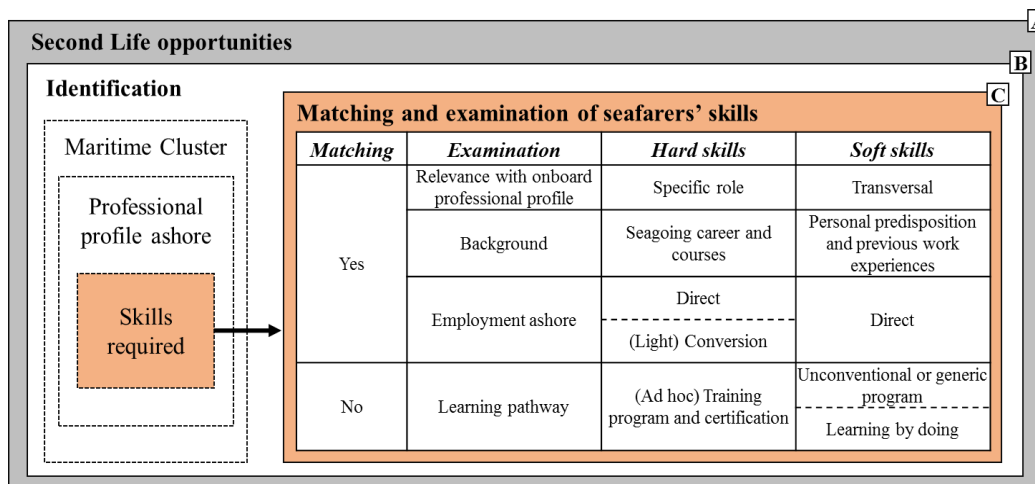
Source: authors' own elaboration.

Consequently, the identification of specific professional profiles ashore within the maritime cluster (Box B in Figure 3), allows seafarers to target the principal skills required by port-related transport and logistics companies to cover those working positions. In this way, the study takes into account the heterogeneous labour supply of the 10 main sectors related to the maritime and port industry, as suggested by Satta et al. (2018). These include shipping industry, manufacturing industry, logistics, commercial and touristic ports, public administration, shipbuilding industry, shipping agency and craft industry. The abovementioned sectors encompass a different number of professional profiles, which are characterized by specific hard and soft skilled.

In order to understand when seafarers can potentially cover these working positions, Box C of the conceptual framework (Figure 3) proposes to compare the skills owned by seafarers to the skills required by each professional profile of the maritime cluster. As a consequence, when a correspondence exists, seafarer's hard and soft skills are examined according to three dimensions to deeply understand their background and different feasibility of use ashore. The first dimension (i.e. the relevance with onboard professional profile) underlines hard skills are highly dependent on the role covered onboard by seafarer. This indicates that an executive officer has a better chance to own specific hard skills required by port-related and logistics firms than an ordinary seaman does. An executive officer, indeed, has acquired more experiences during his seagoing career and has achieved several necessary certificates to be promoted, which attest his remarkable competences. On the contrary, soft skills are by definition not specific and could be considered

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transversal because of they are not linked to the job played on the ship. Moreover, the second dimension (i.e. background) points out soft skills emerging predominantly from personal predisposition and general previous work experiences. Hence, they are expected to be easily employed in a career ashore (as reported in the third dimension "employment ashore"). As regards hard skills, they often need a conversion before seafarer is ready and suitable for working ashore due to their high level of specialization. Unique features, indeed, characterize maritime sector and determine specific labour requirements. Therefore, seafarers' hard skills are hardly usable in other industries, although port industry shows some affinities.

When it comes the mismatch between skills required by port-related firms and seafarers' skills, the original conceptual framework identifies two viable learning path aiming at fill the gap. As concerns hard skills, seafarers could attend ad hoc training programs to achieve those lacking competences required by labour market, whereas soft skills involve a "learning by doing" approach, as literature suggests to be helpful in gaining a mastery in them (Baya, 2015; Bonesso et alii, 2015), taking advantage by programs organized by different associations.

7. Implications and future research

The paper, investigating seafarers' hard and soft skills in maritime logistics, contributes to bring credit to these professional figures prone to severe working conditions at sea. As previously illustrated, due to both exogenous drivers and endogenous variables, seafarers have to face changing factors within the maritime and logistic cluster. To do this, it has been requested them a growing flexibility and adaptability to have a chance of viable opportunities for an ashore second life.

This work, analyzing their peculiar characteristics and competences, manages to highlight how their own skills represent a useful opportunity for the demand side of the ashore labour market. In this perspective, the paper contributes to develop a new impression related to the seafarers' professionality, considering them proper "osmotic professional profiles" able to adapt to the requests of the maritime and logistic clusters. At the same time, the relevance of tacit knowledge developed during working experiences supporting mastery acquisition reinforces some soft skills, for example leadership, which is appreciated both on the sea and on hearth.

Furthermore, the paper takes into consideration an innovative comparison methodology, introducing the so-called "meso level". As explained in the previous Sections, the micro level hard competences have been regrouped in macro-level hard competences; then these skills have been split up and subdivided into intermediate competences, the MESO-level. All this represents, by its nature, a ground-breaking model, able to allow a more precise mapping and to provide an in-deep link for a rational analogy between aboard and land-based jobs. These meso-skills could be also the focal point for the identification of the subjects within the future training courses for seafarers, to better fit their competences match with ashore profiles. Moreover, meso level competences could be transformed into national "competences" codes and

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taxonomies in line with national laws, in order to create training courses financed by public entities of seafarers' countries.

This work could also be used to start a deeper investigation within the maritime and logistic clusters for the creation, as done for the seafarers side, of ad-hoc data sheets for ashore profiles. Those would contain a brief description of the profile and their positioning inside the companies' organizational charts; moreover, they would provide all hard and soft skills, arranged in meso-level as well. This would represent a first cue for a direct collaboration with the maritime cluster. The involvement of ashore companies, especially with eventual future partnerships with the human resource departments, could lead to a profitable joint work. In this way it would be possible to deepen the demand side of the labour market, focusing on the needed competences requested by the maritime and logistics cluster.

Merging the respective needs would lead to better detect all the subjects/areas in which former seafarers seem to be more unprepared, in order to define combined training programs for seafarers to facilitate the future match with ashore professional profiles. Furthermore, this collaboration could support the validation of our model explained in the previous Sections.

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