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# The role of paperwork in building up maritime competence in Brazil

Thesis study exploring the implications of paperwork in the praxis under seafarers' perspectives.

Master's thesis in Maritime Demanding Operations

Supervisor: Marte Fanneløb Giskeødegård

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Norwegian University of Science and Technology  
Faculty of Engineering  
Department of Ocean Operations and Civil Engineering



## Acknowledgment

This thesis study is the finishing process of a master's program in operative maritime leadership at NTNU Ålesund, Norway. These last years were challenging and educational in all senses. Not only because I learned a lot of relevant knowledge but also because I got the opportunity to grow more as a person, professional, and mother. Indeed, I learned to combine professional studies from the master's program with maternity, which was sometimes chaotic. Still, at the same time, my newborn daughter motivated me to continue, and here I am presenting this thesis study.

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And finally, I would like to dedicate this thesis to the ones who were my parents in life: Jose Felix Medel Y Herrada and Rosa Georgina Linares Rasmussen de Medel. Thanks for all.

Maria-Fernanda Rasmussen.

## Abstract

**Background:** This thesis study has considered many studies where researchers have explored the paperwork effects in seafarers' notion of seamanship. Nonetheless, all of the studies considered in this thesis were conducted in the North sea. Therefore, this thesis was conceived to understand the relationship between seafarers and paperwork in another operational location: Brazil.

**Purpose:** This study aims to investigate the role of paperwork in building up maritime competence in Brazil. The objective is to increase understanding and knowledge between seafarers, the praxis, and documentation in Brazil.

**Research question:** What is the role of paperwork in building up maritime competence in Brazil? Therefore, this inquiry will be split into the two following questions: How do seafarers build up maritime competence during their professional development? And What are the effects of paperwork inside seafarers' notions of seamanship?

**Theory:** This thesis will use recent studies that explored paperwork implications in the praxis in the North sea. Apart from these studies, this thesis considers diverse views such as the community of practice theory, the acquisition skill model, Aristotle's practical wisdom, the situational awareness model, and the thinking fast and slow approach.

**Method:** Qualitative research will be used by applying phenomenological life-world interviews. The sample selection consists of seven officers with several years of operational offshore experience in Brazil. The analytical method for processing the data will be thematical analysis.

**Findings:** The findings described the implications of building up maritime competence, where seafarers recognized two main methods used: forming a community of practice to learn new knowledge and using paperwork as a learning supporting tool. Nonetheless, both described positive and negative consequences, where paperwork became a central topic in response to this thesis study. Furthermore, the findings suggested that the offshore working environment in Brazil is surrounded by functional regulations, bureaucracy, and excessive regulator control.

**Conclusions:** Beginners seafarers have difficulties learning and practicing maritime skills due to an overload of paperwork and practice constraints in cadets. Moreover, these facts affect seafarers' original job description where seamanship practice was their primary goal to system managers due to over-regulation. Additionally, experience officers described how paperwork could reduce their situational awareness and produce professional judgment inhibition due to its volume in Brazilian offshore operations. And finally, the paperwork developed in Brazilian offshore operations interferes with seafarers' seamanship and its development.

### Keywords:

Paperwork, seamanship, praxis, practical wisdom, ISM system, documentation, proceduralization, seafarers.

## Sammenheng

**Bakgrunn:** Denne avhandlingsstudien har tatt for seg mange studier der forskere har utforsket papirarbeidseffektene i sjøfolks forestilling om sjømannskap. Ikke desto mindre ble alle studiene som er vurdert i denne oppgaven utført i Nordsjøen. Derfor ble denne oppgaven unnfanget for å forstå forholdet mellom sjøfolk og papirarbeid på et annet operativt sted: Brasil.

**Formål:** Denne studien tar sikte på å undersøke hvilken rolle papirarbeid har i å bygge opp maritim kompetanse i Brasil. Målet er å øke forståelsen og kunnskapen mellom sjøfolk, praksis og dokumentasjon i Brasil.

**Problemstilling:** Hva er rollen til papirarbeid for å bygge opp maritime kompetanse i Brasil? Derfor vil denne undersøkelsen deles inn i følgende to spørsmål: Hvordan bygger sjøfolk opp maritim kompetanse under faglig utvikling? Og hva er effekten av papirarbeid inne i sjøfolks forestillinger om sjømannskap?

**Teori:** Denne oppgaven vil bruke nyere studier som utforsket papirarbeidsimplikasjoner i praksisen i Nordsjøen. Bortsett fra disse studiene, fokuserer denne oppgaven på ulike teorier som praksisfellesskapsteorien, tilegnelsesferdighetsmodellen, Aristoteles' praktiske visdom, situasjonsbevissthetsmodellen og tilnærmingen til å tenke raskt og sakte.

**Metode:** Kvalitativ forskning vil bli brukt ved å anvende fenomenologiske livsverdenintervjuer. Utvalget består av syv offiserer med flere års operativ offshoreerfaring i Brasil. Den analytiske metoden for å behandle dataene vil være tematisk analyse.

**Resultater:** Funnene beskrev implikasjonene av å bygge opp maritim kompetanse, der sjøfolk anerkjente to hovedmetoder som ble brukt: å danne en praksisfellesskap for å lære ny kunnskap og bruke papirarbeid som et læringsstøttende verktøy. Likevel beskrev både positive og negative konsekvenser, hvor papirarbeid ble et sentralt tema som svar på denne oppgavestudien. Videre antydte funnene at offshorearbeidsmiljøet i Brasil er omgitt av funksjonelle forskrifter, byråkrati og overdreven regulatorisk kontroll.

**Konklusjon:** Nybegynnere sjøfolk har vanskeligheter med å lære og praktisere maritime ferdigheter på grunn av overbelastning av papirarbeid og praksisbegrensninger hos kadetter. Dessuten påvirker disse fakta sjøfolks opprinnelige stillingsbeskrivelse der sjømannskapspraksis var deres primære mål for systemansvarlig på grunn av overregulering. I tillegg beskrev erfaringsoffiserer hvordan papirarbeid kunne redusere deres situasjonsbevissthet og produsere profesjonell dømmekraft på grunn av volumet i brasilianske offshoreoperasjoner. Og til slutt, papirarbeidet som er utviklet i brasilianske offshoreoperasjoner forstyrrer sjøfolks sjømannskap og utviklingen av det.

### Nøkkelord:

Papirarbeid, sjømannskap, praksis, praktisk visdom, ISM-system, dokumentasjon, prosedyre, sjøfolk.

## Nomenclature

Ab	It stands for able seaman or able bodied seaman, a seafarer who belongs to the deck department of a merchant's vessel, according to the STCW-regulation ii/5 (International Maritime Organization, 2017).
A nautical mile	It is a unit of length equivalent to 1852 meters (Lieutenant Commander Moody, 1949).
Anchorage area	Ground which characteristics allow a vessel to set fast to the sea bottom using one or many anchors. The area must be neither too deep, shallow, or exposed for ships to ride in safety using anchors (Smyth, 2013).
Curso NR	It stands for regulatory norms subjects. The Brazilian regulatory norms were designed in response to the working law n° 6.514. Their main objectives are avoiding damage from accidents and illnesses in the working environment, analyzing and diagnosing the work environment to verify if it complies with established standards, developing risk maps, and assessing the risk and ranking them. There are 36 courses, and depending on the working industry a worker is in, they must follow special training in response to Brazilian law (IACO, 2021).
DP system	A Dynamic Positioning system can control the position and heading of a vessel by using thrusters that are constantly active and automatically balance the environmental forces (wind, waves, currents, etc.) to keep the boat in the same position. Environmental forces tend to move the vessel off the desired position, while the automatically controlled thrust balances those forces and keeps the ship in position (Offshore Engineering, 2021).
DPO	It stands for dynamic positioning system operator. This operator is in charge of controlling the Dynamic Positioning System (Lerus Training, 2021).
Drift	It is the altered position of a vessel by current or falling to leeward when hove-to or lying-to in a gale, when but little headway is made by the action of sails (Smyth, 2013).
Enamm	Peruvian maritime academy «Almirante Miguel Grau.»



Eudaimonia	Well-being, which refers to optimal psychological experience and functioning, has been vigorously studied in psychology over the past quarter-century (Deci & Ryan, 2006)
H <sub>2</sub> S	It stands for Hydrogen Sulfide. It is a gas commonly found during the drilling and production of crude oil and natural gas, plus in wastewater treatment and utility facilities and sewers. The gas is produced due to the microbial breakdown of organic materials in the absence of oxygen which is colorless, flammable, poisonous, and corrosive. H <sub>2</sub> S gas is noticeable by its rotten egg smell with a toxicity similar to carbon monoxide, which prevents cellular respiration. Therefore, monitoring and early detection of H <sub>2</sub> S could mean the difference between life and death (Seaman, 2021).
Landlubbers	Workers that are part of the maritime business, operating from shore, which means the administration of the company and the Maritime Authorities (Knudsen, 2008).
Maritime Adventure	According to the English Marine Insurance Act (1906), it is defined as any ship goods or other moveables exposed to maritime perils (The Faculty of Law of the University of Oslo, 2021).
NR	It stands for regulatory norms (normas regulamentadoras). They are complementary dispositions from the working law n° 6.514, which came into force on December 22 <sup>nd</sup> , 1977. They consist of obligations, rights, and duties to be fulfilled by employers and workers to guarantee safe and healthy work, preventing illnesses and accidents at work (Governo Federal do Brasil, 2021).
Praxis	Praxis is an ancient Greek word, which means the way of "doing." The "doing" or how a task onboard a vessel is performed is highly influenced by human factors such as the seafarers' knowledge and experience level (Rasmussen, Lützen, & Jensen, 2018).

PSV	It stands for platform supply vessels or PSVs. It is a type of offshore vessel mainly used for transiting essential equipment and additional human resources to reinforce the high seas' operations. Therefore, platform supply vessels help to sustain the demands of the construction and maintenance projects, thus fulfilling a vital necessity like operations at the high seas (Kaushik, 2021).
PT	It stands for <i>permisao de trabalho</i> (work permit in Portuguese). Many job tasks that expose workers to severe hazards in all industries are non-routine/maintenance-type activities that must be managed to control risks. These hazards are handled in the industry through written procedures (work permits) to be completed before initiating these non-routine activities. Work permits are administrative controls and must be developed, implemented, and managed appropriately to manage risk effectively (Zimmerman & Haywood, 2017).
Risk assessment	The risk assessment process involves observing the company's activities and operations by identifying what might go wrong and deciding what should be done to prevent it. The areas pertained to are: identification of hazards, assessment of the risks concerned, application of controls to reduce the risks, and monitoring of the effectiveness of the controls (Dasgupta, 2021).
Safety technician	The safety technician plays a relevant role within organizations by analyzing and evaluating the work environment, facilities, and processes to prevent incidents, accidents, and occupational diseases. They adopt measures to control occupational risks through actions, health, and safety programs to eliminate possible risks that could harm the worker. They work in public and private organizations of any segment by providing autonomous, temporary services, effective contracts, or even as an employer (Senac EAD, 2021).
Safety zone	It is the area around an offshore installation within a radius of 500 m. Ships are prohibited from entry except under exceptional circumstances (Wartsila, 2021).

Steering rudder

It is part of the steering apparatus of a boat or ship that is fastened outside the hull, usually at the stern. The most common form consists of a nearly flat, smooth surface of wood or metal hinged at its forward edge to the sternpost. It operates on the principle of unequal water pressures. When the rudder is turned so that one side is more exposed to the force of the water flowing past it than the other side, the stern will be thrust away from the side that the rudder is on, and the boat will swerve from its original course (Encyclopedia Britannica, 2021).

Toolbox talks

They are a way to ensure all workers participate in safety activities and have an opportunity to discuss hazards/controls, incidents, and accidents (SiteSafe, 2021).

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## 1. Introduction

Nowadays, the world citizens are part of an international society living in a world that depends on a global economy, which could not be viable without ships: the shipping industry and maritime operations. According to the International Maritime Organization (IMO), the world's sustainable development needs to establish excellent transport and systems since more than 80% of the global trades are done by sea (International Maritime Organization, 2021). In addition, in the book "*seafarers' rights*" (2010), it is described that the shipping industry is the bloodstream of the worldwide economy where the author proposes that without maritime activities, "*half-world would starve, and the other half would freeze*" (Nikolaeva Dimitrova, 2010, s. xvii). Therefore, based on Nikolaeva (2010), it might be suggested that shipping in all its operational alternatives to be the most international of the worlds' most significant industries and yet one of the most dangerous (Nikolaeva Dimitrova, 2010).

Over history, the world has witnessed fatal maritime accidents such as the "*RMS Titanic*" in 1912 (International Maritime Organization, 2021) and others, which remind us of the importance of setting operational parameters because the world cannot afford human losses and environmental catastrophes. Therefore, relevant entities have reunited efforts for creating agreements, conventions, and codes for determining operational safety frameworks. In that way, regulations as the convention of the safety of life at sea (SOLAS), the international safety management code (ISM), among others, appeared to revolutionize the way maritime activities have been carried out.

One of these frameworks is the International Safety Management Code (ISM). According to a study, the code requires that managers or shipowners set safety management systems involving risk management, self-checking, and self-critical measures to verify and continually improve their performance (Bhattacharya, 2012). As a result, another study proposes that these regulations generated written demands of rules, guidelines, procedures, documentation, protocols, and measurements (Knudsen, 2008), where Reason (1997) suggests these measurements might be "*one of the most important defenses against organizational accidents*" (Reason, 1997, p. 182). Yet, studies indicate that those efforts impose administrative burdens and problematic settings (Størkersen, 2018).

Recent studies suggest that the efforts to reduce accidents in seafaring have led to a proliferation of procedures such as workplace assessment, checklist, work permit and so on, where many seafarers perceive these written procedures demands as counteracting the use of common sense, experience, and professional knowledge (Knudsen, 2008). Furthermore, another study proposes that in the call of doing *safety differently*, impractical and ever-expanding safety management documentation is understood "*as a necessary and largely unavoidable evil that even might induce accidents*" (Størkersen et al., 2017, cited in Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020 s.1).

Relevant studies describe that paperwork has become a matter of concern in the maritime industry, where researchers explore the relationship between paperwork, seafarers, and the praxis to understand how functional regulation from safety management systems becomes over-regulation, why practitioners perceive these written demands as going against their seamanship and other possible effects. Nonetheless, researchers also suggest that there is much literature regarding over-regulation. Yet, few empirical studies might go into the causa behind it (Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020). For that reason, this thesis study was planned for understanding the interaction between seafarers and paperwork with empirical data. Yet, in this thesis, the data obtained comes from another operational location different from the studies considered in the theoretical section (chapter 2).

This thesis study aims to understand the role of paperwork in building up maritime competence in Brazil, based on similar studies where researchers have: suggested the main opposition to written demands perceived by seafarers (Knudsen, 2008), have explored the paradoxical relationship between the governmental deregulatory measure and organizational over regulations (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020) and have investigated how administrative changes in the work environment have influenced the role of seamanship (Kongsvik, Haavik, Bye, & Almklov, 2020). Nonetheless, it is significant to point out that even though the paperwork effect is a topic of concern between researchers, all of the studies on which this thesis is based were conducted in the North Sea. Therefore, it was interesting to consider a different operational location where the researcher has experienced difficulties in her job as a sailor.

I am a deck officer who studied at the Peruvian military maritime academy (ENAMM) to become a seafarer. In addition, I have sailing experience in diverse operations such as offshore, coastal, and worldwide navigation. Consequently, I have observed notorious changes in the volume of paperwork in the last years in all maritime sectors I have been part of. Yet, nothing could be compared to what I have experienced in Brazilian offshore operations. Therefore, the operational circumstances involving paperwork in Brazil were the main motivation for doing this thesis study that has as main objective to contribute to the academic field.

## 1.1 Research questions

This thesis study explores the following questions:

*“What is the role of paperwork in building up maritime competence in Brazil?”*

For this research question, it is necessary to split the inquiry into the following supporting question:

*“How do seafarers build up maritime competence during their professional development?”*

*“What are the effects of paperwork inside seafarers’ notions of seamanship?”*



## 1.2 Delimitations

This study is based on seven officers with sailing experience in Brazilian offshore operations, where these practitioners performed activities as department leaders (captains, chief engineers, chief mates, and first engineers). The study focussed on the participants' perspective towards paperwork since it is considered that those practitioners are the ones most exposed to it onboard.

As a starting point, this thesis aims to explore how seafarers acquire knowledge based on their experiences. On the other hand, it is crucial to narrow the investigation and be specific; therefore, this thesis study focuses on Brazilian offshore operations for delimitating the research topic.

As leading theories, this study can consider diverse approaches and models. Nonetheless, due to the scope and study duration, it has been determined to limit the theory presented in chapter 2. On the other hand, this thesis study is centered on paperwork. Hence, there are many studies in the academic field where written procedures' effects on seafarers are explored. Yet, according to Størkersen, Thorvaldsen, Kongsvik, and Dekker (2020), few are developed according to empirical data. For those reasons, the leading theories considered for this study are based on empirical data that was collected from the North sea practitioners.

It is crucial to emphasize that even though this thesis study explores paperwork implications in Brazilian offshore operations, these recent investigations will guide this thesis as a comparative guide, in addition to approaches centered on acquiring knowledge and cognitive processes.

## 1.3 Background

This thesis study explores what happens with the praxis and paperwork under the eyes of officers who have experience in Brazilian offshore operations. Nonetheless, this small section will briefly introduce the Brazilian offshore operations and describe the country's operational culture.

According to the petroleum, natural gas, and combustibles Brazilian national agency (APN in Portuguese), Brazil holds the 15th largest oil reserve worldwide and the 2nd one in Latin America under Venezuela. In Brazil, it is produced approximately 12.2 billion offshore barrels and 0.6 billion onshore barrels (Agencia Nacional do Petroleo, Gas Natural e biocombustiveis, 2018). Brazil's most important offshore oil reserves are Campos and Santos basins, holding the most significant offshore oil exploration fields in the following decades due to the oil located in the pre-salt layer (Agencia Nacional do Petroleo, Gas Natural e biocombustiveis, 2018, as cited in Zacharias & Fornaro, 2018). Therefore, it is not strange that oil exploration in the area would become attractive for many national and international companies that provide offshore services.

A survey conducted by the industry federation of the Sao Paulo state (2017) signals that 84% of the Brazilian population see Brazil as a bureaucratic country (Albuquerque, 2021). If the same population recognized their system as bureaucratic, it is believed that organizations from different countries might encounter cultural shock due to bureaucracy. According to the Brazilian report magazine (2021), filling endless forms, walking around with various documents, wasting time in countless queues at state agencies are common trades for the

citizens. Hence, the country remains one of the few countries in the world where a signature alone isn't worth much without notary validation (The Brazilian Report, 2021).

Indeed, in a comparative study between the American and Brazilian notary systems (2017), the author proposes the differences between both systems and suggests that the reason behind their nature might be linked to each countries' history (Martins Silva Stancati, 2017). According to Martins (2017), Americans seem to be based on *people's words*, while the Brazilian may prefer documents. For example, Martins (2017) described that when Portuguese colonizers came to Brazil, they claimed to own the land. Therefore, it seems that for Brazilians to validate their diverse rights, they most likely needed a third party who had prestige and an excellent reputation for creating a valid signed and stamped document to be public. So in that way, the citizens might validate their rights (Martins Silva Stancati, 2017). Therefore, the study suggests a preference towards a third party in the documentation that might have historical roots.

Next, a graph will be presented, describing the actual time to comply with tax legislation in hours per year of different countries, where the information will help us understand the complexity of documentation and the system in the South American country.

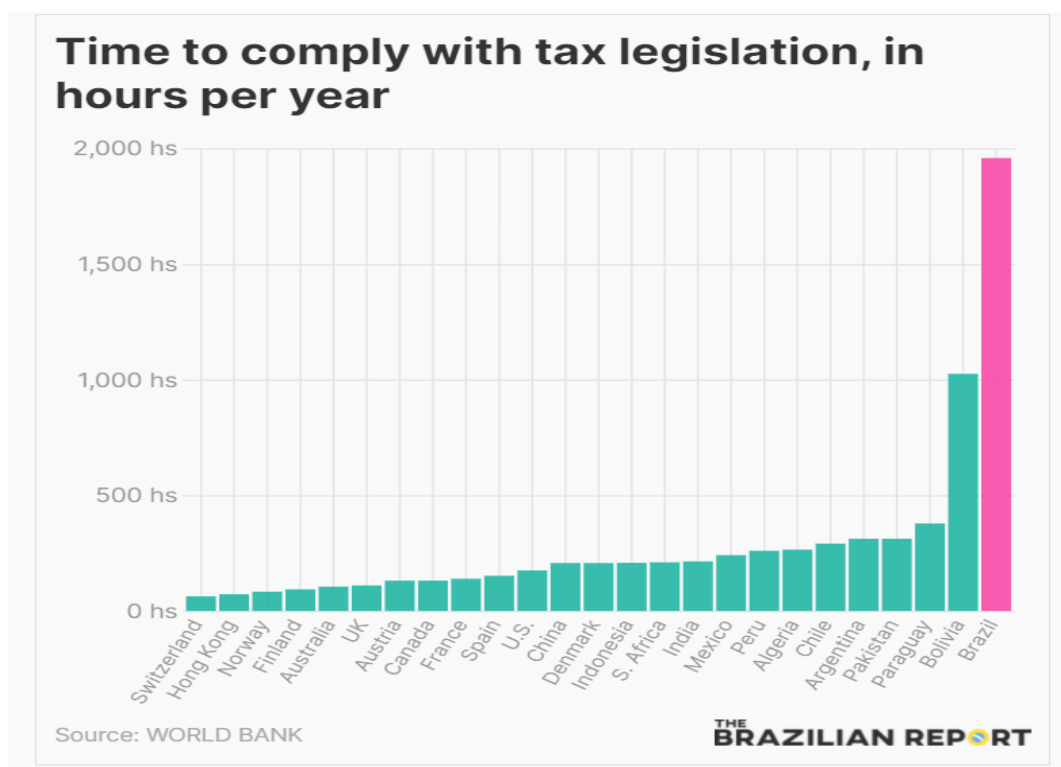


Chart 1 Time to comply with tax legislation (The Brazilian Report cited the world bank, 2021)

The graph shows that Brazil uses approximately 2000 hours per year to comply with tax legislation, while Switzerland, Norway, and Finland use less than 200 hours per year. The graph also indicates a notorious difference between the countries ranking first and second, Brazil and Bolivia, with an approximate thousand hours between them. Therefore, we can appreciate that something might be happening regarding documents, regulator's control, organizational culture, and the system in which Brazilian citizens live.

## 1.4 Thesis Structure

This thesis consists of six chapters. The theoretical knowledge is in chapter two, which presents the theory that has been selected for supporting the discussion of the study results. Chapter three explained the chosen method for analyzing the data and its implications. Chapter four will present the findings, followed by chapter five, the discussion. And finally, the conclusion will be given with considerations for further study.

## 2. Theory

The following chapter will review relevant literature regarding the investigation topic, where the theory will be divided into modern maritime trends, building up maritime competence, and the cognitive processes. In the first section, the objective of the theory presented is to describe what is going around the maritime industry, where it was consulted many empirical studies regarding seamanship and ongoing tendencies as paperwork workload. The second section presents information related to the way officers learn during all their professional paths. And in the last section, it is shown the cognitive processes in order to understand the reason behind seafarers' perspective regarding paperwork.

### 2.1 Current maritime trends

This study aims to understand the relationship between practitioners and paperwork inside Brazilian offshore operations; for that reason, it is important to explore what is going on inside the maritime working environment. As known, the maritime industry has evolved due to many accidents that cause irreparable life loss, contamination, and other disastrous consequences. Therefore, different international and national regulators avoid repeating these catastrophes by generating codes that ensure safety and prevent marine pollution. This section will introduce the main regulators, the paperwork generator, and the side effect produced as its consequences.

#### 2.1.1 Safety management systems and main regulators

Studies suggest that the international marine trade is considered one of the world's oldest and highest risk industries (Størkersen, Antonsen, & Kongsvik, 2017). Therefore, the number of stakeholders interested in such operations might increase every day due to this globalized era where communication and access to information are possible more than ever. According to Coombs (2014), national and international entities dedicate time and effort to improving their activities (Coombs, 2014), which in the maritime industry might be in response to safety and environmental protection, meaning that maritime operations could become more visible to the world's eyes.

Due to this overexposure that different industries receive nowadays, and in response to societal values, the shipping industry is continuously improving the way maritime organizations perform their activities. Consequently, regulatory bodies like the International Maritime Organization (IMO), the International Labour Organization (ILO), and many relevant classification societies appeared on the scene (Grech, Horberry, & Koester, 2008), being the IMO the main pillar of them all.

The IMO is a specialized organization from the United Nations (UN) that establishes operational frameworks to provide safer and cleaner operations (International Maritime Organization, 2021). One of these frameworks is the International Safety Management Code (ISM), where it requires that managers or shipowners set safety management systems involving risk management, self-checking, and self-critical measures to verify and continually improve their performance (Bhattacharya, 2012).

The Safety Management System (SMS) is an integral part of the ISM code. It details all the essential policies, practices, and procedures that must be followed to ensure ships' safe sea functioning. In addition, all commercial operations are required to establish safety management procedures. Therefore, the SMS might form one of the most critical parts of the ISM code that ensures compliance with mandatory safety rules and regulations. Furthermore, it follows guidelines and standards recommended by the IMO, classification societies, and concerned maritime entities. According to Kantharia (2021), the SMS entails information regarding how a vessel would operate, what procedures are to be followed in case of emergency, how drills should be executed, how training should be carried out, and so on (Kantharia, 2021). Additionally, the ISM Code might establish a set of minimum requirements, meaning that every nation, flag state, company, or other regulatory institution can increase these minimum requirements as to their consideration.

So far, studies suggest that every organization dedicated to the marine trade must comply with having an SMS, while regulators might only verify that those organizations have it (Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020). These facts could imply that organizations have the freedom to decide what type of SMS they will use and implement as long as they comply with having one. According to Størkersen, Thorvaldsen, Kongsvik, and Dekker (2020), SMS are functional regulations that might be created to deregulate. However, these intentions could be far from the reality since they might generate over regulations and affect safety as the authors' results suggest three mechanisms that lead to over-regulation: (1) making work auditable, (2) managerial insecurity and liability, and (3) audit practices. But how are these mechanisms contributing to over-regulations?

When these three mechanisms are explained, we will understand some of the reasons behind paperwork. For example, according to Størkersen, Thorvaldsen, Kongsvik, and Dekker (2020), companies must document their actions within societal traditions, which might imply that work must be limited to auditable documentation- *making work auditable*. In addition, the managers' behavior could have a vital role due to their fear of having few procedures or not covering the essentials- *managerial insecurity*. And finally, organizations' decisions of implementing an SMS easy that auditors could approve quickly- *audit practices* (Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020). These three mechanisms suggest that the manager's freedom to implement SM systems might go against the intentions of being functional.

This section has presented information regarding the nature of the maritime adventure being determined as a high-risk industry. In addition, the main regulators have been introduced with particular attention to the IMO. And finally, it has been explained the ISM code and the requirement to have a safety management system (SMS), implying that the freedom of choice of its application might generate more regulations. So far, we understand the implications of safety systems. However, it has not been presented information regarding how seafarers react in front of the SMS. Therefore, the following section will discuss seafarers' reactions to SM systems.

### 2.1.2 Safety management systems and seafarers

In the previous section, it has been established that SM systems are generators of paperwork, in addition to their importance for safety. However, it has not described the perspective of the practitioners. For that reason, it has been consulted many recent studies where it has been explored the paperwork relationship with seafarers in maritime operations.

According to Størkersen, in organizations, there is a love-hate relationship between seafarers and paperwork, which is understood as “*a necessary and largely unavoidable evil that even might induce accidents*” (Størkersen et al., 2017, cited in Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020 s.1). It might be true that documentation is necessary for organizations to act according to modern society. However, why is it an unavoidable evil?

According to Knudsen (2008), recent efforts to improve safety might have brought other consequences such as the increasing volume of regulations, control, and administrative work such as checklists, work permits, workplace assessment, and risk assessment. Yet, Knudsen (2008) also suggests that seafarers could perceive those demands as imposed by personnel who do not understand anything about life at sea and seamanship (Knudsen, 2008), but how do we understand life at sea?

We understand that life at sea might be difficult, not only by the perils of the sea but also by the challenging working conditions, which were explored in an investigation concerned about paperwork (Knudsen, 2008). Indeed, in this investigation, the findings describe the working and living conditions where the crew members work and live for months in a physically and socially restricted environment without changing roles and exact routines. Furthermore, the study’s findings also refer to dividing lines of identification done by function and nationality that might cause feelings of fragmentation and shared identity. Nonetheless, the author also suggests that no matter how fragmented or compatible the crew could be, there might be one fact that some of the crew members have in common, which is the feeling of being misunderstood by the landlubbers (Knudsen, 2008), but who are the landlubbers and why do seafarers perceive that?

According to Knudsen’s study (2008), seafarers’ feelings of being misunderstood, undervalued, or even forgotten by landlubbers are mostly oriented towards the land office workers (Knudsen, 2008). Furthermore, Knudsen’s findings (2008) also suggest that practitioners might be losing their authority and autonomy of their decisions, meaning that they cannot even perform a daily routing without asking or receiving instructions from personnel ashore (Knudsen, 2000, cited Knudsen, 2008). Consequently, it might not be strange to observe rejection towards documentation and regulations from practitioners since these demands are perceived as going against their authority and highlight the distance between land offices and vessels. Still, landlubbers might have different skills and might not know the challenges and limitations of working at sea.

This section has presented information regarding the seafarers' paperwork perspective suggested in Knudsen's study (2008), where it was proposed that those demands are perceived by seafarers as imposed by personnel who do not understand anything about life at sea and seamanship. Yet, this section has not presented information related to seamanship. Therefore, the following section will discuss seafarers' notion of the seamanship term described in many studies.

### 2.1.3 Seamanship term

The previous section presented some of the findings in Knudsen's study (2008), where it was suggested that the demands on written procedures are perceived by seafarers as imposed by personnel who do not understand anything about life at sea and seamanship (Knudsen, 2008). Yet, what does seamanship mean? For that reason, this section will present some of the diverse discourses obtained in different studies where researchers looked for a definition in empirical data.

According to Knudsen (2008), seamanship is "*a blend of professional knowledge, professional pride, and experience-based common sense*" (Knudsen, 2008, s.295 ). For Antonsen (2009), some seafarers related the concept with the general ability to work inside safety parameters and high-quality work (Antonsen, 2009). For Danton (1996), it is the necessary knowledge to navigate and operate the vessel safely (Danton, 1996). Finally, for Kongsvik, Haavik, Bye, and Almklov (2020), the term suggests personal competence and capacities as responsibility and reliability of work execution, going alongside the crew's and ship's safety and the transported material (Kongsvik, Haavik, Bye, and Almklov, 2020). As observed from the diverse definitions exposed above, we can say that seamanship might have a mix of professionalism, tradition, experience context, and the ability to perform nautic tasks inside safety standards protecting the vessel, the crew, the transported material, and the environment as part of the social responsibility. However, how do demands on written procedures interfere with seamanship?

According to Knudsen (2008), the aversion against introducing new rules and requirements on written procedures could be understood as facts that contradict seafarers' experience of enhancing control, mistrust, and disrespect of their seamanship (Knudsen, 2008). On the other hand, Knudsen (2008) also proposes that practitioners acknowledge the necessity of reducing the risk of accidents by needing safety awareness. Yet, they might still have statements regarding paperwork, arguing that it might go against safety apart from interfering in their seamanship (Knudsen, 2008).

This section has introduced the practitioners' perspective towards SM systems by explaining their reluctance to written procedures or what the researcher likes to call paperwork. Moreover, the diverse concepts of seamanship have been presented. However, written procedures are not the only tendency inside the maritime industry that constantly changes and challenges practitioners to adapt to ongoing trends. For that reason, the following section will introduce relevant literature to understand the main changes in the marine trade.

#### 2.1.4 Working changing nature

The maritime industry might have a reactive behavior since the most important conventions were born after accidents or environmental catastrophes. Therefore, studies suggest that the IMO might be fighting to change this point to a proactive and holistic approach to human and organizational factors, concentrating effort on human interaction with systems to ensure safety and environmental protection in recent years (Hollnagel, Baldauf, Hofmann, & Kataria, 2013).

In this search for safer and cleaner operations, studies suggest that there have been noticeable changes in the seafarers' working environments. Where these studies propose changes that might produce doubts on whether these alterations in work influence the notion and content of seamanship among sailors or not (Kongsvik, Haavik, Bye, & Almklov, 2020), but what are these main changes?

A recent study conducted to explore how technology and administrative changes have influenced the role of seamanship, it has been observed that the changes in the working context might have branched out into four domains, which are (1) *technology*; the transformation from active operators to passive inspectors, (2) *proceduralization*; the noticeable incrementations of paperwork workload, (3) *training and education*, the theoretical weight over the practical approach, and (4) *generalized competence*, the visibility that seafaring profession has gotten, meaning how practitioners can change jobs (Kongsvik, Haavik, Bye, & Almklov, 2020).

According to Kongsvik, Haavik, Bye, and Almklov (2020), the changing nature of seamanship-safety relations might show that working conditions have improved over the years, where these improvements increment safety with the new technological systems onboard. However, the authors also suggest that there might be concerns about using the practitioners' professional judgment since all these new aids could reduce intuition and assessment. Furthermore, the recent importance of the theoretical approach in building maritime competence might be a cause of concern from experienced seafarers, who described that new practitioners could not recognize anomalies and weak signals due to their lack of experience (Kongsvik, Haavik, Bye, & Almklov, 2020). Consequently, these affirmations might describe that operational changes regarding technology and proceduralization could affect professional judgment, but what do we understand by judgment?

According to Knudsen (2008), *judgment* might be understood as the ability to interpret new situations on the base of experience and to discern what is essential from what is not. Also, it might increase with expertise (Knudsen, 2008). However, other studies suggested that for seafarers, the road to allowing them to have a professional judgment might become narrower due to technology and the growing proceduralization of the work (Bieder & Bourrier, 2013), but how come?



Studies suggest that technological advances with new electronic systems might generate a side effect since practitioners might become system managers when performing their job (Størkersen K., Thorvaldsen, Kongsvik, & Dekker, 2020). Therefore, researchers propose that specialization and standardization might have, bit by bit, substituted practical experience as the main asset regarding professional competence (Kongsvik, Haavik, Bye, & Almklov, 2020). Additionally to these changes, studies also describe that SM systems might have been created as frameworks for more detailed procedures (Kongsvik, Størkersen, & Antonsen, 2014; Størkersen, Antonsen, & Kongsvik, 2017; Kongsvik, Haavik, Bye, & Almklov, 2020), facts that could produce an impact on the way practitioners perform their jobs.

Studies propose that modern tendencies might challenge the traditional concept of seamanship, where the introduction of new technological systems and an increasing proceduralization of the work could induce perception between the experienced seafarers of marginalization of professional competence, skills, and judgment (Kongsvik, Haavik, Bye, & Almklov, 2020). Furthermore, the same study describes that the seafarers' training and education might have been perceived as more theoretical and generalized than in previous years, facts that could reduce the significance of the tacit knowledge innate in seamanship (Kongsvik, Haavik, Bye, & Almklov, 2020).

This section has presented information regarding the most significant changes in the marine trade described in four domains. Additionally, arguments have been offered regarding how these changes might affect practitioners' notions of the seamanship concept, suggesting that the road gets narrower for developing professional judgment or common sense for seafarers due to changes in the industry. However, it is necessary to discuss the way practitioners generate this professional judgment that has been mentioned previously. For those reasons, the following section will present literature regarding how practitioners might grow professionally at sea.

## 2.2 Building up maritime competence

The previous section focussed on the ongoing maritime tendencies in the market to understand an operational context. Yet, this study is not only focused on that. This study also aims to find information about how seafarers construct their professional knowledge and common sense. Thereupon, this section will introduce diverse ongoing learning approaches with the seafarers' community of practice. Additionally, a model of skills acquisition would be used to find the role of paperwork inside practitioners' professional evolution (Dreyfus & Dreyfus, 1980). And finally, it will be explained Aristotle's professional wisdom to understand expertise in the praxis.

### 2.2.1 Learning approaches: theoretical and practical

The maritime industry seems to be a well-organized and systematized working environment that is constantly improving. As part of these improvements, the IMO came up with a series of international regulations about the standardization or minimum requirement for training and practice regarding professional competence inside the international convention on standards of training, certification, and watchkeeping for seafarers (STCW, 1978), where the theoretical approach began to have relevance in the maritime industry.

According to the IMO, the code aims to standardize the seafarers' minimum competence to perform the correct working practice in operations at sea (International Maritime Organization, 2017). Therefore, educational organizations might have to follow the STCW code to comply with the theoretical approach and to have international recognition at the same time. However, the IMO might still emphasize the training practice before assuming the role on board, being observed in the pre-professional practice time that every crew member must go through before finishing their studies (International Maritime Organization, 2017). Therefore, we can understand how important it might be to acquire knowledge inside formal educational frameworks for the IMO. Yet, it could be suggested that the IMO still considers the practice training but not the same magnitude as the theoretical approach.

In a recent study, "*re-boxing seamanship*," the authors proposed the increased emphasis on formal qualification and the reduced weight put on the practical experience as something that could threaten safety as an ongoing tendency (Kongsvik, Haavik, Bye, & Almklov, 2020). Indeed, in the mentioned study, the authors suggested that the training and education seemed to have become more theoretical for seafarers, implying that it involved much more practice in an earlier carrier path than today. For example, researchers suggest that a seafarer started as an ordinary crew member, and their promotion occurred based on their experience and practical knowledge. Thus, although formal education might have also been necessary back then, it was more integrated into the practical learning of the profession (Kongsvik, Haavik, Bye, & Almklov, 2020).

Once again, in the following seamanship discourses, we can see the importance of the practice for building seafarers' maritime competence, suggested in various studies with empirical data:

*"seamanship comprises specific skills for seafaring, and there are manuals of seamanship. Yet to seafarers, seamanship means much more than what can be learned at school"* ( Knudsen, 2008, s. 295). Therefore, in the previous definition, it is suggested that seamanship goes beyond what seafarers could learn at school, recognizing that practitioners might need more than what could be achieved in formal education because there is no replacement for experience.

Also, another study proposes that "*good seamanship seems to be a normative, positive word that traditionally has addressed characteristics and abilities that seafarers possess, gained through practice, evaluated and recognized by fellow seafarers*" (Kongsvik, Haavik, Bye, & Almklov, 2020, s. 4), where it is suggested that for accomplishing these characteristics and abilities, seafarers might need the practice. Consequently, studies describe that the traditional seafarers' training might be based on the practice and oral transfer of knowledge, where beginners might obtain skills and knowledge through trial error to adapt to the established practice (Kongsvik, Haavik, Bye, & Almklov, 2020). Therefore, we could suggest how relevant it might be for practitioners to learn in the praxis and acquire knowledge from formal education.

To conclude with this section, we can observe that both theoretical and practical approaches have been presented information from many studies where practitioners have expressed their opinion regarding how regulators set importance to theory. On the other hand, researchers have also acknowledged the importance of the practice in seafarers' seamanship discourses, where beginners can learn *by doing*. However, one of the concepts revealed the recognition of fellow seafarers. Consequently, the following section will present the community of practice theory to understand the fellow distinction among seafarers in their working group.

### 2.2.2 Seafarers community of practice

During the seafarer's professional development, researchers suggest that seafarers' traditional training might be based on their competence development through practice and oral knowledge transfer (Kongsvik, Haavik, Bye, & Almklov, 2020). This phenomenon receives the name of *the seafarer's community of practice*. According to Wenger (2002), the "*community of practice*" is defined as a group of people who share an interest in a domain, and they engage in the process of collective learning that creates bonds between the members (Wenger, 2002, cited in Gray, 2004). Therefore, it is vital to go through this theory in order to understand the seafarers' collective learning process that reinforces their formal education, but how does this phenomenon occur?

Wenger suggests that the community of practice (COP) is performed in three forms. Firstly, people concentrate on shared interests and membership where competence and knowledge distinguish members from other people. Secondly, people collaborate and learn by performing joint activities and discussions, where each member benefits from each other. This process mainly helps create bonds and form a community around the maritime domain. Thirdly, people make a shared collection of experiences, stories, best praxis, and ways of dealing with problems (Wenger, 2002, cited in Gray, 2004). For example, it is common to hear about "*War Stories*" inside the community of practice theory. These narratives refer to tales about specific matters regarding a challenge and their way of dealing with it, passing from one person to another, so the group learns by hearing someone else's experiences. Hence, we need to remember that studies suggest that a ship is a traditional autonomous, isolated, and self-sufficient work community that requires cooperation and coordination from its member to perform a task (Kongsvik, Haavik, Bye, & Almklov, 2020).

Once again, the term *seamanship* can also be used to describe the COP since a study also proposes that seafarers portray the concept as a social categorization and construction of identity (Kongsvik, Haavik, Bye, & Almklov, 2020). This identification could be observed as well in Knudsen's term: "*blend of professional knowledge and professional pride*" (Knudsen, 2008, s.295). Therefore, we could see that somehow the seamanship term might also include connotations of teamwork used for learning, where seafarers create strong bonds and are recognized between them, which might explain COP inside seamanship development.

The theoretical-practical approach and the community of practice might be essential elements for building up competence in the maritime domain. But, in the following section, we will talk about seamanship development. For that reason, a skill acquisition model will be introduced (Dreyfus & Dreyfus, 1980) to help us understand the learning development of a seafarer.

### 2.2.3 Skills acquisition model

Previous sections discussed the incompatibility between seamanship and the demands on written procedures perceived by seafarers described in Knudsen's study (2008). Also, the term seamanship has been presented in different discourses to understand why practitioners might perceive paperwork as interfering with their seamanship. However, any information related to the seafarers' professional development has not been shown. For that reason, this section will present relevant information.

In the practical approach, the skill acquisition model (Dreyfus & Dreyfus, 1980) might provide the necessary information to understand how the learning process occurs during a seafarer's professional development. For example, officers could begin their professional path by being cadets or students. Consequently, practitioners might need to fulfill some requirements stated in the STCW convention for being promoted, where these requirements are based on sailing time and experience (STCW, 1978). Therefore, the model might help describe each professional stage from junior officers to seniors.

The model has a five-stage process, describing the diverse characteristics in each corresponding stage: novice, advanced beginner, competence, proficiency, and expertise, being in every different level attributes that form part of a person's skills acquisition (Dreyfus & Dreyfus, 1980).

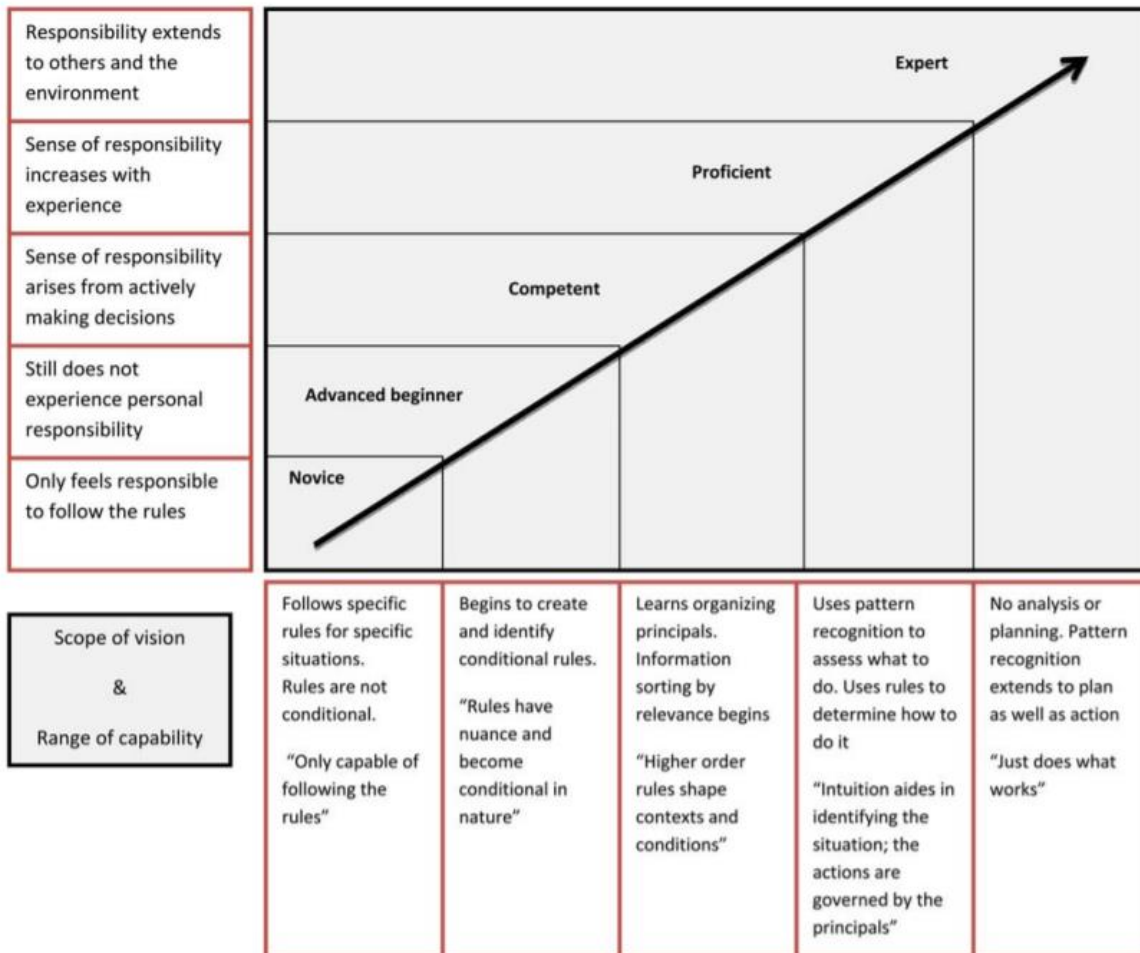


Figure 1 Five-Stage Model of Skills Acquisition ( Dreyfus & Dreyfus, 1980, cited in Mackinnon, 2012)

The model suggests that the instruction begins at the novice level, where cadets might receive rules for determining actions. The behavior might be sequential and strongly related to regulations at this level. Therefore, the novice might be a rule follower in any situation, using written procedures for acquiring working context. Nonetheless, a study suggests that with the growing experience, rules might become superfluous and even an impediment (Knudsen, 2008). Therefore, according to Dreyfus (2004), as novice gains experience, they can cope with real situations and understand a relevant context (Dreyfus, 2004), which might give them more confidence while doing their jobs.

According to Knudsen (2008), the advanced beginner or what we would call junior officers might recognize essential elements in a new situation while feeling little responsibility for the result of their behavior (Knudsen, 2008). Dreyfus (2004) suggests that as officers acquire more experience, they might gain more knowledge while the number of potentially relevant elements and procedures to follow could become overwhelming (Dreyfus, 2004). Dreyfus also proposes that people might learn through instruction or experience by choosing a perspective to determine if the situation's elements were essential or unnecessary in order to cope with this overload and achieve competence, where decision-making becomes easier (Dreyfus, 2004).

At the competent level, the seafarers might make their own decision making, where the individual could be no longer limited to understanding their senses, suggesting that they have critical thinking. As a result, written procedures and rules might begin to lose relevance. Additionally, the seafarers might better understand the situation, which allows them to face new issues in operations due to active decision-making, as figure 1 describes.

In the fourth stage, Knudsen (2008) describes that the practitioner might go beyond analytical rationality, which could mean understanding what happens in the situation as a complete picture with the help of intuition (Knudsen, 2008). However, Dreyfus (2004) proposes that the practitioner in this level might have an emotional involvement in the tasks, making it difficult for them to draw back and adopt the detached rule-following stage as it is the beginners' case (Dreyfus, 2004).

In the last stage, Dreyfus (2004) advises that the practitioners might be more immersed in the world of their skillful activity, which could imply that they see what needs to be done and decide how to do it. He also describes that the expert might have situational discrimination by applying their professional judgment to distinguish those situations requiring one reaction from those demanding another (Dreyfus, 2004).

Table 1 Five Stages of Skill Acquisition (Dreyfus, *The Five-Stage Model of Adult Skill Acquisition*, 2004, s. 181)

**Table 1. Five Stages of Skill Acquisition**

Skill Level	Components	Perspective	Decision	Commitment
1. Novice	Context free	None	Analytic	Detached
2. Advanced beginner	Context free and situational	None	Analytic	Detached
3. Competent	Context free and situational	Chosen	Analytic	Detached understanding and deciding; involved outcome
4. Proficient	Context free and situational	Experienced	Analytic	Involved understanding; detached deciding
5. Expert	Context free and situational	Experienced	Intuitive	Involved

The model explores the process of skill acquisitions, where researchers suggest the importance of rules and procedures in the first stages. Additionally, practitioners might create a repertoire of skills learned through experiences that contribute to forming their professional judgment with time. Nonetheless, according to Knudsen (2008), there might be a margin for error due to “*overconfidence*” and a “*black tunnel*” experienced by experts when reaching the last stage of this model (Knudsen, 2008).

As described above, every stage in the model describes diverse attributions practitioners will experience while escalating the model. For example, the importance of rules, procedures, and instructions are reflected in the first stages. However, in the higher stages, practitioners might have a background gained through experience and participation inside the COP that helps them analyze situations and find solutions, which might mean forming practical wisdom, but what is practical wisdom? The following section will introduce “*the highest intellectual virtue for Aristotle*” (Massingham, 2019, s. 1).

#### 2.2.4 Practical wisdom

In the previous section, we have described professional development from novice to expert with the help of a model (Dreyfus & Dreyfus, 1980). We illustrated how a cadet might acquire knowledge to a senior officer stage, suggesting that a senior officer or an expert has practical wisdom, but what does practical wisdom imply?

According to the Cambridge dictionary, wisdom refers to using knowledge and experience to make good decisions and judgments (Cambridge Dictionary, 2021). Therefore, a person with wisdom might be capable of making better decisions (Massingham, 2019). To this point, many studies suggest looking back in time to Aristotle in Ancient Greek, where his text *Nichomachean Ethics* is perhaps a good choice for anyone concerned with the question of what precisely practical wisdom means (Tsoukas & Cummings, 1997).

Aristotle referred to three intellectual virtues that will enable an individual to achieve *eudaimonia* or well-being. These intellectual virtues are *episteme*, *techne*, and *phronesis*- being this last type of knowledge, the highest intellectual virtue for Aristotle (Massingham, 2019).

The first intellectual virtue is *episteme*, which is the scientific knowledge, consisting of deductions of basic principles (Tsoukas & Cummings, 1997). Knudsen (2008) referred to the form of knowledge we know from natural science: abstract, universal, and invariable (Knudsen, 2008), which we might understand as scientific facts. The second is *techne*, which is about how to make things (Tsoukas & Cummings, 1997). Another more straightforward definition is offered by Knudsen (2008), where she said that *techne* is the know-how that we know from applied, concrete, variable, and product-oriented techniques. The second and final virtue is *phronesis*, commonly known as practical wisdom. According to studies, *phronesis* is challenging to define since it unfolds in situational processes, meaning that it is variable, context-dependent, experience-based, action-oriented, and based on practical value rationality (Flyvbjerg, 2012). For being exact, *phronesis* might mean knowing what is good for human beings in general and having the ability to apply such knowledge to particular situations (Tsoukas & Cummings, 1997).

According to Schwartz (2009), a wise person knows when and how to make the exception of every rule. He also provided an excellent explanation by using a janitor's job as an example: "*A janitor knows when to ignore their duties for the benefit of others.*" (Schwartz, 2009), meaning that this janitor knows how to improvise in a real-world with problems and context changing, where this person knows how to use these moral skills in pursuit of the proper objectives in the service of others (Schwartz, 2009).

*"A wise person is made and not born—wisdom depends on experience and not just any experience, where you need the time to know the people you are serving, needing the permission to improvise, to try new things, occasionally fail and to learn from your failures, and you needed to be mentored by wise teachers."* (Schwartz, 2009).



In Knudsen's article, she uses Aristotle's concept *phronesis* to add a reflexive, social, and ethical dimension to the experts' knowledge (Knudsen, 2008). Furthermore, according to a study, it could be understood as the root concept in a very long-standing intellectual current that articulates the wisdom that guides everyday practice, where the practice is a complicated phenomenon with three different aspects of human activity (Halverson, 2002), but what are those?

In the first aspect, Halverson (2002) refers to the practice or praxis as to *day-to-day* activities where persons might routinely engage. In the second one, he describes that praxis deals with the repetition of actions to increase proficiency. And in the third one, he proposes that the regularities of this praxis could emerge into chunked traditions of behavior that are passed down as legitimate cultural or organizational behavior (Halverson, 2002). On the other hand, Knudsen also implied that *techne* is also oriented towards praxis (Knudsen, 2008), where *techne* could be represented in the written procedures. However, according to Halverson, in ancient Greek, Aristotle was already conscious of the risks of reducing all knowledge that guides action into *techne* (Halverson, 2002), which might be understood as giving more weight to written procedures than professional activities in the praxis.

Moreover, studies suggest that the industry is changing and practitioners might not be only exposed to the sea's perils. Nonetheless, a study advises that the praxis cannot depend on *techne* alone and ignore experience, common sense, professional pride, and practical wisdom. Therefore, in the same study, the researcher suggests that questioning the belief that written procedures entail improved safety by definition does not mean that seamanship has no need to support fixed procedures, nor does it mean promoting deregulation (Knudsen, 2008).

According to Tsoukas and Cummings (1997), exploring Aristotle's practical knowledge shows how this understanding might be relevant in today's organizational studies, where researchers argue that practical wisdom should be an organizing framework for professional knowledge (Tsoukas & Cummings, 1997, cited in Massingham, 2019).

This section has explained practical wisdom, where researchers propose its relevance in today's organizational studies. Furthermore, it has been described Aristotle's three intellectual virtues: *episteme*, *techne*, and *phronesis*, setting special attention in *phronesis*. So far, this theoretical chapter has described the ongoing maritime tendencies together with the seafarers' perspectives and how officers learn by forming a community of practice and scaling professionally in their career path. However, we haven't talked about why they do what they do? Or why do seafarers think like that? Therefore, the following section will introduce cognitive processes to help us understand the reasons behind actions.

### 2.3 The cognitive processes

The cognitive processes are critical elements for understanding how seafarers behave and how their brains work, but what is a cognitive process? A cognitive process allows us to process the information received through our senses by decoding the data and simplifying this information for us. However, it is crucial to note that not all these mental processes have the same complexity since some are basic and others are superiors (Universitat Calermany, 2021).



According to Cherry (2020), cognition refers to the mental processes that involve obtaining knowledge and comprehension. These include thinking, knowing, remembering, judging, and problem-solving, which involve higher-level brain functions, together with encompassing language, imagination, perception, and planning (Cherry, 2020). Researchers describe the maritime industry as a complex and dynamic environment that constantly changes for performing safer and cleaner operations. Therefore, as complexity grows, attention turns to the human aspect as the primary cause of accidents and incidents (Da Conceição, Dahlman, & Navarro, 2017). Therefore, understanding offshore vessels' systems requires attention to the seafarers' cognitive processes such as perception, situational awareness, and thinking processes.

### 2.3.1 Perception

According to Oviedo (2004), perception might be one of the ground topics of psychology as a science and has been the subject of different studies (Oviedo, 2004). Reitz described the following: "*Perception includes processes by which an individual receives information about his or her environment-seeing, hearing, feeling, tasting and smelling*" (as cited in Chaturvedi, 2013 p. 234). Efron suggests that a man's perception forms part of the cognitive contact with the world around them, emerging from this primary form of awareness (Boston Colloquium, 1966-1968). The investigators Wertheimer, Koffka, and Köhler considered perception as a *fundamental mental activity compared to other psychological activities as the learning process, the memory process, and the process of thinking between others, which depend on the proper operation of the process of perceptual organization* (cited in Oviedo, 2004 p.89).

Svartdal (2011) describes that the cognitive function has three elements: *stimulus, sensory organs, and impression*, which helps control information absorption. However, perception correlates with experience and human behavior, which sometimes does not go along with reality since the elements of the process can create illusions, wrong concepts, or bad judgments. For those reasons, according to Svartdal (2011), it is essential to know that the process of perception can unveil sources of error that could produce the loss of situational awareness (Svartdal, 2011). But what is situational awareness? The following section will provide information regarding situational awareness.

### 2.3.2 Situational awareness

Studies propose that operating a vessel is a complex activity, where one of the factors to consider is the operational personnel's situational awareness (Rasmussen, Lützen, & Jensen, 2018). Therefore, it might not be odd to connect this topic while exploring human behavior, especially in dynamic complex operations.

According to Endsley, situational awareness (SA) is the perception of diverse elements in a determined time, space, and volume (Endsley, 1995). This cognitive process might establish information that could help predict what happens next by understanding the element's meaning and projecting it to the near future. According to Dominguez (1994), *SA is defined as a continuous extraction of environmental information and integrating this information with previous knowledge to form a coherent mental picture, which is used to direct future perception and anticipate future events* (Dominguez, 1994, s.11, cited in Salmon et al., 2008).

According to Endsley (1995), situational awareness (SA) might be one of the main concerns in system operations, based on a descriptive view of decision-making and its connection to numerous individual and environmental factors to explore (Endsley, 1995). For that reason, it is vital to introduce the model to understand seafarers' behaviors in dynamic operations performance.

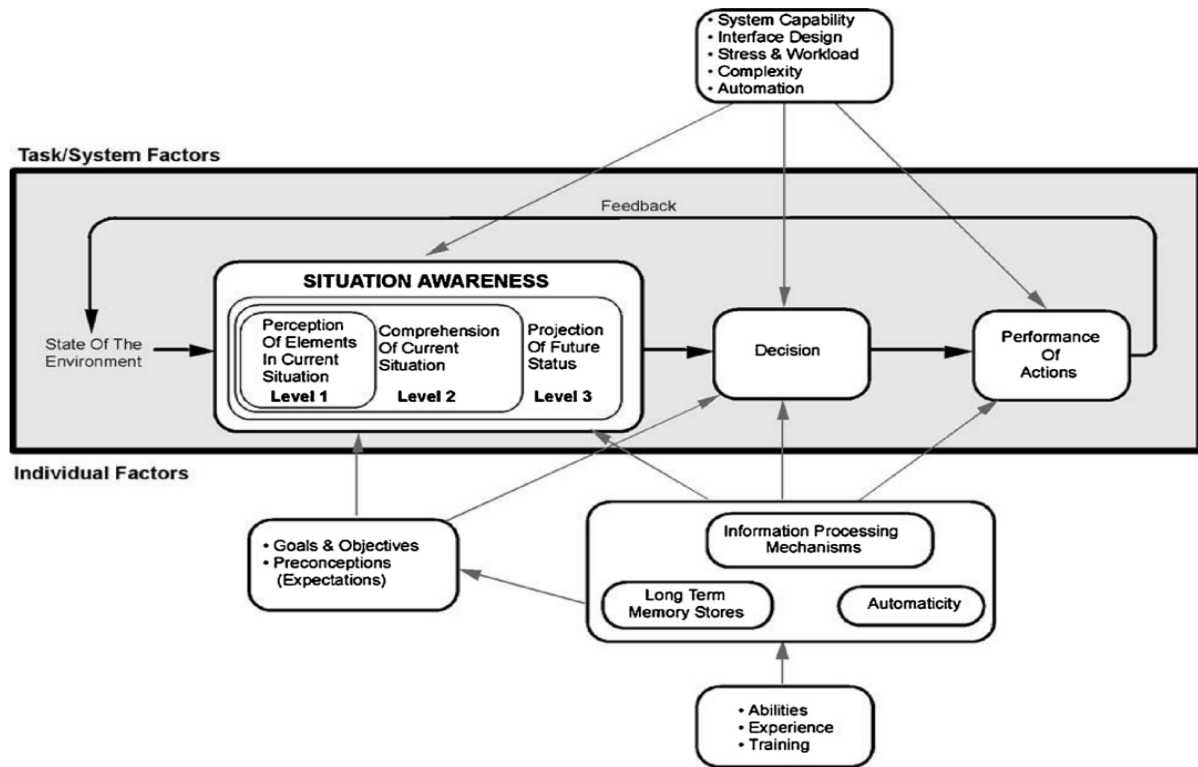


Figure 2 Model of Situational Awareness Illustrated by Endsley (Endsley, 1995, s. 35).

In the figure above, we can observe Endsley's SA model (1995), where the main factors: task-system and individuals, influence a person's SA. In the task/ systems factors, we can find capability, interface design, and automation, while we see stress, workload, and complexity in task factors. Additionally, the task-System Factors constitute the outer frame within which an operation task is performed. On the other hand, individual factors such as abilities, experience, and training influence information-processing mechanisms affecting goals, objectives, and expectations simultaneously (Rasmussen, Lützen, & Jensen, 2018).

The SA model has three levels (Fig.2). On the first level is located a person's perception, which deals with perceiving the status, attributes, and dynamics of a relevant element of this person's environment in a specific situation. However, that data is yet not processed. On level 2, the interpretation occurs by understanding the data perceived. Next, individuals make a holistic picture to understand the environment. Finally, on the last level, predictions are made.

According to studies, SA would depend on a person's knowledge of the ground at a specific moment in time. Therefore, it is developed over time, considering the situation's complexity at a given time, which would relate to the past and the future (Rasmussen, Lützen, & Jensen, 2018). Researchers describe that mental models formed by training and experience might be used for being able to achieve SA by focussing the attention on critical elements in the environment; level 1, interfacing the piece by an attempt of their meaning; level 2 and generating the future; level 3 (Salmon, et al., 2008).

This section has described the factors involved in the SA model (Endsley, 1995), where we saw how this mental process operates, resulting in decision making. However, how does documentation generate an impact on a mental process? Therefore, the following section will present the thinking fast and thinking slow theory (Kahneman, 2013) to understand how paperwork can affect mental processes.

### 2.3.3 Process of thinking-System 1 and 2

The book *Thinking fast and slow* describes the human process of thinking, which is divided into two systems (Kahneman, 2013). Systems that would allow us to understand how our brains operate and how paperwork could be connected to this thinking process, but what are those systems about?

Kahnemann suggests that the first system- *system 1*, works automatically under operation, using little or no effort and no voluntary control. It is effortless and does not need concentration to reach a result. It continuously builds a logical interpretation of what is happening around us instantly, being our innate ability to perceive the world. For instance, when performing activities, we can execute an action quickly or automatically with time, which would be determined according to the person's ability (Kahneman, 2013). A clear example of it is when a person speaks a new language. In this case, we can observe that this mental activity can produce a lot of concentration and mental capacity to formulate sentences which means that system 2 owns the process. On the other hand, for a native speaker, using their native language does not require much thinking and effort, which means that system 1 is active in this opportunity. Furthermore, Kahneman refers to "*the attempt to give a sense of the complexity and richness of the automatic and often unconscious processes that underlie intuitive thinking and how the automatic processes explain the heuristic of judgment*" (Kahneman, 2013, s. 17).

Kahnemann proposes that the second system- *system 2*, demands intense thinking, requiring much attention, as the example of speaking a new language explains. Those actions are mentally effortful and subjective to experience, the agency choice, and concentration, which system 1 is not designed to do. Consequently, system 2 can affect the processing of system 1 by controlling the automatic function of the memory, concluding that there is a strong connection between both systems, meaning that they interact and constantly are under process. For instance, when system 1 finds difficulties, system 2 takes over and aims to find a solution. Therefore, system 1 works under impressions, intuitions, feelings, and intentions. While system 2 approves and transforms the information into planned actions. Hence, both approaches show us that most of our thoughts and actions occur under the system 1 process, where system 2 takes over when facing difficulties (Kahneman, 2013).

Up to this point, it has been presented in this subsection the cognitive processes such as (1) *perception*; the individual's mental process in which a person receives information about the world around them through senses, (2) *situational awareness*; the individual's mental process in which a person perceives diverse elements in a determined time, space and volume projecting them to a near future, and (3) *the thinking process*; the individual's mental process of thinking fast or slow. The literature presented in this section attempts to provide meaningful information to understand seafarers' practical wisdom and the impact of paperwork in the praxis.

## 2.4 Conclusion

The theoretical chapter has been divided into three main sub-sections: current maritime trends, building up maritime competence, and the cognitive processes.

In the first section, the theory presented describes the current operational context from the maritime industry obtained from three empirical studies, where the authors explore paperwork in the praxis under practitioners' eyes. Then, the central maritime regulators were introduced, and relevant findings from these studies were shown, where seafarers' perspectives towards the seamanship term were presented, the three mechanisms that can lead to over-regulation were described, and the incompatibility towards the demand on written procedures was proposed.

In the second section, the theories described how officers learn during all their professional paths, including learning methods as formal theoretical education, the practical approach, and the COP. Furthermore, a model of skills acquisition (Dreyfus & Dreyfus, 1980) was presented to understand how practitioners evolve professionally. Finally, Aristotle's practical wisdom was considered for understanding knowledge at an expert level of the model.

In the third and last section, the information presented describes the cognitive processes such as perception, SA (Endsley, 1995), and systems 1 and 2 from thinking fast and slow (Kahneman, 2013), which were presented for allowing us to understand how seafarers behave and how their brains work.

### 3. Method

The importance of the method in research would be decisive for the research's theme and purpose since the information would emerge (Brinkmann & Kvale, 2015). Therefore, this chapter will address the method chosen, a description of the scientific perspective, and a review of the study's development.

#### 3.1 Method decision

According to Brinkmann and Kvale (2015), qualitative researchers often argue that phenomena can only be understood when seen in context (Brinkmann & Kvale, 2015). In addition, Myers (2013) describes that qualitative research methods help researchers understand a social and cultural context inside people's lives, where the researchers can understand what people say and do (Myers, 2013). This study aims to explore the officers' perspective regarding paperwork. Therefore qualitative research methods would be the most suitable approach for the investigation.

#### 3.2 Ethical considerations

In interview research, ethical considerations might appear as a result of digging into someone else's private life. Therefore, potential concerns should be considered from the beginning of an investigation to the final report. For those reasons, this study contemplates the purpose of the interview, which goes beyond the scientific value, implicating the improvement of the human situation investigated (Brinkmann & Kvale, 2015). Furthermore, this thesis is focused on the principles of informed consent, confidentiality, consequences, possible effects, researcher obligations towards the participants, and interviewees' rights in response to ethical parameters and according to the Norwegian center for research data (NSD) guidelines.

#### 3.3 Planning the qualitative research interview

The best option for this thesis study is the semi-structured interview, which will provide a comfortable environment where the interview will be performed as a casual conversation (Brinkmann & Kvale, 2015). Yet, since the interview is done inside a dialog, it can have alterations because new questions might emerge during the discussion, and such improvisation is encouraged (Myers, 2013). Additionally, according to Brinkmann and Kvale (2015), using key questions are advisable when planning interview research as the following: *why*, *what*, and *how* (Brinkmann & Kvale, 2015), which will guide the thesis during this planning process.

The interview design of this thesis study would respond to the phases described by Kvale and Brinkmann (2015): thematization, planning, conducting interviews, transcription, analysis, verification, and reporting (Brinkmann & Kvale, 2015).

##### 3.3.1 Thematizing the interview

In this phase, the study's purpose must be formulated to answer *why* as a key question. The purpose of this study is to examine the relationship between seafarers, paperwork, and building competence in Brazil, where the study aims to improve the human situation being explored and to focus on gaining knowledge with scientific value (Brinkmann & Kvale, 2015).

This phase took a considerable amount of time since it was necessary to identify the topic and its purpose. Moreover, the first steps were gathering previous information regarding the main topic, searching for relevant theory, analyzing methodology, etc.; measures described according to Brinkmann and Kvale (2015).

### 3.3.2 Designing the interview

Designing an interview study carries the planning process and techniques, where the key question “*how*” is answered (Brinkmann & Kvale, 2015). This stage took a considerable amount of time as well since it was essential to develop a working framework to ensure reliability and validity. Furthermore, it was important not to induce answers and keep neutrality due to the researcher's proximity to the topic.

In Norway, every study must respect the Norwegian Center for Research Data (NSD) guidelines. The NSD provides information to ensure the data management of people and society, respect the national law (The Norwegian Center for Research Data., 2021). Therefore, this study waited for the NSD approval to execute the interviews (Appendix 1). Then, a consent letter was prepared where information related to specifications of the project, parameters, management of the data, durations of the interviews, and more relevant information (Appendix 2) have been detailed inside it according to Norwegian law.

The maritime nature of operations shares a common language, which is English. However, the researcher aims to acquire as much information as can be possible. Therefore, the interviews were conducted in the language of preference of the participants, which includes English, Norwegian, Spanish and Portuguese. The researcher understands and speaks those languages since this study's researcher has lived in countries where those languages were spoken for many years.

### 3.3.3 Sample description

This part would explain how the participants were selected from a broader population, meaning that the sampling selection would vary according to the search question and study design. The nature of the sample is purposive, which means that the researcher has decided to elect individuals who are considered representative since they meet specific criteria (Bui, 2020). The sample for this study is formed by officers who have offshore sailing experience in Brazil.

Regarding the sample size, many researchers avoid questioning “*how many participants*” are sufficient inside the qualitative research domain suggesting anywhere from five to fifty participants should be good (Dworkin, 2012). On the other hand, researchers argue that there is no straightforward answer to this issue. The sample size is contingent on several factors relating to epistemological, methodological, and practical matters (Baker & Edwards, 2012). Nevertheless, according to Sandelowski (1996), it is recommended to have a qualitative sample size large enough to allow the study to unfold a new and rich texture understanding of the phenomenon under investigation. Yet, it ought to be small not to preclude the deep case-oriented analysis (Sandelowski, 1996). Therefore, this study sample is formed by seven seafarers with working experience in Brazilian offshore operations.



In order to participate in the study, a selection criterion was determined of the following parameters: it was required officers since those positions are the ones that have more contact with paperwork. Additionally, it required operational personnel with many years of experience in the way that they have sailed in Brazil and other locations so that their contributions might reflect comparative descriptions. Consequently, the following table will show some of the sample characteristics.

*Table 2 Sample's descriptions*

Deck officers	3
Engine officers	4
Age range	30-50 years
Total-experience	9-25 years
Experience in Brazil	3-10 years

These officers have top leadership positions in their respective departments, where their current status are the following: captains, chief officers, chief engineers, and first engineers who have sailed in offshore support vessels in Brazil. Therefore, for a better reading identification and understanding, it was necessary to provide fake names to the participants in the following chapter (Findings).

### 3.3.4 Interview Guide

It is common to prepare a script during the interview containing some topics to consider or a detailed sequence of carefully worded questions. The guide would include an outline of the themes to cover with the suggested questions for a semi-structured interview (Appendix 3) as a description of the plan to follow (Brinkmann & Kvale, 2015).

Many versions were suggested during the creation of the guide, which resulted in an easier-to-digest direction that became fundamental to an interview that intended to be simple, relaxed, but at the same time knowledge-related. The intention was to generate comfort so the participant could express their opinions freely.

The guide served as a guideline for the researcher to follow. The questions were designed to be as open as possible, so each participant could feel free to describe a situation and express their opinions on how the diverse topics can come to light. Each subject has suggestions that have subquestions regarding a central idea. It is essential to clarify that due to the researcher's experience, the questions tried to be as open as possible to avoid influencing the participants to answer since the researcher shares the same profession and experience in Brazil as the participants.

### 3.3.5 Interview process

First, before the interview, relevant ethical considerations were informed to the participants according to section 3.2. Furthermore, they were advised to feel free to express what they would like to share and whatnot. Second, the participant's answers were constantly summarized during the interview to ensure the researcher understood what they meant due to possible language and cultural misunderstanding. Finally, after the audio recorder was off, it was told

sincere thanks for their participation, asked if there were more questions, and reminded them of their rights about their participation.

### 3.3.6 Pilot interview

Before the meeting, the consent letter was sent online since, due to covid restrictions, the interview could not be conducted personally. Therefore, the pilot interview was arranged online by creating a video call only for this thesis's researcher and the participant.

Before starting the audio record, the consent letter was explained again, asked "*if there were more questions,*" and received a signed consent letter. On the other hand, during the interview, one question required more information to be understood, which is the case of question number 8, where it was asked the following:

*"What paperwork are you expected to do before, during, and after an operation?"*

Operations are different according to the worker's position on the vessel and the type of boat, so the first question was too broad. For those reasons, it was necessary to provide more context to be understandable, and place the participant in one of their operations and take it from there. So, finally, question number 8 became the following:

*"Can you think of one operation inside your department and explain to me what documentation you are expected to do before, during, and after the operation?"*

In short, the pilot survey allowed the researcher to get the experience for the following interviews. Furthermore, it provided good contributions that allowed the pilot survey to be included in this thesis study. Therefore, seven interviews were performed, including the pilot survey as the initial plan.

### 3.3.7 Conducting the interviews

As a reminder for the audience, this thesis' researcher is a sailor with many years of working experience in Brazil. Therefore, the interview participants were recruited inside this thesis researcher's working network. The first contact was made through the internet since many participants are in different locations worldwide. Once the participants agreed on their participation, the researcher sent the consent letter with enough time for them to process the information and decide if they would be part of the project.

The participant had the freedom to choose the appropriate time appointment due to the different time zones and their tight sailing schedules. However, the process took longer than expected due to covid uncertainty, which forced some participants to change their working schedules; therefore, the complete process took approximately six weeks. For those reasons, the transcriptions were done as soon as each interview was completed to gain time.

The interview was conducted on a video call, and it started with a brief explanation of the study's intention. In this phase, the participants were asked if they had any doubts regarding the interview process. After clarifying this phase, they were informed about the beginning of the audio record. Right after, the participants had the opportunity to introduce themselves as part of the interview guide.



The research approach was very neutral since the researcher was aware of the danger of directing the answers. For that reason, all participants felt free to develop their responses in the direction that they felt more comfortable sharing, and at the same time, the researcher adopted a more unfamiliar role regarding the maritime industry.

The interview guide was placed in front of the desk to keep track of the questions. In some interviews, some questions were not made since some participants had already provided the answer to those. Furthermore, new interview guides were printed to write notes in each interview and mark the questions already answered to follow the survey sequence. Finally, after every question, the researcher summarized the answers to avoid language and cultural misunderstandings.

### 3.3.8 Interview transcriptions

According to Brinkmann and Kvale (2015), the interview transcription transforms the oral data to a written mode structure of the interview conversation in a form that is susceptible to closer analysis and is the beginning of the analytic process. Nonetheless, interview transcription is weakened due to the impossibility of reproducing emotions. For that reason, some researchers prefer to do their own transcription to ensure the many relevant details are obtained (Brinkmann & Kvale, 2015). Therefore, to avoid misunderstanding feelings, languages, and lousy understanding of maritime technical words, the interviews and transcriptions were made by the same person (this thesis's researcher). For those reasons, the researcher considered the *interview transcription* a suitable method for the study purpose.

## 3.4 Raw data analysis

This section describes the procedures involved during the analysis of the raw data, but how to accomplish so? According to Myers (2013), qualitative research produces a large amount of raw data. Hence, it is vital to figure out how to process it (Myers, 2013). Therefore, as a good way of organizing the data into themes, this study has considered thematic analysis (TA).

Thematic analysis (TA) is a qualitative research method applicable in different fields, being the most common and the simplest form of analysis. TA is an approach for extracting meanings and concepts from data and includes pinpointing, examining, and recording patterns or themes. Furthermore, TA provides a flexible method of data analysis, and it also establishes a more systematic and explicit form of it without threatening the depth of analysis (Javadi & Zarea, 2016). Therefore, TA should be seen as a foundational method for qualitative analysis since it is the first method researchers should learn, providing core skills useful for conducting many other qualitative analysis forms (Braun & Clarke, 2006).

### 3.4.1 Analysis phases

According to Braun and Clarke (2006), the TA aims to identify, analyze, and report themes within data by organizing and describing the data set in rich detail. These themes capture something important about the data concerning the research question and represent patterns of response or meaning (Braun & Clarke, 2006). The TA phases are similar to the phases of other qualitative research. Therefore, these stages are not unique from TA. The process begins with noticing and looking for patterns of meaning and potential issues of interest inside the transcriptions and finally reporting the content and purpose of the patterns, also called themes,

where the analysis constantly moves back and forward between the process before its final result (Braun & Clarke, 2006). Consequently, the following table will describe each step followed in this thesis.

*Table 3 Phases of Thematic Analysis (Braun & Clarke, 2006, s. 87)*

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

According to Braun and Clarke (2006), engagement with the process is necessary (Braun & Clarke, 2006). Therefore, the researcher carried out the complete process, where the researcher began the process with some prior knowledge of the data based on the leading studies explained in chapter 2 and some initial analytic interest, which is the motivation for understanding the circumstances around paperwork. Braun and Clarke (2006) also precise the importance of being immersed in the data (Braun & Clarke, 2006): therefore, the researcher repeatedly read the transcriptions to search patterns or any piece of information that could indicate something relevant for this thesis study.

In the second phase, familiarization with the entire data was accomplished, where a list of ideas that sounded interesting for the study were proposed. Consequently, as Mile and Huberman (1994) suggest, the first codes emerged, where they were applied for a short data segment (Miles & Huberman, 1994). And finally, they were organized into meaningful groups (Tuckett, 2005). However, as Braun and Clarke (2006) suggested, the coded data is different from themes, where these last ones are often broader (Braun & Clarke, 2006).

In the third phase, the data was coded, resulting in a long list of codes to re-focused the analysis into a broader level, which is the formation of themes. Therefore, the process involved sorting other codes into possible themes and collating all the relevant coded data extracts within the identified themes. In other words, the researcher began the analysis of the codes and saw how different they could have been, combining them into an overarching theme. Therefore, the researcher followed the recommended steps by Braun and Clarke (2006) for better visualization, where they explain that the researcher should sort the different codes into themes in a visual representation (Braun & Clarke, 2006).

In the fourth phase, a review of the themes was done. The researcher had devised a set of candidate themes, implicating the improvement of the themes. However, some of the themes were not themes since there were not enough data to support their intentions. In addition, some were contradictory to others, while others needed to be broken down into different ideas.

Therefore, this phase was essential to discharge the themes that lack strength—concluding that this phase involved two levels of reviewing and refining the themes (Braun & Clarke, 2006).

The fifth phase deals with the definition and names of the themes, where the researcher should reach a satisfactory thematic map of the data (Braun & Clarke, 2006). As suggested by Braun and Clarke (2006), the researcher went back to collated data extracts for each theme and organized them into a coherent and internally consistent account, with an accompanying narrative of the transcriptions for having clearly defined themes and discharge the other ones (Braun & Clarke, 2006).

Braun and Clarke (2006) suggested that the last phase should be the production of the report, which includes the final analysis and write-up of the same report (Braun & Clarke, 2006). This thesis resulted in two main themes from the data: competence and seamanship. According to Braun and Clarke (2006), it is crucial to tell the story of the data to convince the reader of the merit and validity of the analysis produced in the report, considering the final analysis and write-up of the report. This process provides a concise, coherent, logical, non-repetitive, and exciting story to tell within and across the themes (Braun & Clarke, 2006). During the report, it has been presented the extracted material to support each topic. The criteria for selecting the interview material in quotes respond to the will to answer this thesis's research questions.

### 3.5 Study's validation

The trustworthiness, strength, and transferability of knowledge are commonly discussed in the social sciences concerning objectivity, validity, and generalization in qualitative research. For those reasons, this section would address the validation of interview knowledge in this study's results (Brinkmann & Kvale, 2015).

#### 3.5.1 Objectivity

There is a constant question regarding whether the knowledge from qualitative research interviews can be objective. Objectivity is an ambiguous term; therefore, it needs to distinguish its diverse, relevant meanings to the study's qualitative research (Brinkmann & Kvale, 2015).

According to Brinkmann and Kvale (2015), objectivity is a concept with many meanings relevant to a qualitative investigation;

- *Freedom from bias*, which deals with knowledge as something proven, controlled and undistorted by personal preferences and prejudice.
- *Reflexivity about presuppositions*, where the researcher is objective about subjectivity.
- *Intersubjective consensus*, an intersubjective agreement.
- *Adequacy to the object*.
- *The object's ability to object*.

In short, it can be argued that concerning these meanings of objectivity, qualitative methods can be an objective research method (Kvale & Brinkmann, 2017).

### 3.5.2 Reliability and validity

Reliability means the consistency and trustworthiness of research findings. A matter of reliability concern refers to the possibility of reproducing the study's results by other researchers (Brinkmann & Kvale, 2015). On the other hand, validity refers to examining the sources of truth. Therefore, the validation has become a measurement of quality control during the interviews allowing the study to keep the direction (Brinkmann & Kvale, 2015). The researcher was aware of all these matters described in this subchapter and the previous one. Therefore, this thesis study can provide good decision-making regarding the method to collect and process data since the purpose is to obtain valid results.

On the other hand, the participants were eager to share their negative perspectives on the topic during the interview. It is believed that the topic of this study might have already influenced them in the way they could tell their experiences as a relieving method for their negative thoughts. Nonetheless, at the end of their storytelling, they also acknowledge the positive aspect of the topic, providing validation to their information.

### 3.5.3 Generalizing

Scientific knowledge claims to look for generalizability, which implies producing laws of human behavior that could be generalized universally; therefore, it deals with how applicable it is to transfer the knowledge obtained in the research method for other relevant situations (Brinkmann & Kvale, 2015). The study intends to get a contextual description of Brazilian operational circumstances and how these circumstances can be compared in other countries with similar offshore operations to understand better the role of paperwork in building up maritime competence in the seafaring profession.

## 3.6 Methodological Limitations

The methodological limitations are related to this thesis sample and the researcher's proximity to Brazilian operations.

The first limitation is the sample background. The seven officers selected for the thesis indeed have relevant experience in Brazilian offshore operations. However, all of them have different backgrounds, meaning that from the seven officers who participated, three are Peruvians, three are Norwegian, and one is Brazilian. The participants' countries of origin are state members of the IMO (International Maritime Organization, 2021), which means that their education is standardized according to the international convention on standards of training, certification, and watchkeeping for seafarers (STCW). On the other hand, the way they have received their education can influence their praxis since Brazil and Peru have militarized nautical formation, and Norway does not. Apart from that, the participants belong to different companies, which are mainly Norwegian and Brazilian. Therefore, their results have different perspectives since they are exposed to diverse organizational cultures. Yet, most of the participants agreed with their notions regarding Brazilian paperwork.

The second limitation is to have only one Brazilian as a participant. It would have been interesting to have more participants from Brazil to obtain more findings. Nonetheless, this fact encourages others to study this topic further for more understanding.

The third limitation is the researcher's connection to operations in Brazil since this thesis' researcher shares the same profession as the thesis' sample. Nevertheless, this fact was beneficial because it has allowed the researcher to identify possible issues in the praxis that require attention as it is the role of paperwork in the praxis. On the other hand, the researcher's proximity to the topic became a constant challenge for avoiding conclusions before processing the data. Therefore, the researcher has been meticulous in admitting this situation and taking the necessary attention to be neutral and follow the complete study process.

### 3.7 Conclusion

This chapter has described the research method applied in this study based on scientific research theory. The thesis is developed under a qualitative research method with a phenomenological hermeneutic approach. The interviews were semi-structured, and the analytical method used was thematic analysis. Furthermore, this process has considered ethical issues, including factors that offer reliability and validations of the knowledge obtained. In the following chapter, the results will be presented for further discussion.

## 4. Results

This chapter presents the results from the interview process, where the data collected was analyzed in response to the research questions of this study. The data has been organized into two main categories; building up maritime competence and seamanship, plus subsections in each corresponding category as presented in the following table:

<b>Categories:</b>	<b>Subsection:</b>
1. Building up maritime competence	Beginners seafarers Advanced seafarers Building up maritime competence in Brazil
2. Seamanship	Concept Future concern Brazilian paperwork

*Table 4 Results Organization*

As observed in the table above, the chapter will be divided into two main areas of this study: building up maritime competence and seamanship.

The first category, building up maritime competence, explores the participant's perceptions of how seafarers develop practical knowledge during two professional stages: beginners and advanced seafarers. However, the collected data did not link the narratives with Brazil. For that reason, the participants offered more specific information explaining the challenges beginner officers face in Brazil when they develop practical knowledge, as presented in its respective section.

The second category, seamanship, explores the participant's perceptions of what they consider as good seamanship. Since the concepts do not have any connotations with Brazil, the participants provided information about how they performed maritime activities there. In addition, the data revealed the role of paperwork in their praxis, causing future concern in learning practical knowledge and how paperwork interferes with applying good seamanship, as described ahead.

### 4.1 Building up maritime competence

Building up maritime competence is the first area of interest in this study, where the participants provided information on how they believe seafarers learn and manage practical knowledge during two different stages in their professional development, together with how they think seafarers learn in Brazil. These stages are cadets-junior officers and senior officers. Therefore, this sub-chapter would be divided into three sections.

In the first section, the participants spoke about how cadets and junior officers can learn practical knowledge. Their answers provided information related to their perspectives regarding the beginner's learning process, including paperwork as a supporting tool and group learning among members for acquiring operational context from those who have experience.

In the second section, the participants spoke about how seafarers with experience learn new information and manage their knowledge. Their answers showed their paperwork and group learning perspectives for those experienced officers. However, in this opportunity, the participants provided some positive and negative aspects, explaining how these aspects contribute to and affect the senior officer's praxis.

In the third and last section, the participants spoke about how seafarers learn maritime skills in Brazil. It was necessary to include this section since the previous interventions reflected general perspectives that didn't involve Brazilian operations. For that reason, it was asked the participants to be more specific about how seafarers learn in Brazil. On the other hand, their answers only showed their thoughts regarding beginners and not advanced seafarers, where they mentioned how beginners find difficulties in learning maritime skills due to strict regulations and paperwork load in Brazil.

#### 4.1.1 Beginners Seafarers: Cadets and junior officers stage

This section presents what the participants think about how seafarers learn practical knowledge throughout the beginner's phase: cadets or junior officers stage, where their answers showed that they preferably acquire knowledge through paperwork as a learning tool and in teamwork group learning. For those reasons, this section will be divided into paperwork as a supporting learning tool and teamwork group learning.

##### 4.1.1.1 Paperwork as supporting learning tool

During the interviews, it was asked to the participants how they believe a beginner seafarer can learn practical knowledge onboard vessels. Their answers provided information related to their perspective regarding the learning process for cadets and junior officers with the help of paperwork: checklists, work permits, or any document produced by a safety system, meaning that cadets used these papers as preparation guides providing them with the necessary safety context to perform a job. Furthermore, the senior officers in charge of the training process of cadets use checklists as learning objectives for them. For those reasons, some participants agreed that paperwork that comes from a safety management system is a valuable tool for cadets or junior officers, as presented in the following quotes:

Erika mentioned the importance of the ISM paperwork, which is used as a guide when the person has no experience, claiming that any ISM document, for example, a risk assessment offers the necessary information to perform a job as she described in her own experience:

*“I find it very important to have documentation as a guide; for example, once I was an inexperienced officer. I didn't know anything. So, I find it very important to have a risk assessment or even verify the management systems nowadays; in those systems, you even find information on how to perform a task. For officers who have experienced this might be pretty irrelevant, but for a person who has no experience, the information can be gold”.*



Finn added that documents like checklists anticipate cadets with information for performing activities, explaining that cadets help the crew in various jobs, for example, cleaning a tank. Therefore, that checklist helps them cope with the tasks safely as the rest of the team, as the participant explains in his general perspective:

*“A cadet needs to cope with the daily routine on board. Therefore, they need to be prepared as much as others, mainly if they perform a job. For instance, if they are going into a tank to participate in the cleaning before entering, they should know what it is all about. They should also know that this is there to help to provide them with safety. The safety that is required for the job”.*

Andreas offered information on how they perform activities in his vessel, declaring that checklists are training guides, meaning that cadets use each checklist as objective items since they explore and investigate them. For that reason, he believed they are practical tools for learning, as the quote below explains:

*“Documentation provides cadets goals, for example, you give them a checklist, you can say ok here is the vessel, in this week you are expected to find this system. Cadets have to go through the systems, so they check documentation related to that system, they have to find drawings and the technical data, find the valves, stuffs that are underneath the floor, so in fact, the checklist became very important for them”.*

To conclude with the participant’s perspective about new personnel using paperwork as a learning tool, we can appreciate its critical role in providing safety context to beginners. Whether it is for work assistance or preparation, the documentation from an ISM system is helping personnel who do not have enough experience to create a suitable base to carry out operations inside the operational parameters as the rest of the crew.

Although the paperwork is indeed necessary for learning, it is not enough for acquiring knowledge. For that reason, the participants expressed that they need the crew's social interaction for learning in teamwork as part of the other learning method onboard that would be presented in the following section.

#### *4.1.1.2 Group learning*

During the interviews, it was asked to the participants how they thought beginners seafarers acquire practical knowledge. Their answers describe the use of paperwork as an assisting tool. However, they also explained that paperwork is not the only method beginners use, explaining that cadets and junior officers learn more by working and speaking between members who have more experience. Also, they agreed that operations are constantly changing with different challenges; for that reason, not all information can be found in papers, and there is when they must share information by talking with those who are more familiarized with the jobs, as the following quotes describe:



Ben provided a general perspective where he claimed that the ideal way of acquiring knowledge is by talking with others with more experience. He contrasted that it is easier to transfer information by speaking instead of writing all in a paper. Furthermore, daily activities can vary according to circumstances, and not all those alterations can be found in documents' formats, as the quote below shows:

*“The best way new professionals acquire knowledge is by talking with others, maybe a toolbox or a meeting, it is better than just putting all in a paper, because it is challenging to do things the same in every task since they can change.”*

Gabriel told how he had learned during his first years as a seafarer, where he had the opportunity to learn from experienced crewmembers. He explained that certain information such as the vessel's behavior, leadership, handling the member's relationships, and sensitive topics could not be easy to find in books since it is more about practical knowledge, as the quote below explains:

*“I was lucky to go onboard with experienced personnel, those that have been sailing for almost all their lives. They transferred me a lot of knowledge. I remember especially a captain who helped me a lot in maneuvering the boat, handling relationship issues, seeing what was happening and what was not happening, especially speaking accurately on sensitive topics, and being a leader. This type of information is difficult to find in a book.”*

Finn's intervention is done with a general view, where he explained that solving problems in teamwork by brainstorming is beneficial for all the members when analyzing issues, especially for cadets. This is because all members contribute differently in solving problems and learning from each other with different perspectives; a knowledge phenomenon that can be beneficial for beginners, as the description shows:

*“An excellent way of learning on board, especially when you are new, is to do brainstorming; people pick up information differently, and some remember one thing, others remember another thing. In teamwork, you can take advantage of that situation, so you have three persons working together, there is a lot of knowledge about a task going on, and you as cadet can observe that for your convenience.”*

As observed, the participants expressed their own experiences and opinions on how new elements learn practical knowledge inside teamwork by working together, talking in meetings, and brainstorming, where the information is shared from those who have more experience to those who are new. Furthermore, they specified that some information is difficult to find on paper. Therefore, this learning method in a group is suitable in those scenarios.

Until now, the data that has been presented provides information about how beginners seafarers learn practical knowledge with the help of paperwork and teamwork. The following section will explain how more experienced personnel manage knowledge to build maritime competence in the praxis.

#### 4.1.2 Advanced seafarers: senior officers stage.

This section presents the participants' thoughts about how experienced seafarers manage their maritime competence in acquiring new knowledge and handling a previous one. In other words, how they learn new things and manage vast experience during a professional stage where members have been sailing for many years. Once again, paperwork and teamwork have become suitable methods for managing knowledge during this stage. However, in this opportunity, the participants provided aspects that implied positive and negative angles of paperwork as a supporting learning tool and teamwork as group learning.

##### 4.1.2.1 Paperwork for senior officers

The previous section presented the participant's explanation of how they believed a beginner seafarer acquired practical knowledge, where paperwork appeared to be one of the tool methods for accomplishing so. This time it was asked if paperwork still has the same relevance for them as experience seafarers, where their answers showed the positive and negative implications of using paperwork when a seafarer has more experience, meaning that paperwork is used as a knowledge updating tool and compliance tool as positive sides. However, on the other hand, they also suggested that paperwork can limit professional knowledge and reduce situational awareness. For that reason, this section would be divided into two sections: positive and negative aspects, presenting what the participants believe concerning to knowledge management of senior officers.

##### 4.1.2.1.1 Positive aspects: updating and compliance tools for senior officers

While the participants were answering, if paperwork continues to have the same application for senior officers as for beginners, their answers reflected the positive views of the use of paperwork on senior officers, meaning that paperwork: checklists, work permits, or any document produced by a safety system, helps them update their knowledge according to the market's demands. Furthermore, some participants meant that paperwork has a compliance role more than an educating one, meaning that papers assist senior officers as evidence of what they did previous to an accident, as the following quotes show next:

Erika provided her perspective of how she does things at work since she is a senior officer using paperwork, adding that the maritime industry constantly changes. Those changes can be new rules, new operational parameters, or any new aspects of how things should be performed. For those reasons, any paper that contains this information is vital for senior officers who need to update their knowledge to comply with the market's demands, as the quote below points out:

*“While time passes by, there always appear new things, new operational criteria, or something different in the way an oil rig operates. Consequently, those who design documentation create papers differently from those you had before because things are changing. Therefore, when I read a document, I learn those changes. A seafarer needs to be updated on what is going on around because everything changes in the maritime industry constantly”.*

Andreas offered a general perspective, remarking that SM documentation has the same relevance for junior and senior officers. He meant that the difference lies in an experienced officer's practical wisdom. He also added that crewmembers could update their knowledge with the information written in SM documentation as rules, procedures, and new vessel's characteristics, as he quoted below:

*“Documentation from an SM system is as relevant to both a cadet and an experienced officer. The difference here is that the senior officer has more background, more practical knowledge, and knows how to solve situations. Still, documentation provides information related to new rules, procedures. It helps you understand things better, primarily if you work in a different boat to the one you worked on before”.*

Hugo gave a general perspective, adding the compliance nature of paperwork for a senior officer in his description. He said that the information that a checklist carries is the one senior officers already know. So for that reason, paperwork is more a compliance tool than an educational one, as he quoted below:

*“Documentation is necessary, but it is not 100% important. What I want to say is that a checklist will tell you to do A, B, and C, but you already know it. So, when I fill them, I already know the parameters, which means that it is not so important for knowledge, but its importance goes more as a proof of evidence in the case of accidents”.*

As observed in this section, the participants described situations where the SM documentation assists experienced personnel to update their knowledge as the market demands change. Furthermore, a participant added that the SM documentation as checklists are being used more as evidence of compliance so that the information it carries has no relevance for learning. However, apart from offering positive views, the participants also explained that paperwork could negatively affect more experienced personnel, as described in the following section.

#### *4.1.2.1.2 Negative Aspect: Paperwork limiting criteria*

As the participants were explaining how relevant paperwork continues to be for senior officers, negative implications began to appear in their narratives, where the participants explained that paperwork could reduce situational awareness. Moreover, they also explained that it could reduce the possibilities of using the thinking process of seafarers who got used to verifying documentation instead of using a mental state where the person can analyze circumstances and think over them, concluding that paperwork blinds them. For those reasons, paperwork can limit criteria, as the quotes below explain:

Ben offered a general view, explaining that when you are doing paperwork, you are focused only on that, which does not allow you to detect any fault since your attention is on the paper. Also, he referred that some crew members become blind due to paperwork, which reduces their capacity for self-thinking, as he explains next:

*“You are filling paper for the paper, taking your focus away from the activities. Moreover, you get so linear with documentation that you stop thinking ahead. You are not able to see more since you believe blindly in the paper. Maybe, you are in front of a fault, but you have no time to see it because you are only checking the paper”.*

Andreas provided a general perspective, where paperwork reduces the attention to essential matters in operations, meaning that safety can be compromised due to the crewmember's concentration on papers. Moreover, he mentioned that paperwork could lessen the opportunity to develop professional judgment since seafarers stop thinking by themselves when they fill in checklists as a routine task and do not compromise their thinking process.

*“You get to focus only on the document, and you don't see the fault that is next to you. Maybe, there is something wrong two meters to your left or right, and you don't see it because you are so concerned about the checklist and performing it. And unfortunately, with time, you stop thinking since it is easy to verify the checklist, and you don't involve your professional wisdom in it.”*

Gabriel provided a general perspective, where he referred that trusting blindly in the SM documentation does not allow the crew member to develop a common sense that is vital for solving issues. He specified in his quotes that a crew member would not be able to solve a problem if this issue is not described in the document meaning that this person cannot use his mind to solve it.

*“When you trust too much in documentation, you don't develop that common sense or wisdom for solving things. For example, what would you do if something is not in your procedures or a risk that was not described before appears? You cannot find a solution because you used a paper for all and don't use your common sense.”*

As observed above, the participants shared their general perspectives concerning how paperwork could reduce the possibilities of developing common sense and professional judgment, implying that SM documentation can affect a person's thinking process. Hence, the participants added that filling in paperwork takes the attention away from critical aspects in operation that could affect the safety on board, concluding that paperwork could adversely affect the senior officer's praxis.

Until this section, the participants have provided their perspective regarding how paperwork contributes to and affects senior officers' knowledge management. In the paperwork contribution to senior officers, the participants explained that paperwork assists them in updating their knowledge. Thus, they use it as evidence in case of accidents. Nonetheless, paperwork has adverse effects on the senior officers' praxes since it can blind and reduce the opportunities to develop professional judgment.

On the other hand, the participants not only referred to paperwork. They also mentioned that learning in a group is still relevant for senior officers inside their knowledge management. Moreover, in this opportunity, they also provided positive and negative implications of senior officers' group learning that will be explained in the following part.

#### 4.1.2.2 Group Learning for senior officers

Previously, it has been presented the participants' descriptions of how they believe a beginner seafarer acquired practical knowledge, where group learning appeared to be as well one of the tool methods for accomplishing so. However, it was asked if group learning still has the same relevance for experienced seafarers this time. Their observations showed the positive and negative implications of group learning when a seafarer has more experience. For that reason, this section would be divided into two: positive and negative aspects of group learning for senior officers.

In the positive implications, the participants meant that group learning still has relevance for experienced crew members like beginner personnel. They mentioned that experienced personnel unfamiliar with new vessels and operations need support from those who have more context in them. This support is done by sharing information in teamwork. Furthermore, they also implied that every member has different perspectives and experiences that contribute to solving issues independently of the working status of each crew member.

In the negative implications, the participants meant that in group learning, seafarers might have a member with an excess of confidence due to his experience, meaning that this scenario can create discomfort and generate unsafe performances. Furthermore, overconfidence in group learning complicates the praxis since the members might use their experience as a shield for avoiding applying new regulations and suggestions in the teamwork.

##### 4.1.2.2.1 Positive Aspect: Relevance of teamwork

While the participants provided information about how group learning continues to be relevant for those who have more experience, positive implications began to shape during their interventions. The participant's answers showed the importance of sharing information in a group, meaning that independently of the experience of a seafarer, there is always new information. For that reason, experienced personnel would get support from those who are more familiar with these new settings. Moreover, the participants also pointed out that every member provides different inputs to problem-solving due to their diverse backgrounds and perspectives. For those reasons, group learning has positive aspects for the senior officer's knowledge management, as the quotes would describe below:

Erika claimed the importance of sharing information between the members by working together, independently of the person's experience. Every boat has different characteristics that can be new for experienced personnel; consequently, it is better to get support from those familiar with it, as she talks about herself in the quote below:

*"I have relevant experience now because I am a chief engineer, but not every boat is the same. For example, now I am replacing a person, and I have no understanding of my actual boat for obvious reasons. Therefore, I ask many questions to my first engineer; he is around 70 years old, and he knows everything about this vessel. I think that the experienced person needs to learn the new specifications of a new ship. Therefore, it is helpful to use the experience of others".*

Ben emphasized the importance of teamwork, meaning that members share different perspectives and learn from each other even though the members are leaders of a department on board, as his general perspective shows:

*“Running a ship is important, but the most important is to work on a team, so you can share ideas from others and learn from others’ experiences even though you are the top leader.”*

As observed above, the participants share their perception regarding group learning for senior officers, implying that operations and vessels are different. Therefore, even experienced personnel might need help from crewmembers who are more familiar with those operations and boats. Furthermore, they agreed on the importance of brainstorming in teamwork, where every element contributes differently and teaches each other. However, despite those positive implications, the participant's narratives also offered information wherein group learning can have components that can negatively impact the praxis, as described in the following section.

#### *4.1.2.2.2 Negative Aspect: Overconfident member*

As the participants talked about how relevant group learning is for senior officers, negative implications also appeared, referring to having an experienced member with overconfidence in the crew. First, the participants explained how overconfidence in senior officers affects the crew's performance. Furthermore, they also explained how overconfident senior officers have difficulties accepting and applying new rules, procedures, and even their co-workers' suggestions, making it difficult for the members to work together, as the quotes below explain:

In Daniel's narrative, it was observed how having an overconfident officer harms the crew's praxis, generating unsafe performances and discomfort. He meant that some crewmembers could have difficulties accepting new procedures or new opinions, using their years of experience as a shield for avoiding applying this information, a fact that has consequences in the group learning of the crew, as he refers next:

*“Some crewmembers believed that because they have been working for more than 15 years, they know everything, and they reject new procedures or new opinions from others that perhaps have less experience than them. But, most of the time, it creates discomfort and sometimes accidents because a senior officer doesn't hear or trust new stuff. What he says is law, and that affects the teamwork.”*

Hugo added the complications of having experience officers, meaning that it is impossible to teach them new operational settings for some. These officers refused to change their praxis, implying that nothing had happened to them in all their years of experience. For that reason, they aren't accessible for the rest of the crew, a fact that affects the group learning, as the quote portrays next.

*“When some officers have too many years in the carrier, they are untouchable. You cannot teach them new procedures or rules because they refuse to follow them. They say that they did it million times, and nothing happened to them. So it is dangerous to believe yourself super powerful. They only misguide the crew.”*

As is appreciated above, the participants believe that some experience officers have too much confidence in their abilities. These facts can negatively affect learning and applying new instructions, rules, and regulations. In addition, a crew member with these characteristics could neglect safety since this senior officer has done it his way for years. For that reason, this officer would continue like that even if these actions could put the crew in danger. Moreover, an overconfident member affects the crew's performance and group learning for all.

The data presented until now has described information about how advanced seafarers learn and maintain their practical knowledge, pointing out some of the positive and negative implications of paperwork and group learning for senior officers. However, this information does not report any information regarding Brazilian operations. For that reason, the following section will introduce what the participants commented about building up maritime competence.

#### 4.1.3 Building up Maritime Competence in Brazil

As seen previously, the data provided by the participants did not link any narrative with the way operations are specifically carried out in Brazil. For that reason, it was asked to be more specific in how seafarers learn maritime skills in Brazil. However, for the record, their answers focussed only on the beginner's phase and not on an advance one, claiming the difficulties cadets experience in learning seamanship's skills due to the Brazilian regulations and amount of paperwork, as the quotes explain below:

Gabriel's perspective compared his cadet learning experience to how cadets do it in Brazil today, implying that cadets are becoming office workers. Furthermore, they are forbidden to go freely around different departments in the vessel, reducing the learning opportunities since they are only allowed to be at the bridge due to the vessel's insurance policy, as the quote below explains:

*“Now we are forming secretaries. Cadets do not have the same formation as we had in the past. Here, the cadet must be touched with tweezers. There aren't many things that you can do to teach them. For example, cadets cannot go on deck to work with oxide because it is forbidden to send them on deck by the company. Neither deck cadets can start up a pump in the engine nor learn something from the engine room because it is not their working area. Deck cadets are limited to the bridge, can go out to inspect lifesaving appliances and do paperwork, but are not allowed to be on deck or in the engine room due to the boat's insurance and company's requirement.”*

Daniel expressed his concern about how cadets would learn the practical skill since they cannot be in touch with the vessel. According to Daniel, the cadets are restricted in their activities, making learning stuff challenging. Thus, cadets assist officers with filling documentation due to the paperwork load on board. He also offered a narrative comparing his experience with how cadets learn today in Brazil, as the quote describes below:

*“When we were cadets, we could be in touch with the vessel. Now, I have no idea how they would learn that. They are not allowed to do so much stuff on board, and since we have a lot of paperwork, they only learn that.”*



As observed above, companies in Brazil or Brazilian regulators restrict the cadet's activities, causing limitations in their training period. Also, both participants claimed that cadets are learning many paperwork-related activities due to the working paper load and the operational constraints that cadets face.

#### 4.1.4 Conclusion of building up maritime competence

This study's first area of interest is how seafarers learn and manage seamanship skills. The participants provided information on how beginners and advanced seafarers acquire and maintain their knowledge, presented in three sections.

In the first section, the data presented showed the participant's perception of how paperwork and group learning contribute to the cadet's and junior officers' professional development. They referred that paperwork serves as a preparation guide that provides the necessary context for safely performing activities. Furthermore, it is used as objective items for investigation in beginners' training periods. Although the paperwork has an active role in building up maritime competence, the participants mentioned that it was insufficient since they believed it is significant to learn in groups by teamwork, where members share information. Information that can be difficult to be found in papers.

In the second section, the data presented showed the participant's perceptions of how paperwork and group learning contribute to and affect the senior officer's professional development. In paperwork as positive aspects, it is described how experienced staff use paperwork as updating and compliance tool. While in paperwork as negative aspects, it is explained that paperwork limits professional judgment and reduces situational awareness. On the other hand, in group learning as positive aspects, senior officers still transfer information through teamwork with members who are more familiar with new operational characteristics. While, in group learning as a negative aspect, it was described how overconfidence in a group member affects the teamwork by generating danger and discomfort in the partnership.

In the last section, the data presented showed the participant's perceptions of how challenging is to learn seamanship skills for beginners in Brazil due to the regulated system and paper overload in operations, being this last section; the only one that links information to the way operations are performed in Brazil.

The following section will present the second area of interest in this study, which is seamanship and how the participants' notions of the concepts seem to be affected due to the way operations are being performed in Brazil.



## 4.2 Seamanship

Seamanship became the second area of interest in this study. Therefore, the following section will be divided into three main groups: seamanship, future concerns, and Brazilian paperwork.

In the first section, the participants were asked what they understood as good seamanship. Their notions of the concept highlighted some necessary qualities as main characteristics for a seafarer to accomplish good seamanship. These distinctions are being professional, thinking inside of safety, prioritizing activities in crisis, being responsible and resourceful. Their answers showed perspectives towards their concept into general notions, regardless of the ongoing changes in the maritime industry or location.

In the second section, the participants were asked about seamanship and its connection to Brazilian operations. As a first insight, the participants provided information where paperwork became a recurrent topic in their descriptions, showing their concern for future generations of officers that would find challenges in developing seamanship skills under these praxes.

In the last section, it was asked the participants to provide descriptions of the paperwork involved in their vessel's operations to understand how operations in Brazil are performed. Their narratives showed the number of papers they complete, the number of signatures they make, and ongoing changes in documents officers face every day, meaning that they are excessive. Also, information regarding the procedures behind some documents was described, highlighting that procedures delay operations and create conflict with the client, who demands more effectivity in less time, where the client is frequently the oil company that is paying for the offshore services. And finally, the participants expressed the conflicts generated around work permits requirements, which increase the complexity in operations where documents have become issues in the praxis of these participants.

### 4.2.1 Seamanship's concept

This section presents what the participants understood about good seamanship. Their answers provided a general notion of the concept, which does not include any Brazilian context and ongoing tendencies in the maritime industry. Nonetheless, the participant's quotes highlighted the different abilities, including professionalism, prioritization, resourcefulness, and responsibility, which are qualities that are mainly accentuated during their interventions, as presented next.

Daniel offered a concrete definition, emphasizing being a knowledgeable professional as the main quality. As it can be seen, inside his notion of the concept, a seafarer must have a professional formation that makes him capable of performing activities in response to maritime demands and according to professional standards acquired during his academic construction, as the quote specify next:

*“A professional who does his job good; he knows the rules, procedures and does his job in a good way.”*

Finn provided an explanation where an experienced seafarer has to be a safe thinker as the main characteristic, where the concept of safe thinker involves qualities like awareness, responsibility, patience, concentration, and thoughtfulness, among other attributes that help this person find solutions inside those qualities as the following description implies:

*“Experience people who can think and do things with safety, that can see solutions for things. If they cannot solve situations with safety, then it is bad seamanship”.*

Andreas gave a notion of seamanship where the main quality is prioritizing, which means that this seafarer can decide what to do immediately and later according to the importance of the matter. This factor would allow the seafarer to control critical situations due to his ability to prioritize actions in crisis, where we can be able to see good seamanship as the description shows below:

*“In my opinion, to have good seamanship is to be able to take the correct decision at the right time like in case something happens; you have a loss of power situation when everything is black, then what is important? Is it the three hundred alarms you have on the alarm system, or is it to get the power back and deal with the alarms later? So, what is important at this moment? So, you need to know what to do in case of the unexpected because it is not during routine work that we see good seamanship; it is during a crisis.”*

Erika explained her point of view, where the main quality of the concept is to be resourceful. This implication indicates that a seafarer has to have the capacity to utilize his resources which can be limited according to circumstances, forcing the seafarer to act as an improviser of solutions with the existing material. On the other hand, it is known that life at sea can be complex; for that reason, a seafarer must not allow problems to affect his performance since this can compromise the crew’s safety, as the description explains below:

*“To have good seamanship means to do your job with what you have there, which means, for example, to solve situations with the resources that you have there. For example, rich and poor companies are missing some materials, so you have to handle the situation with limited resources.*

*I also believe good seamanship allows you to be able to keep your issues on land and not on board so that you can be focused on your job.”*

Gabriel offered a description where responsibility becomes the main quality in his concept. Sailors can learn and develop several abilities, but all of them must be combined with accountability. Therefore, a seafarer is aware of their career's commitment to the human lives, the social responsibly towards the environment, and their company’s interests, as the quote describes below:

*“For me, it is responsibility; I believed that seamanship covers many things, but all of them go with the hand of responsibility. A sailor has to be responsible at any moment of his job because he is growing and learning new things. Being accountable has a significant impact on the concept because we handle human lives and protect the environment. Hence seamanship has that”.*

To conclude with the participants' perspectives regarding seamanship, their concepts showed us the diverse qualities seafarers must own to perform activities inside good seamanship. These qualities include professionalism, safe thinking, prioritizing, resourcefulness, and responsibility, which all can describe the participant's notion of the concept. For the record, their concepts do not implicate present tendencies of the current praxis or reflect any information that can link the study to a particular country.

The following section will present the participant's information related to one of the current tendencies in modern operations, which implies the way operations are generally performed inside this trend, which is paperwork load. This causes concern for the participants regarding the future officer's formation under circumstances where paperwork plays an essential role in the praxis.

#### 4.2.2 Future concerns

During the interviews, it was asked to the participants the implications of seamanship in Brazilian waters, where inside their answers, it was shown that paperwork was a recurrent word in their descriptions. The participant's contribution described situations regarding paperwork and how operations significantly impact how seamanship is performed, resulting in worries about future officers' development under these operational praxes. This information would set the introduction for showing the context of Brazilian operation, as the following quotes describe:

Hugo detailed the job's description during operations in DP, implying that the two officers at the bridge, senior and junior, divide their responsibilities by being the last one in charge of filling in the paperwork related to the operation. The situation caused concern since junior officers spend too much time doing paperwork and do not learn seamanship skills, which is becoming a common situation in operations around the world, as the description presented below indicates:

*“Nowadays, the senior officers are focused on operations in DP, weather conditions, sailing, and those things, but those in charge of all the documentation are the juniors. I understand it is teamwork, but the one that does most of the documentation is the junior officer while the senior is maneuvering the vessel. Therefore, I see that it is so much documentation here that the junior officer is no longer how it is supposed to be since he spends more time sitting in front of a computer and not learning how to sail”.*

Hugo also added the lack of chances junior officers have to learn seamanship skills due to the time and effort they dedicate to paperwork. Junior officers spend many hours doing paperwork, which does not allow them to get involved with the seamanship practice that every seafarer must own to acquire experience and therefore upgrade their positions to the following. Apart from this, it was also described the necessity of having two officers during DP operations to assist themselves in critical conditions, as the narration claims below:

*“In Brazil, a junior officer spends more time sitting in front of a computer than behind a steering rudder, and I make myself a good question... how the future senior officer would maneuver and maintain the boat? So let’s try to teach junior officers in their free time more about the vessel’s behavior. After all, they must know how to sail a ship because they are the future captains.*

*If there is an emergency now, you need someone who can help you; that is why the rule says there must be two officers during operations all time.”*

Finn explained that a balance should exist between doing seafaring activities and paperwork. Nonetheless, in the praxis, he finds it challenging to accomplish it due to the paper load. Then again, how many activities seafarers must perform to achieve their job descriptions. It is important to note that suppose these professionals only focus on one activity; in that case, the other activities will be neglected, as the narrative below presents the challenges officers face in nowadays industry:

*“Sometimes you can get the impression that being good with checklists is the modern way of seamanship, but I think that being able to use the paperwork helps to make things easy and safe. But, if you only concentrate on the paperwork, other items will not be done well, so there should be a balance, and everyone needs to find that balance, and the question is if it is possible to find that balance in Brazil”.*

Finally, we can observe that the participants provided information regarding how paperwork creates concern in how seamanship is performed, presenting cases where paperwork has become an intense activity where junior officers dedicate long hours to complete and disregard the learning opportunities, affecting teamwork in emergencies and making it challenging to find a balance between paperwork and the praxis. Moreover, the keyword during the set of questions in the interviews was paperwork, which creates a cause of concern regarding the possibilities that beginners have for learning maritime skills in the current working environment.

On the other hand, the data presented in this section did not help describe Brazilian operations since they portray current tendencies in the different offshore fields around the world. However, it has served to dig inside the participants’ experiences to reveal information that provides the operational context of the country that will be presented next.

#### 4.2.3 Brazilian paperwork

As the interviews advanced, it was still unclear how the Brazilian operational praxes could cause concern regarding the officer's development under paperwork influence. For that reason, it was asked to the participants to be more specific by describing their daily operations, so we could understand the connection that has paperwork and the praxis in Brazilian waters, as the following quotes portray:

Ben described the bunkering operation at the engine room, where he highlighted the number of signatures and papers he was required to do during the oil transfers, implying that these papers were becoming more a more every day. Furthermore, the participant's most significant contribution from his quote is that he has never made as many signatures as in Brazil. This allows us to understand the proportions of paperwork, as the passage below tells us.

*“I signed more signatures in Brazil than I have done in all my life. For bunkering operations, for example, you have to fill in 8 pages and sign them, plus you must add a set of copies for the client and the supplier, and surprisingly every time, it was more papers.”*

Andreas began explaining one type of paperwork he commonly does involving bunkering activities. In his description, the engine officer must prepare eight pages of paperwork with copies to all parties involved in the bunkering operation. Apart from that, the essential information delivered is that he claims constant changes in Brazil. Every day, the client comes with more demands regarding documentation by making new versions of the same document, as the description below explains.

*“Generally, you have a checklist, which implicates a procedure on how I have to do something. So, for example, I have to go to the engine room; I have to check that nothing would cause an issue when we come close to land or a rig. It is the things that can be involved in a task, like bunkering papers.*

*The bunkering papers are around eight pages in Brazil, which become three sets of copies around 24 pages in total; one for our company, the supplier, and the client. But, it was getting more and more every time. If you got one page, then maybe it was increased next time with more questions, more things to do, and to fill in.”*

Finn also described bunkering operations papers. But, in his description, he explained the procedure behind those papers, where the oil pumping must be stopped halfway of the total amount. This action generates more paperwork since the officers at the engine needed to complete more checklists to reinstate operations. Furthermore, the most important information delivered by the participant is that during the paperwork, the participant signed 40 times, a description that indicates the amount of paperwork performed during this specific operation.

*“During the bunkering operation in Brazil, we had like three checklists to be filled out before we start, one for the company that I work for, one for the client we work for, and one for the supplier of the bunker. Also, there is a lot of procedures to follow that are included in all these checklists.*

*So, during the bunkering operation in Brazil, you have to stop halfway and do another set of checklists demanded mainly by the client and the supplier to start again. Then, finally, you must add the bunker delivery note and the last checklists. So, as you see, there is a considerable amount of paper; I think it was around 40 signatures at the end. But, it was what they wanted us to do, so we did it.”*

Daniel described the documents to be filled in during Dp operations: checklists, operational control lists, risk assessments, and work permits. The participant focussed on explaining the work permit and risk assessment procedure, where the officer must write the names of all crew members involved in the operation, meaning that everyone must read and sign the papers. The most crucial information he offered is that a work permit is open for routine activity. According to the participant, Brazilian work permits are applied differently from other countries. For example, the participant suggested that in different working locations, this paper is a document that should be implemented in high-risk activities such as working in confined spaces, working on heights, working with electricity, and not in an everyday activity as it is sailing or setting the DP system. For those reasons, there are checklists for assisting the seafarers in those tasks, as the quote explains:

*“There is a checklist of DP operations, but before that, you have to open a work permit, which is new for me. I think it is strange that you have to open a work permit for operations in Dp, which is a standardized operation for these types of vessels.*

*So, you do a checklist, an operational control paper, a risk assessment paper, and the work permit paper, which implicates doing what the documents indicate and write down the operation’s participants where they have to sign that they have read those papers.*

*This is not practical. So, you have the DPO on one side, and at the other side, it is the other officer in front of the computer doing a mountain of paperwork, not paying attention to the maneuver, and asking the crew to read the paper and sign them.”*

Daniel also wanted to share a situation that he has experienced recently regarding receiving provisions and spares on board. He explained that for operating a low-capacity crane used for carrying small pallets and boxes, the officer in charge must complete a series of documents demanded by the company’s ISM. In addition, according to the participant on board a vessel, the crew members allowed to operate a crane must have training courses, which means they have the correct instruction for doing so safely. Once again, this is a routine lift, which shouldn't be considered a job for opening a permit to work, as the participant explains next:

*“It is crazy. For example, a taxi boat is 20 minutes outside bringing material, and we get the message at that moment, so we didn’t have time to plan how to receive it.*

*So, for operating the crane, a permit to work must be opened. Therefore, the officer must enter the ISM system, open the file, and add two documents; the risk assessment and the preliminary risk analysis corresponding to moving the crane.*

*In the risk assessment, you must include the names of the participants and the names of the responsible officers. Then, you must add and fill in the work permit with the preliminary risk, which I consider a repetition.*

*The paperwork might take you some time, but you might finish them in 15 minutes if you are skilled in it. So as you see, you must print, fill in, and send it to the participants to read the papers, sign, and scan them. And finally, you can move the crane.*

*Before, you just needed the authorization of the chief officer to move the crane. Well, now you need a bunch of papers and signatures for using a small crane. That is insane.”*

Gabriel described the approach maneuver. In his description, it is possible to see the procedure behind this operation, which involves completing checklists. He declared that sailing alongside a rig took 20 minutes before; however, it takes 2 or 3 hours today, a situation that creates tension between the vessel and the client who demands to do the job in less time. Furthermore, the essential information he provided is that the crew invested time and effort in completing every step of the checklists. For the record, Officers must accomplish operations with paperwork with the same number of seafarers or less, as the quote describes below:

*“My boat is in charge of supplying diesel to rigs. So, before entering the safety zone, you must test your equipment, weather conditions, drift direction, and so on; that is your first checklist.*

*The second checklist is the authorization to enter the safety zone, including how to approximate: joystick and DP. Before, we could make this approximation by hand, which demanded less time for the whole bunkering operation. However, now we must follow the procedures from the paperwork, which requires approaching the first 300 meters in joystick at one knot and the following meters until being alongside the rig in Dp at a half knot. So, an operation that could be done in 20 minutes takes 2 to 3 hours, and this is only the approach.*

*After the approach, we have another checklist for bunkering operations that would take around 2 hours to prepare the vessel according to the papers, and the client is pressuring us to be done soon.*

*Also, the engine room has a checklist. As captain, I also have a checklist to verify the personnel on deck, and every checklist demand to follow a procedure; each step takes time, and we have the same amount of crewmembers and sometimes even less.”*

Hugo explained the papers involved in the Dp approach, where he illustrated a bit of the two simultaneous checklists the officer must complete. The first checklist is about the safety steps to take at different distances from the rig, and the second is about measuring released gases by the rig in another set of distances from it. Finally, he adds that these checklists are part of the beginning of the operation, pointing out that once the vessel is at the position, there is more paperwork to be done according to the vessel’s job. Furthermore, the essential information he provided is the number of steps an officer must consider, including his job related to safe navigation and preparing the correct documentation.

*“There is much paperwork involved in operations in Brazil. We have to follow different work permits, risks assessments, and checklists in various stages. For example, we must open a permit to work with a risk assessment for the approach. Therefore, we have four documents; the safety zone checklist, the operational criteria checklist, the work permit, and risk assessment for the Dp approach.*

*The first checklist we do is to enter the safety zone with procedures at 2 miles away, 1 mile away, 500 meters away, 250 meters away, 150 meters away, 50 meters away, and at the position. So, all of these procedures are inside the first checklist.*

*Meanwhile, we begin with the first checklist; we must start with the operational criteria checklist, which involves measuring toxic gases as the H<sub>2</sub>S that might come from the rig. So, the paper demands to measure gases inside the safety zone at 200 meters, 150 meters until the position.*

*Once you reach the working position, you must prepare new papers according to the nature of the operations as cargo or fluid transfer.*

*As you can see, deck officers not only must think in a safe approximation with analyzing meteorological conditions. We also must consider all the series of documentation that we must prepare for the operation.”*

Gabriel also explains the diverse paperwork they perform onboard, pointing out that the officers in charge spend 80% of their time doing them. He highlighted that the second officer's job is no longer to be a professional seafarer; it is to be a secretary for the proportion of his activities. The most crucial information he offered is the procedure behind the authorization for opening a work permit, where the crew must wait for a safety technician's approval on land for being able to start with the job.

*“The paperwork we do onboard is a series of documents as checklists that we must complete by following internal and external procedures from the company and the client. In the latest years, the amount of these documents has increased. Consequently, the second officers, initially our assistants, have become the boat's secretaries, spending 80% of their time doing paperwork, generally operational checklists, work permits, risks assessment, and many others.*

*For example, the work permit is around ten pages, which must be completed, signed, and added extra documents like a risk assessment in the same work permit. Moreover, the work permit has a validation time of six hours; therefore, if the job is longer than this time, you must open a new work permit, which means doing the same; fill in the same ten pages, with the same extra documents, and signatures for the same job.*

*When a work permit is opened, the authorized persons are usually the officers, the chief mate/engineer, and the captain. However, in the last years, the captain must send these papers to a safety technician on land assigned by the company, and he is the last person to authorize the job, which means the crew must wait for his approval, which can take 5 minutes or 2 hours. If he has not answered in two hours, the crew has wasted two hours, which means that I have to re-evaluate the situation because while we were waiting, the environment can change from the initial one, and I have to do it all over; again.”*

To finalize the section, we can observe the participants' descriptions regarding the implications of Brazilian paperwork in offshore operations, where the paperwork seems to be an issue for the seafaring praxis. They talked about the vast amount of papers they complete, the number



of signatures made on them, the endless paperwork increased as part of the local market demands, the delays they experience for trying to follow the procedures behind paperwork, the misunderstanding in the work permit's nature, the focus officers must put in several activities, the waiting time the crew waste for having the last approval in a work permit, the six hours validation time of a work permit, and lastly how they perceive second officers are changing to become more office workers than professional seafarers. As observed, the paperwork seafarers experienced in Brazil increases the complexity of a complicated working industry, as the interventions shown in the section.

#### 4.2.4 Seamanship's Conclusion

To conclude with the second area of interest of the thesis, the data presented in this subchapter has been divided into three categories: seamanship's concept, future concerns, and Brazilian paperwork.

In the first section, the data presented showed the participant's perception of having good seamanship, where it was described that a seafarer must have some main qualities like being a professional, a safe thinker, a prioritizer, a resourceful worker, and being responsible. Furthermore, their notions of the concept are presented as general information that does not connect their points of view with any modern tendency or location.

In the second section, the presented data showed how paperwork becomes a cause of concern for the participants due to their allegations regarding the paper workload in Brazil. They meant that future generations of second officers would find problems developing seamanship skills; nonetheless, they would be experts in paperwork. As observed, the descriptions in the section did not portray the complexity of the Brazilian paperwork. However, the data provided the opportunity to uncover specifications that allowed the investigator to understand that paperwork is an issue for the participant's praxis.

In the third and last section, the presented data allow the investigator to see the complexity of Brazilian paperwork during operations where the participants could illustrate situations that significantly impact how seamanship is performed in the country. The participant's descriptions portrayed information like the number of documents to be done with the signatures to make and the challenge of facing new documents every day, resulting in an exaggeration. Also, they mentioned some procedures behind paperwork that delayed operations, creating tension with the client who demands operations to be done quickly and efficiently. Furthermore, some participants explained the issues regarding opening a work permit where the regulators are imposing a validation time of six hours and the approval of an external person. Lastly, the confusion regarding the nature of the paper since they have to open a work permit for routine jobs. This last section allowed the investigator to understand how Brazilian paperwork impacts the participants' pursuit of good seamanship.

### 4.3 Result's Summery

The results in this chapter have presented two areas of study in demand of the research questions. For those reasons, the collected data has been organized into two main categories: building up maritime competence and seamanship, where it was explored the participant's perspective on Brazilian offshore operations' effects in their praxis.

In the first area of study: building up maritime competence, the collected data presented the participant's appreciation of how seafarers learn and manage their practical knowledge. Consequently, the participants provided information on the different professional stages identified as cadets/junior officers and senior officers. When the participants described the beginner's stage, they referred mainly to two learning methods: paperwork as a supporting learning tool and group learning for acquiring context. Although, on the other hand, the participants also expressed their opinions regarding senior officers' knowledge management, where they provided positive and negative implications about paperwork and group learning. The positive implications involved paperwork as an updating-compliance tool and group learning as a provider of new operational settings. In contrast, the negative implications reflected that paperwork reduces situational awareness and limits the self-thinking process, plus the complications of group learning with an overconfident member as the examples described in this section.

In the second area of study: seamanship, the collected data presented the participant's perception of what good seamanship meant for them, where main qualities appeared to provide a general concept. However, as the participants talked more about seamanship, paperwork became a topic inside their appreciation that caused concern for the maritime development of beginner officers. To this point, it was unclear if the participants were describing Brazilian operations. For that reason, they were asked to provide situations where the magnitude of Brazilian praxes could be reflected, as the examples illustrated in this section.

## 5. Discussion

This chapter will describe the most vital component of this master study, where the presentation of the final interpretations supported with the data collected and theory will be written (Bui, 2020). Therefore, the chapter will be divided into two structures: building up maritime competence and seamanship.

As a reminder for the audience, this thesis explores the relationship between seafarers and paperwork in offshore vessels operating in Brazilian waters to increase understanding of the effects of paperwork. Firstly, this study has considered several studies where researchers have: located the main opposition to rule-following perceived by seafarers (Knudsen, 2008), have explored the paradoxical relationship between the governmental deregulatory measure and organizational over regulations (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020) and have investigated how technological and administrative changes in the work environment have influenced the role of seamanship (Kongsvik, Haavik, Bye, & Almklov, 2020) as the leading theories for answering the research questions. On the other hand, it is significant to highlight that even though the paperwork effect is a topic of concern between researchers, all of the previous studies considered in the theoretical chapter were conducted in the North Sea. Therefore, it was interesting to consider another operational location as part of the contribution of this thesis study.

This study sample corresponds to seafarers with experience in Brazilian offshore operations, where the data collected from their interventions aim to find an answer for the following study's question:

Research question:

*“What is the role of paperwork in building up maritime competence in Brazil?”*

Consequently, for this research question, it is necessary to split the inquiry into the following supporting questions:

- *“How do seafarers build up maritime competence during their professional development?”*

Where the objective is to explore how practitioners learn and manage their knowledge throughout professional development; therefore, the researcher will reflect on what is essential while building knowledge and what influences this development. Additionally:

- *“What are the effects of paperwork inside seafarer's notion of seamanship?”*

Where the question aims to understand practitioners' understanding of seamanship and the paperwork effects in their notions of these concepts, consequently, the researcher will reflect on how seafarers perceive Brazilian paperwork and how the interaction paperwork-seafarers is.

## 5. 1 Building up maritime competence

This section will discuss the following question:

*“How do seafarers build up maritime competence during their professional development?”*

Maritime competence is developed during different stages of a sailor’s professional career path. However, the way people learn might vary according to their experiences or previous knowledge: which can be theoretical or practical. For those reasons, this section will be divided into two learning perspectives: beginners and experienced seafarers, according to the processed data. Furthermore, in the end, a discussion linked to developing competence in Brazil will be included for answering the research questions.

### 5.1.1 Beginner maritime competence development

The findings in this section are centered on how junior officers or cadets learn practical knowledge throughout their first experiences on a vessel. Beginner officers' perspectives regarding knowledge acquisition are divided into two main methods used for their professional formation. The two main methods suggested are: learning with paperwork as a supporting tool and learning through the social interaction of members and teamwork.

#### 5.1.1.1 Paperwork for beginners

The findings suggest that seafarers use SM paperwork for acquiring knowledge. Whether practitioners use these papers as a preparation guide for understanding the operational context or as a learning objective for cadets, paperwork is being used as an essential means for acquiring more information on the diverse activities inside offshore vessels.

The arguments of this section described that inexperienced seafarers use paperwork as a guide. For example, many began their professional duties without ever being on a ship’s deck in their lives. Therefore, in their efforts of coping with daily praxis, seafarers go through relevant documentation and even verify the SM system where they can find essential information related to their job. So, in short, we can say that the documentation applied in these scenarios reflects positive results for the practitioners who lack operational context and experience, who are primarily beginners.

The theory tells us that novices’ behavior is sequential and firmly related to regulations (Knudsen, 2008) by taking every step by the rule (Dreyfus & Dreyfus, 1980, cited in Mackinnon, 2012). Indeed, the findings confirm the strong connection between beginner practitioners and written procedures, which agrees with the skills acquisition model (Dreyfus & Dreyfus, 1980). Nonetheless, this strong relationship has an instructional nature, which means that seafarers depend on written procedures as a learning process. Furthermore, this characteristic implies that seafarers lack operational context, practical knowledge, and self-confidence, which force them to rely on written procedures as learning tools for acquiring what they lack: experience.

#### 5.1.1.2 Group learning for beginners

The findings also suggested another method regarding practical knowledge acquisition, where the members use social interaction, cooperation, and teamwork to learn from mentors who have more experience with the profession. This phenomenon occurs by the oral transfer of knowledge and collaboration with crew members that have experienced similar situations or know more about the operational context, all done through the seafarer's COP.

These thesis' findings have traces of the COP theory and *phronesis*, but why do we link *phronesis* to these findings? According to Schwartz (2009), *phronesis* is accomplished by experience, where he implied that *people need the time to know their jobs, where they are allowed to try new things, to improvise, occasionally fail and see these failures as opportunities to learn by the hands of wise teachers, who have experienced similar situations* (Schwartz, 2009), with the use of *war stories*. Therefore, for accomplishing experience, practitioners need the formation of a COP and depend on wise teachers who own *phronesis* in the maritime domain to teach novices. Thus, seafarers acknowledge the importance of a practical approach inside a COP rather than the theoretical one.

The theory says that members share interests and membership that help them distinguish themselves from another profession (Wenger, 2002, cited in Gray, 2004), implying a process of auto-identification which creates bonds, a situation also reflected in Knudsen's term "*a blend of professional pride*" (Knudsen, 2008). Consequently, these study's findings support these theories by showing the formation of a seafaring COP as part of a traditional way of learning, where members have strong connections and share a common identity, as Knudsen argued as well. Therefore, seafaring is a strong community, where members are proud of themselves and work together to accomplish what they consider good seamanship.

Additionally, as part of the importance of developing a COP, seafarers recognized that not all information could be presented in books or acquired in a class where *Thecne* is observed. Actually, this section's results propose a type of knowledge that can only be developed through the experience gained over the years and cannot be passed on by a set of instructions, manuals, and books, known as *Tacit Knowledge* (Ribeiro, 2012). Indeed, tacit knowledge is contrary to *explicit knowledge* and generally is defined as the knowledge that can be articulated in the informal language (Nonaka & Takeuchi, 1995, cited in Ribeiro, 2012), which is the essence of seafarers' COP explored in this thesis as part of this thesis' contributions.

#### 5.1.2 Experienced seafarers' competence

The findings in this section are centered on how experienced officers manage their maritime competence in acquiring new knowledge and handling a previous one, which means how senior officers learn new things and apply this information with the vast experience that they already have. Once again, the suggested methods used by seafarers are paperwork as a supporting tool and group learning through the social interaction of members and teamwork. However, the results proposed positive and negative implications of both knowledge management methods in this case.

### 5.1.2.1 paperwork: implications

The results showed that paperwork is a tool used by experienced officers to manage previous and new knowledge. However, the use of paperwork as a learning tool appears to have positive and negative consequences for senior officers.

#### Positive effects:

As established in chapter 2, the maritime industry is continuously changing, and due to that dynamism in operations, seafarers are forced to learn more often. Consequently, practitioners use paperwork as a learning tool, so they learn new rules, procedures, or any new information, which is, in other words, to keep themselves updated. Furthermore, it is known that SM systems are developed to comply with regulators' demands. Therefore, it is not odd that practitioners use any document produced by an SM system to learn the market's demands due to its reliability.

According to the acquisition model (Dreyfus & Dreyfus, 1980), paperwork has significant relevance for novices since they cannot act without going by the book. Indeed, this study findings suggest that paperwork for beginner seafarers has an instructional role as part of this thesis contribution, where paperwork is crucial during the first stages, as the model (Dreyfus & Dreyfus, 1990) proposes. Besides, Knudsen (2008) argues that a novice is a rule follower whose sequential behavior is strongly related to regulations, which are facts that agree with the findings regards beginners. Yet, Knudsen also suggested that as practitioners acquire more experience, rules and documents become irrelevant (Knudsen, 2008), which are facts that disagree with this study's findings. Actually, the findings suggest that paperwork, regulations, documents, or written procedures still have relevance for senior practitioners in the same way it has relevance for beginners. However, the reason behind this relevance for senior officers is focused on an updating and compliance nature. Therefore, these officers find paperwork helpful for coping with the newest demands in the offshore market and as a compliance tool.

Nowadays, societies have no option but to organize in the face of risk. This fact extends the reach of internal control into every aspect of organizational life (Power, 2004), where organizations are making solid efforts in doing *safety differently* and as demanded by regulators. Therefore, it is not odd that the results suggest the compliance nature of paperwork. Seafarers understand the importance of registering their activities, so they are not to be blamed in accidents. Størkersen, Thorvaldsen, Kongsvik, and Dekker (2020) argued that company management makes rules that operational personnel feel responsible for safe operations. Therefore, the management board cannot be responsible for accidents (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020), which is reflected in how seafarers pay attention to paperwork as a compliance tool, so they are not to be blamed in case of accidents. This fact explains how relevant paperwork for experienced officers is and agrees at the same time with the theory presented in chapter 2, where researchers proposed how managers develop written procedures to save their backs (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020).

### Negative effects:

This thesis results suggest that paperwork reduces situational awareness, but how can we understand that? According to the theory presented in chapter 2, Endsley's model (1995) proposes the different components of a person's SA. For example, the model illustrates an outer frame connected to operations' working conditions and design; *Task-system factors* (Rasmussen, Lützen, & Jensen, 2018). These factors are linked to stress and workload, being paperwork included on them. Therefore, paperwork influence this outer frame, which at the same time delivers information to the person.

This cognitive process helps seafarers understand what is going on and, according to that, make decisions and actions (Rasmussen, Lützen, & Jensen, 2018). But why is paperwork affecting the SA system? The results suggest that seafarers' attention is only centered on paperwork due to its volume. Indeed, paperwork forces officers to spend many hours completing them, which does not allow them to detect issues since they cannot perceive all the elements in a current situation occurring in the first level of the model (see the model in Chapter 2). Therefore, seafarers are not processing the complete information from the beginning of an event. As a result, their decisions and actions do not consider all possible issues in this event, where safety can be threatened. Therefore, as this study's contributions, we can say that the volume of paperwork affects seafarers' SA so that they cannot perceive all the elements that can produce issues in the praxis.

On the other hand, the results describe how the dependence on paperwork can cause professional judgment inhibition. For example, when seafarers use paperwork in a considerable volume, they do not involve a cognitive thinking process, where a person can evaluate a situation and analyze the elements for decision-making, which means they stop thinking. As suggested, paperwork overload lessens the opportunity to develop professional judgment since seafarers stop thinking by themselves when filling in a checklist as a routine task and do not compromise their thinking process. Consequently, we can add the power of making actions automatic, meaning that *system 1* controls seafarers' actions, but what does that mean?

Professional judgment is formed by experience (Knudsen, 2008). Nonetheless, when a practitioner is basing their practice on paperwork-oriented activities, there are few opportunities that this practitioner would be able to develop a solid maritime competence. Additionally, the results suggest that paperwork-related activities do not allow this seafarer to build up relevant maritime skills. Yet, when we speak about automatic actions, we refer to the theory of *thinking fast and slow* (Kahneman, 2013). Kahneman's theory describes the human thinking process, dividing it into *system 1*: the automatic-effortless system and *system 2*: the intense thinking that requires attention. So, how does paperwork affect the thinking process?

Paperwork such as checklists, work permits, risk assessments, and other documents produced in an SM system were made to assist officers with technicalities and specifications regarding a safe operation, a kind of know-how to do something, and simple to follow (Techne). However, when a person acts repeatedly, this person's activities regarding a document become automatic, implying that *system 1* owns the process, while *system 2* is on stand-by. These actions implicate a lack of development in the thinking process of a seafarer whose actions are commanded by



*system 1* and not *system 2*. Therefore, paperwork produces a blinding effect and stops them from developing professional judgment, which requires the use of *system 2* to be accomplished.

Seafarers' road for constructing professional judgment is becoming narrower due to technology and the growing proceduralization of the work (Bieder & Bourrier, 2013), where development, thoughtfulness, and seamanship are stopped as a consequence (Knudsen, 2008). Indeed, in Knudsen's study (2008), senior officers regret that the development and thoughtfulness are stopped by going according to the book, where thoughtfulness and common sense are often used with *seamanship* as the seafarers' response (Knudsen, 2008). However, apart from agreeing with Knudsen's results (2008), it is interesting to see the regulators' attempts to portray good seamanship praxis in written rules and procedures, something that Aristotle was afraid of in ancient Greek. Still, we can see that is happening in today's society.

#### *5.1.2.2 Group learning: implications*

The results showed that experienced officers manage previous and new knowledge with the help of group learning. However, this learning method appears to have positive and negative consequences for senior officers' knowledge management.

##### Positive effects:

The results suggest that senior officers still consider group learning to acquire knowledge even for experienced personnel, who have a repertoire of experiences that make them competent and able to handle many operational issues. Nonetheless, they are only qualified in marine activities where they have previous practical contact. Consequently, for those new activities where they ignore characteristics and specifications, they need the help of a seafarer's COP.

Indeed, the theory describes that traditional seafaring training is based on competence development through practice and oral knowledge transfer (Kongsvik, Haavik, Bye, & Almklov, 2020), which is no other than developing a COP, but why is it so essential to create this COP? According to one of the leading theories for this thesis, the authors suggest that a vessel is a traditional autonomous, isolated, and self-sufficient working community that requires cooperation and coordination from its members (Kongsvik, Haavik, Bye, & Almklov, 2020), which are matching factors with this thesis' findings where we see the COP in action due to operations nature even with experienced personnel.

##### Negative effects:

The findings offered the negative result of having an over-confident member in the COP, where a member with overconfidence generates unsafe performances and discomfort in the group, but how does this happen?

An overconfident member affects the crew's performance due to the difficulties of accepting and applying new rules, procedures, and even their co-workers' suggestions, compromising the harmony of the COP. Furthermore, they refuse to change their praxis, implying that they have done it a thousand times, and nothing happened before, but what does the theory of this thesis tell? Knudsen (2008) referred to the errors of expertise, indicating that the Dreyfus and Dreyfus model (1980) does not claim that experts can make mistakes. In fact, experts, or what the



researcher would like to call *senior officers*, can develop overconfidence, leading them to *tunnel vision*, as Knudsen also suggested. Factors that are observed in these results where we have noticed that seafarers with vast experience can experience these characteristics. Therefore, the findings agree with what Knudsen (2008) suggested regarding the *dangers of expertise* and how the *skills acquisition model* (1980) does not cover that area.

### 5.1.3 Building up maritime competence in Brazil

The findings provided in this section focus on beginner officers who have difficulties learning seamanship skills due to Brazilian regulations and paperwork load experience in this working environment.

The findings suggest expectations generated by the effects of paperwork in officers growing professionally under these operational circumstances of proceduralization. The maritime competence formation from officers who spend their hours doing paperwork is being affected. These facts implicate that they are becoming office workers or, like others, would prefer to call *secretaries*, but how come?

In Brazil, the findings propose that cadets cannot learn some practical skills since they are not allowed to be in touch with all the working areas in vessels. These circumstances imply that there aren't many things that mentor officers can do to teach them. For clarifying, cadets are not allowed to perform activities outside their working area. For example, deck cadets can only be at the bridge, meaning that they cannot explore the vessel since it is not allowed, and the same for engine cadets. Additionally, cadets assist officers in paperwork-related activities due to the vast amount of paperwork experienced onboard. These facts reduce the learning opportunities of these beginner practitioners, who will become experts in documentation rather than competent seafarers. A similar situation was argued in studies where researchers suggest the professional transformation from operators to system managers (Kongsvik, Haavik, Bye, & Almklov, 2020), which is also perceived in this study's findings.

### 5.1.4 Discussing the research questions

So far, the discussion in the complete section (building up maritime competence) has explored how seafarers construct their maritime competence during two professional stages: junior and senior officers, where the methods in use were paperwork and group learning. Yet, it is required to be more specific in answering the question, which is:

*“How do seafarers build up maritime competence during their professional development?”*

Seafarers acknowledge the importance of the use of paperwork for assisting them during both professional stages. Consequently, they see the benefits of its use independently of how they apply paperwork together with some bad consequences of its use. Nonetheless, the maritime working environment suffers constant changes that affect how operations are performed. As a matter of fact, many researchers are considering studying the effect of paperwork in modern society differently, where they suggest how paperwork interferes with seamanship (Knudsen, 2008) and how these changes in the working environment have an impact on the term (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020).

In the case of this study, the findings suggest that operations in Brazil are not distant from the conclusions of many actual studies. For example, in Brazil, it is experienced how regulators in *the call of safety* increase the number of procedures, rules, written documents, and so on, which agrees partly with the study on how deregulation can become over-regulation (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020), but why partly? Because we can see how functional regulations become over-regulation in this study's findings but disagree with the suggestion that regulators focus only on verifying that companies have an SM system. Indeed, in Brazil, if companies intend to operate, they must comply with the client's procedures or demands so that the boat can be allowed to sail in those waters. The example of bunkering operations shows that seafarers must complete many sets of papers for all parties involved. Some of those documents are not being designed by their company, meaning that the client imposes these demands. Therefore, the client has become a regulator that produces functional rules. These facts make side effects in the praxis, where we can see how functional regulations become over-regulation as the theory suggest. However, according to the findings, regulators don't only verify; they also make rules.

The findings suggest that Brazilian paperwork affects the competence formation in beginners who learn more paperwork-related activities because they don't have the time to practice maritime skills. Therefore, paperwork in Brazil has an obstructive role rather than an instructive one, reflecting in the concerns expressed by this study's participants towards new generations of seafarers and their competence under these operational praxes.

Under normal circumstances, seafarers acknowledge the importance of paperwork and how this has helped them learn new things and provided them with the necessary compliance mechanism in case of accidents. However, proceduralization is not only interfering with good seamanship praxis, as Knudsen suggested. It also affects the maritime competence of junior officers who are being formed inside a working environment where they dedicate most of their day to paperwork and do not have the necessary contact with maritime-related activities. So, their seamanship is fading, or it is just not being formed.

## 5.2 Seamanship

This section will discuss the following question:

*“What are the effects of paperwork inside seafarer's notion of seamanship?”*

In one of the leading theories of this study, the author has argued the constant rejection from the crew towards written procedures (Knudsen, 2008). Indeed, Knudsen explains how this proliferation of written procedures generates conflicts with practitioners who perceived these procedures as counteracting common sense, experience, and professional knowledge (Knudsen, 2008). For those reasons, this section will discuss those points to verify Knudsen's findings. We have to remember that all the leading theory considered in this study was conducted in vessels operating in the North Sea, facts that are contrary to our study's sample (Brazil) as contributions.

### 5.2.1 Notions of seamanship

The findings brought to light the participants' thoughts regarding the qualities of having good seamanship according to their perceptions, which have been formed as part of their cognitive contact with the maritime world gained through their experiences.

The qualities mentioned in the interventions are: being professionals, safe thinkers, responsible, resourceful, and prioritizers during a crisis. However, we understood that to accomplish most of these characteristics, the seafarer would depend on the practical contact with an event or occurrence that would impact their knowledge or praxis, which, in other words, means that sailors depend on time and practice to achieve them. For example, when seafarers begin their career path, they start acquiring knowledge with a theoretical approach received in an educational institution to comply with societal values and the STCW, which implies that they are inside the professional characteristics of seamanship. But then it is asked how a beginner seafarer will be a safe thinker, prioritizer, or resourceful if they do not have a holistic view of the job. Furthermore, they ignore the context of operations since not all information is portrayed in a book or a class, needing the tacit of the profession. Apart from that, not all persons learn in the same way; some can learn with a theoretical approach, while others depend more on practice, which all depend on each individual.

Knudsen argued that *seamanship is more than what we can learn in schools* (Knudsen, 2008, s. 295), which implies that even if an officer follows the formal educational path, they need more. Indeed, they need to be in touch with operations since not all information can be transferred from the text (*techne*), and not all persons learn in the same way as the findings suggest. Moreover, they need this practical touch to learn by trial error and oral transfers from others who have more experience, which resumes that beginner seafarers need building experience through the praxis with the help of a community of practice and other tools as paperwork, which were described in the previous section (5.1).

So, this study's findings suggest the need for experience to reach most of the qualities inside good seamanship, where the experience will be accomplished with time, and with that time also will come wisdom but not any wisdom; it is the kind of knowledge that would allow the seafarer to have critical thinking for everyday routines and if issues arise. For instance, Schwartz (2009) explained that a person with experience would know how or when to make rule exceptions and improvise, respecting operational parameters with the moral will and skills (Schwartz, 2009), which is no other than having *practical wisdom*. Ergo seamanship is correlated to *phronesis* as this study's contribution. However, for accomplishing so, the crew member needs practice, trial error, and oral knowledge transfer to learn, as suggested by Kongsvik, Haavik, Bye, & Almklov in their study (2020). Consequently, seamanship is developed through time and experience; therefore, it is not surprising that new officers do not consider the word since they don't have the experience or operational context to relate the term to their day-to-day practice. A similar situation was reflected in a study where administrative changes in the working environment have influenced the seamanship's term (Kongsvik, Haavik, Bye, & Almklov, 2020), where new practitioners do not relate the concept to their praxis.

Apart from correlating the term with *phronesis* as these findings suggest, we can say that the conceptualization of the term seamanship has been argued in different studies. For example, Kongsvik, Haavik, Bye, and Almklov (2020) have analyzed other perspectives on the concept, implicating “*skills, judgment, and work ethics*” (Kongsvik, Haavik, Bye, & Almklov, 2020), facts that agree with this study’s findings.

Inside work ethics, we can appreciate the following qualities: being responsible and professionals, which are characteristics, attitudes, and priorities in expected behavior for good seamanship praxis. Expected behavior among them, implying a community of recognition. Therefore, we must remember that the theory suggests that seamanship praxis is recognized, evaluated, and accepted among other crewmembers (Kongsvik, Haavik, Bye, & Almklov, 2020) inside the COP formed on board. Hence, this community of practice will set these qualities as expected behavior in performing good seamanship.

On the other hand, the participants also described qualities strictly linked to professional judgment as being safe-thinkers, resourceful, and prioritizers. These three characteristics are involved in proper conduct expected, including the ability of *proper judgment for handling changing and unforeseen situations* (Gilmore & Black, 1975, as cited in Kongsvik, Haavik, Bye, & Almklov, 2020, s.2). Yet, these characteristics appear in the competent stage of the Dreyfus & Dreyfus model (1980) when the person has acquired critical thinking for tackling new problems with an active decision making, which in other words means that the seafarer has scaled through the diverse stages of the model based on time and experience to accomplish them, meaning that a seafarer needs to be in their career path, and climb the different professional steps from novice to competent to be able to develop this professional judgment as we have to remember that “*a wise person is not born, it is made*” (Schwartz, 2009).

This section has discussed the participant’s seamanship term with the support of this study theory, concluding in the diverse characteristics a seafarer must own to comply with their notions of the concept. Features inside practical wisdom, work ethics, the community of practice, and professional judgment (respecting the theoretical approach) are accomplished with experience, training, and time as the skill acquisition model (Dreyfus & Dreyfus, 1980) suggest (practical approach). Nonetheless, the contribution of the findings in this section indicates the correlation between seamanship and *practical knowledge*, implying that new practitioners would not recognize the term since they lack experience.

### 5.2.2 Seamanship future

The findings of this section showed the levels of concern about how new practitioners would be able to learn and perform activities in a working environment where practitioners dedicated most of their time to paperwork as part of the participant’s perceptions of their jobs in Brazil.

Seafarers see how challenging it can be for new practitioners to learn and perform activities inside good seamanship practice. Likewise, the seafarer’s COP expects its members to act professionally inside their moral and ethical parameters, including the qualities discussed in the previous section; however, as *proceduralization* increase as part of the industry changes, feelings of concern appear as suggested by this study’s findings. Those concerns are based on arguments where paperwork challenges the balance between documentation and praxis,

meaning that junior officers spend many hours completing them. Therefore, these facts affect teamwork in critical situations and disregard learning opportunities for seamanship skills due to the long hours dedicated to paperwork. According to the skill acquisition model (Dreyfus & Dreyfus, 1980), we understand that for becoming an expert in an area or discipline, the individual should go through each of the stages in order to evolve professionally and to reach their goal of expertise which requires time, effort, and practice. However, how would you develop this professional wisdom or expertise since most of your working hours are focused on doing paperwork and not learning other activities more linked to seamanship? This fact became the central allegation regarding seafarers' concerns towards the future of new officers under a paper workload effect.

On the other hand, the results described an operational working environment where over-regulation is present. Navigators deal with the situation by dividing the job into two activities during DP operations: maneuvering the vessels, which in most scenarios is done by senior officers, and working with paperwork, done by junior officers (office workers), being these last systems managers rather than navigators, facts that are confirmed in the theoretical chapter where Kongsvik, Haavik, Bye, and Almklov (2020) propose the transformation of the profession from operators to system managers (Kongsvik, Haavik, Bye, & Almklov, 2020). Consequently, each officer is working independently rather than being part of a team. Therefore, this bridge team is weakened if unforeseen events happen, affecting the vessel's safety and not allowing them to perform good seamanship.

Recent efforts to generate safety produce a secondary effect, resulting in increased regulations volume, control, and administrative work such as any SM document, where these efforts are commonly called functional rule-making (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020). Nonetheless, it is known that functional rule-making goes against its primary objective, safety, since the paperwork navigator has no head for other activities, such as assisting the senior officer in a critical situation, as these findings propose.

Indeed, Knudsen (2008) argues that some of the reasons behind the aversion against introducing new rules and requirements on the written procedure are facts that contradict seafarers' experience of enhancing control, mistrust, and disrespect of their seamanship (Knudsen, 2008). However, this study's findings focus on that seafarers have no time to practice seamanship skills due to a transformation in their working activities caused by paperwork load. This fact implicates that they dedicate more hours to paperwork rather than sailing the vessel. Here, the findings propose that seafarers are skeptical about future captains' or chief engineers' maritime competence since they will acquire knowledge in a working environment with *proceduralization*. Therefore, their competence will be document-related rather than nautical-related.

This section has described how skeptical seafarers are regarding the professional competence developed as one of the effects of paperwork in the praxis in Brazil, where officers begin their career in an operational context where paperwork interferes with the formation of seamanship skills and consequently their good seamanship praxis. Therefore, as a contribution, we can say that the findings agree with Knudsen's study's findings (2008), where she suggests that paperwork is threatening seafarers' autonomy-authority and disrespecting their seamanship

(Knudsen, 2008). Yet, the findings indicate that paperwork also interferes with building competence as one of its effects.

### 5.2.3 Brazilian paperwork

The section is strongly related to the previous one. The last section discussed the levels of concern regarding the professional development of officers in Brazilian operations, where practitioners are learning more about paperwork than seamanship skills. This section will go deeper, which means that it will discuss the Brazilian operational context in diverse operations, which will explain why seafarers think that paperwork affects junior seafarers' practice and development of the competence described in section 5.2.2.

#### 5.2.3.1 *Brazilian bunkering operations in an offshore vessel*

Bunkering operations in these results describe the activity of receiving oil from the own vessel's consumption, which is frequently done at the shore.

These results suggest the procedures behind the bunkering paperwork, where engineers must prepare three sets of documents for three parties involved (own organization, clients, and oil suppliers), including checklists, risk assessment, and so on, becoming a total of 8 pages in each group of papers. Modern organizational design rest on principles of accountability, where managers make reports and measurements to show that operations are safe (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020). However, the results suggest that ship owners or ship managers are not the only ones producing reports and measurements to improve safety in this operational context. Indeed, in Brazil, the oil client and external companies (the oil suppliers) demand multiple copies of documents in response to Brazilian societal values, increasing document volume and affecting engineers' praxis. In addition, the procedure includes stopping in the middle of oil transferring to confirm some values, where officers must prepare more paperwork for reinitiating the transfer. At the end of this task, officers must sign around 40 times, suggesting that Brazilian offshore activities are extremely bureaucratic compared to other offshore activities worldwide.

The Brazilian operational context is focused on accountability, as the results suggest. Still, this accountability might rest in the roots of three mechanisms argued in a study where researchers have explored how functional regulation turns out in over-regulation (2020). These mechanisms deal in auditable documentation-making and manager's behaviors, reflected in doubts of few procedures that do not cover all and the decision to implement SM systems easily accepted by auditors (Kongsvik, Haavik, Bye, & Almklov, 2020), which might be the leading causes of the paperwork proportion in Brazil. However, the reasons for paperwork proportion in Brazil should be considered for further investigation, where a more extensive study can be considered.

#### 5.2.3.2 *Dp approaching operations in an offshore vessel*

The results provide information regarding the DP approaching operations to a rig, where practitioners must consider the following documentation: checklists, work permits, risks assessment, and operational control lists. Consequently, approaching a rig that used to take 20 minutes now takes around two hours due to all the steps involved in completing the documents mentioned above.



These results uncover traces of *proceduralization* as part of the changes in the working environment suggested in other studies (Kongsvik, Haavik, Bye, & Almklov, 2020). Shipowners implement SM systems as required from the IMO inside the ISM code. Nonetheless, Brazilian regulators introduce more documentation producing redundancy, bureaucracy and causing difficulty in the praxis, as suggested by Størkersen, Thorvaldsen, Kongsvik, & Dekker (2020), where they explain that in the efforts of “*safety call*,” impractical and extensive safety management are born (Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020), like the ones used by Brazilian entities.

### 5.2.3.3 Brazilian work permit

The results suggest the bad implementation and design of some of the work permits used during basic routines, causing misunderstanding in the work permit objective and implicating requirements that make this document complex to apply in the praxis, which is once again an attempt for doing “*safety differently*.”

The permit to work is a document that involves procedures to perform high-risk activities described in the following table:

Table 5 Work Permit (Manoj, 2021)

Work permits	Example of work
Hot work permit	Welding, cutting
Enclose space entry permit	Tank inspections, Tank cleaning
Electrical work permit	Electrical repairing
Working aloft permit	Working at height
Working outboard permit	Works outside ship hull
Cold work permit	Work with power tools outside engine room
Small craft alongside permit	Bunker barge alongside
Under water work permit	diving

The table above describes the working situations in which a work permit is required: welding, cutting metal, performing tank inspections that require entering an enclosed space, working in height or outside the ship’s hull, and so on, in other words, situations that involve higher risks which demand different procedures to ensure the safety of the crewmembers for performing them. Yet, in Brazil, regulators and local companies have imposed the necessity of designing work permits specifically for daily activities, such as port departure and arrival, sailing under engines, operations in DP, ship’s crane lifting operations, etc. For those reasons, seafarers argued the necessity of designing documents that match the praxis with the understanding of their profession. Nonetheless, according to Knudsen's study (2008), the distance boat-office is reflected in how landlubbers design documentation that lacks maritime common sense, meaning that the person in charge of it does not understand the career (Knudsen, 2008). Consequently, this study’s results suggest that the main opposition towards a permit to work designed in Brazil falls into an application that counteracts safety and maritime common sense, which at the same time interferes with seafarers’ notions of good seamanship which agreed with Knudsen’s findings (2008).

Indeed, the results suggest that proceduralization affects the praxis. For example, in the following description of ship cranes' operations, it can be observed how a routinary task has suffered changes that lead to over-regulation. This example fits with the descriptions proposed by Størkersen, Thorvaldsen, Kongsvik, and Dekker (2020), where they explored the mechanisms that lead to over-regulation: making work auditable, managerial insecurity and liability, and audit practices (Størkersen K. V., Thorvaldsen, Kongsvik, & Dekker, 2020).

The ship's crane of a supply vessel is a small capacity cargo handling crane, which objective is to facilitate carrying material, spare parts, or provision for the crew consumption or use. According to the seafarers' job descriptions stated in the SM systems, they are forced to get the proper education and certification (STCW, 1978). Therefore, they have the necessary knowledge and training for using this crane. Yet, in Brazil, practitioners need to fulfill many steps for using a crane, but why is this an issue for practitioners' praxis?

Because of the vast amount of steps implicated in using the ship's crane, where seafarers must do the following actions in today's Brazilian work permit for ship' crane lifting operations:

- Proceed to the vessel's office.
- Enter to the safety system.
- Located the file (crane work permit).
- Add two more files to this (risk assessment and preliminary analysis of ship's crane operation).
- Include in these papers the name of all personnel involved in the task.
- Print it.
- Meet the crew to read all these papers, follow the steps inside the documents and make them sign.
- Get the approval of vessels authorities (the captain, chief engineer, chief mate, officer in charge, and the safety technician).
- Scan them to enter them into the system.
- And ready to do the job.

After doing all of these steps and the procedures described in these papers (work permit, risk assessments, and preliminary analysis), the crew can move the crane. A situation that was different before since the crew members only needed verbal coordination and authorization from the vessel's top leaders. However, apart from these considerations, an extra authority appeared to be involved in signing these documents.

This authority is a safety technician located in a land office, where the findings suggest the negative impact of involving an extra person who is not on board, meaning that the crew must wait for their approval before they can begin with the task. Additionally, from the physical distance, the work permit has a six-hour validation time. Once the time has expired, the crew must repeat all the steps from the beginning and ask for new authorizing signatures. These facts portray that officers are losing the autonomy of their vessels, decision-making, and how paperwork is interfering with what they call good seamanship in the name of doing "*safety differently*," which is under the influence of *functional regulation*. A similar finding was discussed in Knudsen's study (2008), where the author mentioned the distance between



seafarers and landlubbers. Indeed, she argued that one of the reasons behind seafarers' negativity towards introducing new rules and demands on written procedures (paperwork) has to be understood against their experience of enhanced control, mistrust, and disrespect of their seamanship (Knudsen, 2008). Results that are not distant from the findings in this study. Ergo, paperwork in Brazil interferes with seafarers' notions of good seamanship.

Moreover, these results describe how paperwork affects the original jobs description of sailors where seamanship practice was the main asset in their jobs before. However, the way documentation is being implemented in Brazil transforms seafarers' profession descriptions into office workers or system managers due to over-regulation.

#### 5.2.4 Discussing the research questions

So far, the discussion in the complete section (seamanship) has explored how seafarers perceive the concept of seamanship with their concerns regarding building seamanship in a working environment with the presence of bureaucracy, proceduralization, and excessive regulator's control. Consequently, this discussion contributes to answering the following question:

*“What are the effects of paperwork inside seafarers' notions of seamanship?”*

Seafarers agree that paperwork is helpful during the formation of competence, which suggests that paperwork has an instructive role while acquiring knowledge, as indicated in the skills acquisition model (1980). Nonetheless, the maritime industry is experiencing a phenomenon of proceduralization that interferes with the formation of professional competence, as suggested in this study's findings, where there is a cause and effect inside the notions of the seamanship concept. Therefore, the paperwork designed in Brazilian offshore operations suggests bureaucracy, managerial insecurity, and excessive regulators' control, implying that the amount of paperwork to be completed is excessive, redundant, and attempt against seafarers' intentions of performing good seamanship or even constructing one.

We can conclude that the findings in Knudsen's study (2008) have many similarities to what is suggested in this thesis, where she explored how seafarers perceive the demands for written procedures as counteracting the use of common-sense experience and professional knowledge (Knudsen, 2008). Simplified in the following expression: *seafarer's amour propre is under attack* (Knudsen, 2008, s. 296). Therefore, the effects of paperwork inside seafarers' notions of the seamanship term are adverse due to proceduralization effects since they interfere with what seafarers expect from the profession and do not allow them to perform it.

## 5.3 Summary

This section will briefly review the discussion section where building up maritime competence and seamanship were discussed.

### 5.3.1 Building up maritime competence

In the praxis, officers use diverse methods for acquiring competence. However, these methods have different effects according to seafarer competence level, where these levels of competence were defined as junior and senior officers (novice and experts), respectively. Additionally, the methods suggested in the findings are paperwork as a learning tool and the formation of a seafaring COP.

#### Paperwork as a learning tool for cadet or junior officers:

Seafarers use SM paperwork for acquiring knowledge. Whether officers use these papers as a preparation guide for understanding the operational context or as a learning objective for cadets, paperwork is being used as essential means for acquiring more information on the diverse activities inside offshore vessels. Indeed, the arguments focus on using paperwork as a context facilitator and goal objective. For example, junior officers read SM documentation to understand how a job should be done and the dangers involved as a working context facilitator. Additionally, they use SM documentation as an objective list for mentors inside the COP for beginners' advantage as an aim or goal aspect.

#### Group learning for cadets or junior officers:

Seafarers suggest social interaction, cooperation, and teamwork for learning from mentors who own *phronesis*. This phenomenon occurs inside a COP, where members share interests and membership that help them distinguish themselves from another profession (Wenger, 2002, cited in Gray, 2004).

Additionally, as part of the importance of developing a COP, seafarers recognized that not all information could be presented in books. Therefore, the findings suggest that they need a type of knowledge that can only be developed through the experience gained over the years and cannot be passed on by a set of instructions, manuals, and books, known as *Tacit Knowledge* (Ribeiro, 2012).

#### Paperwork as a learning tool for senior officers:

On the contrary from the previous section, seafarers have more to share regarding how paperwork influences their jobs in a positive and negative aspect for experienced personnel. In the positive aspects, senior officers use SM documents as an updating and compliance tool. Nonetheless, experienced practitioners also described how paperwork dependence could affect the development of professional judgment, where their activities activate the system 1 (thinking process), so system 2 is set aside. Furthermore, the increment in proceduralization reduces the SA of officers, where these officers suggest that paperwork in a vast volume could reduce the chances of reading possible dangerous signals inside a situation since they cannot perceive these signals due to the concentration placed on paperwork activities.

### Group learning tool for senior officers:

Senior officers understand the relevance of COP in their praxis, where they have experience in the activities that they are familiarized with. However, they ignore many other operations since they haven't had operational contact with them. For those reasons, they continue to use the COP for learning. On the other hand, experienced practitioners can get over-confident members in the COP, who affect the group's harmony and crew's safety- concluding that these members can suffer from tunnel vision (the expert's mistakes).

### Brazilian operational context and competence development:

Seafarers exposed to these praxes have difficulties learning maritime skills due to Brazilian regulations and the paperwork load in the working environment. For example, according to local regulators, cadets are not allowed to be in touch with the vessels due to their operational constraints, which means that cadets only work and are in contact with activities considered related to their functions. Therefore, a deck cadet can only work at the bridge and engine cadets at the engine. Additionally, due to the paperwork experienced onboard, cadets assist officers in completing them. Consequently, these facts reduce the learning opportunities of these beginners, who will become experts in documentation rather than competent seafarers. Moreover, these operational constraints lessen the chances of learning more necessary activities outside the bridge and engine. It is important to remember that a sailor has to know the complete vessel's operation and all the commercial activities inside the maritime adventure.

### 5.3.2 Seamanship

Seamanship notions of the concept are qualifications and characteristics mainly dependant on experience, meaning that the concept can be a far image of what a sailor is supposed to be for new practitioners. Yet, for experience personnel, the concept becomes understandable. Consequently, those qualifications and characteristics are being professionals, safe thinkers, responsible, resourceful, and prioritizers during a crisis. Nonetheless, for a person to be able to accomplish these characteristics, practical contact with the seafaring profession is required.

Seafarers have concerns about the future of seamanship in beginners since they see how challenging it can be to learn and perform activities inside *good seamanship* practice. Those concerns are based on arguments where paperwork challenges the balance between documentation and praxis, meaning that junior officers spend many hours completing them. Therefore, these facts affect teamwork in critical situations and disregard learning opportunities for seamanship skills due to the long hours dedicated to paperwork activities, concluding that new practitioners would develop a document-related competence rather than nautical-related.

Paperwork developed in Brazilian offshore operation affects the original jobs description of sailors where seamanship practice was the main asset in their jobs before. However, the way documentation is being implemented in Brazil transforms seafarers' profession descriptions into office workers or system managers due to "*over-regulation.*" For example, the lousy implementation and design of some of the work permits used during basic routines produce misunderstanding in the work permit's objective. Furthermore, fulfilling these requirements

makes the praxis in Brazil complicated, which is again an attempt to do “*safety differently*,” producing side effects in the praxis.

Brazilian work permits can be described as a “*functional regulation*” containing bureaucratic traces of any functional paper. However, apart from the misunderstanding from regulators to apply these papers in routine tasks, seafarers described implications where they are losing autonomy and control of their authority as professional workers. For example, those implications refer to considering an extra signing authority called “*the safety technician*” and the 6 hours validation time. Facts that produce extensive paperwork due to opening a work permit procedure.

### 5.3.3 Questions discussions

Research question:

“*What is the role of paperwork in building up maritime competence in Brazil?*”

Supporting questions:

“*How do seafarers build up maritime competence during their professional development?*”

The discussion in the complete section (building up maritime competence) has explored how seafarers construct their maritime competence during two professional stages: junior and senior officers, where the methods in use were paperwork as a learning tool and group learning. However, the finding suggests the presence of *proceduralization*, where Brazilian paperwork affects the competence formation in beginners who learn more paperwork-related activities just because they don’t have the time to practice maritime skills. Therefore, paperwork in Brazil has an obstructive role rather than an instructive one, where seafarers’ concerns towards the new generations of seafarers and their competence under these operational praxes are explored.

“*What are the effects of paperwork inside seafarer’s notion of seamanship?*”

The discussion in the complete section (seamanship) has explored how seafarers perceive the concept of seamanship with their concerns regarding how to build seamanship skills in a working environment with the presence of bureaucracy, proceduralization, and excessive regulator’s control. The effects of paperwork inside seafarers’ notions of seamanship in this study suggest similarities to Knudsen’s study (2008), where she explored seafarers’ perception towards the demands for written procedures as counteracting the use of common-sense experience and professional knowledge (Knudsen, 2008). Simplified in the following expression: *seafarer’s amour propre is under attack* (Knudsen, 2008, s. 296). Therefore, the effects of paperwork inside seafarers’ notions of the seamanship term are adverse due to proceduralization effects since it interferes with what seafarers expect from the profession and do not allow them to perform it.

## 6. Conclusion

This chapter will present brief presentations of the main results of this thesis study and recommendations for future research.

### 6.1 Major results

This study has explored the relationship between the seafarers and paperwork in Brazilian offshore operations, where several conclusions can be made based on this study's results.

The first conclusion is the implication in building maritime competence in an environment where over-regulation reigns. The findings suggested that the offshore working environment in Brazil is surrounded by functional regulations, bureaucracy, and excessive regulator control. Therefore, beginners seafarers have difficulties learning and practicing maritime skills due to an overload of paperwork and practice constraints in cadets. Moreover, these facts affect seafarers' original job description where seamanship practice was their primary goal to system manager due to over-regulation.

The second conclusion is the negative impact of Brazilian offshore paperwork in experience officers who described how paperwork could reduce SA and produce professional judgment inhibition. For example, seafarers complete many documents in Brazil, where officers use a lot of concentration while doing paperwork. Therefore, they do not perceive all the elements in a current situation that could create accidents, which is how their SA is affected. Furthermore, seafarers described that the constant use of paperwork becomes a repetitive action that does not involve the person's thinking process (system 2). These facts show us the implication of working in an environment with excessive proceduralization.

The third conclusion is the senior officers' error, where it was observed how experience officers could suffer from *over-confidence* and *tunnel vision*. Factors that coincide with some of the findings in Knudsen's study (2008), where she referred to the *error of expertise*, indicating that the Dreyfus and Dreyfus model (1980) does not consider that experts can make mistakes.

The fourth conclusion is the implications of building up maritime competence, where seafarers recognized two main methods used: forming a COP to learn new knowledge and using paperwork as a learning supporting tool. Nonetheless, both described positive and negative consequences, where paperwork became a central topic in response to this thesis study, concluding that paperwork has an obtrusive role rather than instructive in Brazil.

The fifth conclusion is that the paperwork developed in Brazilian offshore operations interferes with seamanship and its development. In Knudsen's study, she explored how seafarers perceive the demands for written procedures as counteracting the use of common sense, experience, and professional knowledge (Knudsen, 2008), facts that coincide with the findings of this study. Nonetheless, this study also concluded that growing proceduralization affects the maritime competence of officers who grow up professionally under these praxes.

## 6.2 Recommendations for future research

Based on the study's results, there were several recommendations for future research. First, some of the limitations outlined in this study should be addressed differently for better results in future research. Indeed, one of the limitations is related to this study's sample. This study's sample is based on participants who have sailed in Brazilian offshore fields. However, all of them have different backgrounds. For those reasons, it can be recommended to consider a large sample of various population groups to identify other cultural trends or find more information that could provide a better understanding of the relationship between paperwork and practitioners.

This thesis explored the relationship between paperwork and seafarers in Brazilian offshore operations. Nonetheless, it is strongly suggested that others continue a deeper study with different perspectives as the regulators' points of view to understand the Brazilian praxis better and find the reasons behind over-regulation in the country.

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## Appendix 1: NSD's assessment

### **NSD's assessment**

#### **Project title**

The Relationship Between Documentation and The Human Element Onboard Offshore Units.

#### **Reference number**

746197

#### **Registered**

11.03.2021 av Maria-Fernanda Rasmussen - mfsaetre@stud.ntnu.no

#### **Data controller (institution responsible for the project)**

Norges teknisk-naturvitenskapelige universitet / Fakultet for ingeniørvitenskap / Institutt for havromsoperasjoner og byggteknikk

#### **Project leader (academic employee/supervisor or PhD candidate)**

Marte Fanneløb Giskeødegård, marte.giskeodegard@ntnu.no, tlf: 70161305

#### **Type of project**

Student project, Master's thesis

#### **Contact information, student**

Maria-Fernanda Rasmussen, fermedell@gmail.com, tlf: 94798145

#### **Project period**

05.01.2021 - 30.12.2021

#### **Status**

25.05.2021 – Assessed

### **Assessment (3)**

#### **25.05.2021 - Assessed**

NSD has assessed the change registered on 21.05.2021.

#### **27.04.2021 - Assessed**

NSD has assessed the change registered on 27.04.2021.

#### **25.03.2021 - Assessed**

Our assessment is that the processing of personal data in this project will comply with data protection legislation, so long as it is carried out in accordance with what is documented in the Notification Form and attachments, dated 25.03.2021.

**SHARE THE PROJECT WITH THE PROJECT LEADER:** For students it is mandatory to share the Notification form with the project leader (your supervisor). You can do this by clicking on "Share project" in the upper left corner of the Notification form.

**NOTIFY CHANGES:** If you intend to make changes to the processing of personal data in this project it may be necessary to notify NSD. This is done by updating the information registered in the Notification Form. On our website we explain which changes must be notified. Wait until you receive an answer from us before you carry out the changes.

**TYPE OF DATA AND DURATION:** The project will be processing general categories of personal data until 30.06.2021.

**LEGAL BASIS:** The project will gain consent from data subjects to process their personal data. We find that consent will meet the necessary requirements under art. 4 (11) and 7, in that it will be a freely given, specific, informed and unambiguous statement or action, which will be documented and can be withdrawn.

The legal basis for processing general categories of personal data is therefore consent given by the data subject, cf. the General Data Protection Regulation art. 6.1 a).

#### **PRINCIPLES RELATING TO PROCESSING PERSONAL DATA**

NSD finds that the planned processing of personal data will be in accordance with the principles under the General Data Protection Regulation regarding:

- lawfulness, fairness, and transparency (art. 5.1 a), in that data subjects will receive sufficient information about the processing and will give their consent.

- purpose limitation (art. 5.1 b), in that personal data will be collected for specified, explicit and legitimate purposes, and will not be processed for new, incompatible purposes.
- data minimisation (art. 5.1 c), in that only personal data which are adequate, relevant and necessary for the purpose of the project will be processed.
- storage limitation (art. 5.1 e), in that personal data will not be stored for longer than is necessary to fulfil the project's purpose.

**THE RIGHTS OF DATA SUBJECTS NSD:** finds that the information that will be given to data subjects about the processing of their personal data will meet the legal requirements for form and content, cf. art. 12.1 and art. 13.

Data subjects will have the following rights in this project: access (art. 15), rectification (art. 16), erasure (art. 17), restriction of processing (art. 18), data portability (art. 20). These rights apply so long as the data subject can be identified in the collected data.

We remind you that if a data subject contacts you about their rights, the data controller has a duty to reply within a month.

**FOLLOW YOUR INSTITUTION'S GUIDELINES NSD:** presupposes that the project will meet the requirements of accuracy (art. 5.1 d), integrity and confidentiality (art. 5.1 f) and security (art. 32) when processing personal data.

If using a data processor (questionnaire provider, cloud storage or video call), the processing must meet the requirements for the use of a data processor, cf. General Data Protection Regulation arts. 28 and 29.

To ensure that these requirements are met you must follow your institution's internal guidelines and/or consult with your institution (i.e. the institution responsible for the project).

**FOLLOW-UP OF THE PROJECT NSD:** will follow up the progress of the project at the planned end date in order to determine whether the processing of personal data has been concluded.

Good luck with the project!

### **Contact person at NSD**

Silje Fjelberg Opsvik

Data Protection Services for Research: +47 55 58 21 17 (press 1)

## Appendix 2: Letter of consent

### **Are you interested in taking part in the research project?**

#### ***“Relationship between the human element and documentation.”***

This is an inquiry about participation in a research project where the primary purpose is to explore the relationship between documentation and the human element using studies conducted in the North Sea to compare them with information obtained from practitioners who belong to a different organizational culture. This letter will give you information about the project's purpose and what your participation will involve.

#### **Study's Purpose**

The study aims to answer the role of documentation in building up maritime competence using relevant studies applied in the North Sea and compare them with information obtained from practitioners who belong to a different organizational culture. Based on that, it is necessary to interview four officers who are or were part of offshore operations in Brazil. The intention is to gain knowledge about the experiences related to the research topic.

The project is a master's thesis, which is part of the master's program in operative maritime leadership at the Department of Ocean Space Operations and Construction Engineering at NTNU in Ålesund.

#### **Who is responsible for the research project?**

NTNU in Ålesund is responsible for the project.

#### **Why are you being asked to participate?**

To explore the role of documentation in practice, it is necessary the contribution from personnel who are part of the maritime operations. In addition, the study needs to be able to connect real-life experiences to understand the research topic.

#### **What does participation involve for you?**

Your participation would involve an online audio-recorded interview, which would take approximately 60 to 100 minutes. The interview would include questions about your interaction with documentation, opinions, thoughts, and experiences. Your answers would be recorded electronically for posterior analysis.

**Participation is voluntary.**

Participation in the project is voluntary. If you chose to participate, you could withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. Therefore, there will be no negative consequences for you if you choose not to participate or later decide to withdraw.

**Your personal privacy – how we will store and use your personal data.**

I will only use your data for the purposes I have specified in this letter. In addition, I will process your information confidentially under data protection legislation.

Together with the other interviewers, the information obtained from you will only be used as basic material in my master's thesis. Personal data will be kept separate from other data, and only I will have access to it. The audio recording and transcription will be stored password-protected on an external hard disk unit that will be kept locked. In the analysis process, I will replace your name and contact details with a code. The list of names, contact details, and respective codes will be stored separately from the rest of the collected data. During the data material, I will use fictitious names of interviewees. Therefore, it should not be possible to recognize you in the final publication. Consequently, it would not be possible to identify you in the final publication.

**What will happen to your personal data at the end of the research project?**

According to the plan, the project will be completed by the end of December 2021. After that, all the data material collected and printed interviews will be deleted.

**Your rights**

So long as you can be identified in the collected data, you have the right to:

- Access the personal information that is being processed about you.
- Request that your personal data be deleted.
- Request that incorrect personal data about you is corrected/rectified.
- Receive a copy of your personal data (data portability), and
- Send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding your personal data processing.

**What gives us the right to process your personal data?**

We will process your personal data based on your consent.

Based on an agreement with NTNU (Norwegian University of Science and Technology) and NSD (The Norwegian Centre for Research Data), this project's processing of personal data follows data protection legislation.



## Where can I find out more?

If you have questions about the project or want to exercise your rights, contact:

- Marte Fanneløb Giskeødegård (supervisor), telephone: 70161305 or email: marte.giskeodegard@ntnu.no at NTNU Ålesund.
- Maria-Fernanda Rasmussen (student), telephone: 94798145 or email: fermedell@gmail.com, mfsaetre@ntnu.no.
- Our Data Protection Officer: Thomas Helgesen, telephone: 93079038 or email: Thomas.helgesen@ntnu.no
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or telephone: +47 55 58 21 17.

Yours sincerely,

Maria-Fernanda Rasmussen

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## Consent form

I have received and understood information about the project “Relationship between the human element onboard vessels” and had been allowed to ask questions. I give consent:

- to participate in the interview survey.

I give my personal data consent to be processed until the end of the project, approximately the end of December 2021.

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(Signed by participant, date)

## Appendix 3: Interview guide

What I am interested in knowing	Suggested Questions (Interview Guide)
<b>Before audio-recording</b>	<ul style="list-style-type: none"> <li>• Provide information around the study topic (background and purpose).</li> <li>• Explain the use of the interview information (duty of confidentiality and anonymity).</li> <li>• Ask if there are any questions or if anything is unclear.</li> <li>• Ask for the agreement consent.</li> <li>• Start recording.</li> </ul>
<b>Personal Information</b>	<ol style="list-style-type: none"> <li>1. What is your education?</li> <li>2. How many years of sea experience do you have?</li> <li>3. How many years have you worked in Brazil?</li> </ol>
<b>What is seamanship for you?</b>	<ol style="list-style-type: none"> <li>4. In your opinion, what is good seamanship?</li> </ol>
<b>What is the role of documentation in Brazil?</b>	<ol style="list-style-type: none"> <li>5. What is your current position?</li> <li>6. In your opinion, what is paperwork?</li> <li>7. How vital is paperwork for your organization in Brazil?</li> <li>8. What paperwork are you expected to do before, during, and after an operation?</li> <li>9. How vital is paperwork for you in Brazil?</li> <li>10. In your opinion, what paperwork are you expected to do according to your position in Brazil?</li> <li>11. Were there any challenges regarding paperwork in Brazil?</li> <li>12. How does paperwork is experienced, according to you in Brazil?</li> </ol>
<b>How is documentation in the praxis?</b>	<ol style="list-style-type: none"> <li>13. How is your everyday work with documentation regarding time and effort?</li> <li>14. Do you fill in documentation as it stays in your organization's safety system?</li> </ol>
<b>How is the relation between knowledge and documentation?</b>	<ol style="list-style-type: none"> <li>15. Is paperwork necessary in the cadet's formation?</li> <li>16. Is documentation relevant as an officer gain more experience?</li> </ol>
<b>Seamanship and Documentation</b>	<ol style="list-style-type: none"> <li>17. What is the relation between paperwork and seamanship?</li> </ol>

	18. How paperwork helps you to be more competent?
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