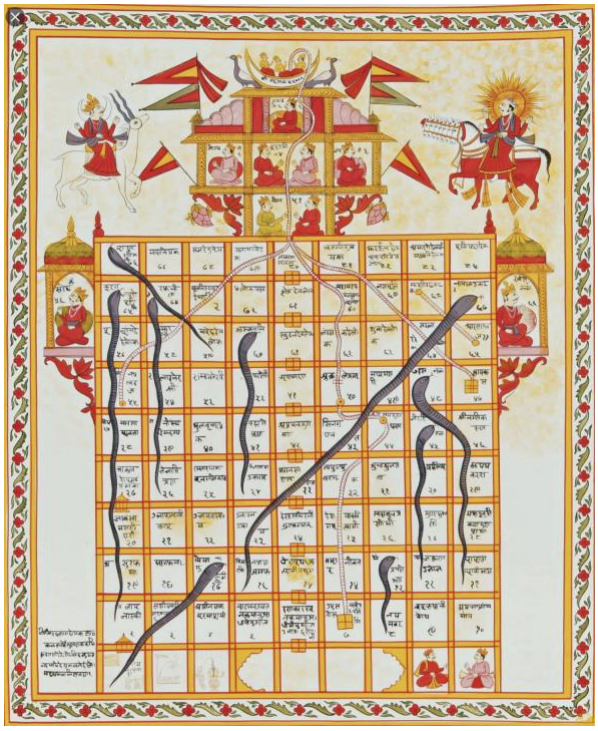

SNAKES OR LADDERS

A MIXED METHODOLOGY REVIEW INTO THE BOARDING AND LANDING OF MARITIME PILOTS

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THIS ARTICLE HAS BEEN PEER REVIEWED (DATA AND PEER REVIEWS AVAILBLE UPON REQUEST)

Disclaimer

The results and conclusions in this article are based upon the review of relevant literature, research and data analysis and have not been influenced by the professional views, opinions or experiences of the author.

Abstract

Although the boarding and landing of pilots is regulated, there are a high volume of non-compliant transfer arrangements throughout the industry. An industry which highlights and is conscious of risk and promotes the importance of a proactive safety culture. In light of this, it is the aim of this research to critically investigate and understand what is contributing to such a high level of non-compliance.

The first step was a literature review which highlighted several key areas where associated areas of the framework may be falling down. The problem was, owing to a lack of current research the failings in the literature review could not be directly linked to the boarding and landing of pilots. To this end, a mixed methodology review was adopted in order to further investigate and document the areas affecting compliance.

The research produced a number of key findings. Namely a failure in regulation, regulatory enforcement, training and vessel design. All underlined in an industry which did not promote, encourage or learn from accidents and incidents. This resulted in an industry which erroneously and dangerously left pilots to become the last line of defence in a system which did not work. Although the research identified several key failings, the main conclusion that was drawn was that there are several key measures which can be adopted which would greatly improve the safe boarding and landing of pilots.

List of Abbreviations

AB	Able Seaman
CFA	CFA Society UK
HSE	Health and Safety Executive
IMO	International Maritime Organisation
IMPA	International Maritime Pilots' Association
ISM	The International Safety Management Code
ISO	International Organization for Standardization
Kn	Kilonewton
MAIB	Marine Accident Investigation Branch
MCA	Maritime and Coastguard Agency
MSC	Maritime safety Committee
OECD	Organisation for Economic Co-Operation and Development
PTA	Pilot Transfer Arrangement(s)
SOLAS	The International Convention for the Safety of Life at Sea
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
UK	United Kingdom
UKMPA	United Kingdom Maritime Pilots' Association
UN	United Nations
VHF	Very High Frequency

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1.0 INTRODUCTION

The Laws of Oleron were introduced into English Law in the 12th century. Their purpose was to govern maritime trade in the West, through a body of rules and standards for all stakeholders. (Wood 1914). An example of one such rule was Article XXII, which stated that if a pilot had the conduct of a vessel and failed in his duty, he was to make full satisfaction to the vessel's master or risked losing his head. Thankfully, in modern society, it is no longer commonplace to cut off a pilot's head. As described by Boraiko, Beardsley & Wright (2008), we now live in a world where we are conscious of risk and accidents and incidents are investigated with a view to prevent reoccurrence and to increase the overall safety culture.

So, what changed in 800 years?

The answer is twofold. As explained by Friedman et al. (1967) the way to enforce changes to societal beliefs is by altering both custom and law. Essentially, society grew to believe that an injury or death in the workplace was unacceptable, and the law changed to put accountability onto the employer. Coupled with the growing realisation that industrial injuries and claims are better avoided through system and design changes, rather than blame and a fear of reprisal (Dekker 2014, p.6-7). These changing views, alongside new legislation forced our industries to implement change. So much so, that we now live in a society where a business or industry, which invests time and money in building a strong relationship with safety systems, safety climate and building a safety culture, will actually be rewarded in terms of competitive advantage, reliability and profitability - a concept which is commonplace today (Cooper 1998, p.32). A concept which has also been adopted by the maritime industry. The International Maritime Organisation (IMO), operate with the mission to promote and adopt the highest standards of safety through international cooperation (IMO 2019). Taking all of this into account, it would be safe to assume that society could no longer imagine a pilot losing their head at the hand of the master.

Has the change worked for Maritime Pilots?

Although not losing their heads, unfortunately, pilots are still being injured during the course of their duties, specifically whilst boarding and landing vessels. According to the UKMPA (2020), in the last four years, six maritime pilots have lost their lives boarding and landing vessels, and The American Club (n.d), predict that pilot fatality is as high as 2-3 per year. Worryingly, of the five reported deaths, only two accident and investigation reports are publicly available; all somewhat contradictory to the safety culture we discussed above.

If we take Europe as an example, a low estimation of pilotage numbers would be at least one million acts of pilotage a year across Europe (European Commission Directorate-General for Mobility and Transport 2012). When we consider these numbers concerning pilot fatalities, it could be argued that boarding and landing is

statistically safe. The problem being, there are no definitive near-miss or accident statistics surrounding boarding and landing to compare these numbers against. However, what we can compare is that surrounding each pilot's death the transfer arrangement was is some way non-compliant. For example, the MAIB concluded in their Sunmi and Patrol report regarding the fatal accidents of a pilot, that although there were contributing factors, the transfer arrangement was non-compliant (MAIB 2017). Essentially, if the vessel SUMNI had provided safe and convenient transfer arrangements, as is required in law, the accident would not have happened. Another unfortunate example is the incident involving the Maersk Kensington. The pilot tragically fell whilst trying to manoeuvre past a non-compliant trapdoor arrangement (Nautilus International 2020).

When we consider the fact that pilots are dying at the hands of non-compliant Pilot Transfer Arrangements (PTA), even if it is argued that boarding and landing is statistically safe, there is simply no argument that a non-compliant PTA is either safe or acceptable. In a recent survey conducted by the International Maritime Pilots Association, non-compliant transfer arrangements ranged from 6.77% to 58.06% depending on geographical location. A notable example was Europe who reported 20.49% of vessels trading in the area had non-compliant transfer arrangements.

All things considered, society and our industry have accepted that a pilot should not lose their head when something goes wrong. Furthermore, we recognise the benefits learning from accidents and incidents brings. Despite this, it would appear the same courtesy is not being offered to pilots when they board or land a vessel. Much like a game of snakes and ladders, pilots are having to rely upon a role of the dice and take a gamble; will we get a snake, or will we get a ladder? To this end, the question is why?

1.2 Aim and Objective

Non-compliant transfer arrangements are all too common in the industry. This research aims to investigate and document the factors which are affecting compliance. This will be achieved by examining the regulatory framework and associated culture with the overall objective of identifying any shortfalls.

2.0 LITERATURE REVIEW

This section of the paper seeks to explore how successful the current PTA framework is and what might be influencing its effectiveness. The literature review also aims to highlight any areas where further research may be necessary in order to meet the aim of this paper.

2.1 Measuring Success

The OECD (2012) explain that regulation is put in place to influence behaviours for an intended outcome. In the context of a PTA this would mean regulation which successfully influences the safe boarding and landing of pilots. Something which could be measured based upon how well the regulation achieves this outcome. The OECD (2012), go onto explain that measuring success can only be achieved through scientific measurement and inference. Furthermore, they state that when evaluating regulatory performance, the concerns of those who are affected by the regulation are in fact essential indicators. To put it another way, it is the pilots, seafarers and industry bodies who are best placed to infer whether regulation is meeting its intended purpose or not.

Another significant factor when it comes to measuring success would be to define what it is that we need to measure. For example, Xanthaki (2014, p.33) explains that the ultimate goal of regulation is efficacy. In the context of boarding and landing pilots this would mean a robust set of rules which can be interpreted and implemented successfully by the end user. Consider this from an alternative viewpoint, non-compliance would be the simplest means to measure success and efficacy and taken alone, non-compliance would indeed identify there is a problem. However, to understand why there is a problem we would require a deeper understanding. Taking this idea further, Dyck et al. (2005) explain that poorly structured or poorly written regulation is synonymous with non-compliance. They also go onto explain that non-compliance is influenced by culture and its associated behaviours. This interpretation is consistent with the IMO, whose Human Element Vision states maritime safety is significantly enhanced through effective training, regulation and culture and affects all maritime professionals from ships' crew to shipbuilders (IMO 2019).

So, in summary, in order to measure success not only do we need to look at how well the regulation is working through non-compliance, we also need to consider what other factors might be influencing success. Taking that into account, we will now begin to start investigating the regulation, associated training, culture and behaviours.

2.2 How are Pilot Transfer Arrangements Regulated?

The provision of boarding and landing pilots is governed by the International Convention for the Safety of Life at Sea (SOLAS), 1974. "The main objective of the SOLAS Convention is to specify minimum standards for the construction, equipment and operation of ships" (IMO 2019). More specifically, SOLAS Chapter V Regulation 23., set the minimum safety standards, which when followed provide an effective safeguard against injury. Taking this into account, and taking what we know about measuring success, it would be safe to say we can initially measure regulatory performance by assessing how well vessels comply with Regulation 23.

We already know that at least 20.49% of vessels trading in Europe have non-compliant PTA. If we relate this back to pilotage numbers in Europe, this suggests that of the one million acts of pilotage per year, at least 200,000 have non-compliant transfer arrangements. Unfortunately, there are no definitive statistics surrounding how many of these result in an incident or a near-miss and one may argue that even though regulatory non-compliance is high, accidents and incidents are low. Thankfully, this interpretation contrasts accepted norms, as Reason (2000) explains using the concept of defences, barriers and safeguards. Essentially, a system backed up by effective regulation, is an accepted way to make an activity as safe as possible by putting safety measures in place. Let us relate this back to a pilotage accident. Reason (2000), goes onto explain that the more effective defence layers an activity has, the safer it is. He also explains that the loss of one defence layer on its own may not cause an accident by itself, but as more layers are removed the chances of an accident occurring begin to rise significantly. Essentially, this means that a non-compliant transfer arrangement may not cause an accident on its own. However, when paired with other latent conditions the chances of an accident are greatly increased, as was the case on the vessel SUMNI (MAIB 2017).

In our bid to measure success, we now know that non-compliance is high but in order to arrive at a more meaningful understanding let us now go on to investigate what might be influencing the non-compliance.

2.3 Why might the Regulation be failing?

"There is perhaps no profession in which language plays as important a part as it does in law" (Edwards 1979). What Edwards means by this, is that law is used at the very foundations of our society and every single word in legal text holds a great degree of value. A theory which is backed up by Dyck et al. (2005), who explains that the way in which regulation is written or structured plays a very important role in the way it reaches an intended outcome. This thought is particularly important when we consider the regulation is interpreted and implemented from vessel design and vessel build, all the way to a seafarer securing a ladder onto the deck; none of who are lawyers. This raises the question, is SOLAS Regulation 23 well written? Although non-compliance would suggest otherwise, unfortunately there are no definitive studies in this area, something which this research intends to resolve.

As previously mentioned, another significant factor is the way in which regulation is structured. Rossiter (2013, p.6) explains that one measure of quality writing and effective communication is accurate, brief and easy to interpret information. When key IMO committees intend to make regulatory improvements and amend a convention, they make recommendations through a resolution which, if adopted, become amendments to the current convention (IMO 2019). Further to this, when the IMO wishes to clarify or provide guidance, they produce circulars. SOLAS Regulation 23 refers to: 1 separate regulation (Regulation 17) 3 different resolutions (MSC.99 (73), IMO A.1045 (27) & MSC.256(84)), 4 circulars (MSC.1/Circ.1375, MSC.1/Circ.1290, MSC.1/Circ.1331 & MSC.1/Circ.1428) and on top of these two International Standards

(ISO 799:2019 & ISO 5488-1979) and 2 Ship Industry Standard (SIS 6 and SIS 7). Therefore, to successfully interpret and implement SOLAS Regulation 23 the user would need to cross-reference 11 documents, some of which require payment to view; certainly not a task synonymous with efficacy.

Unfortunately, there is no definitive data in our industry which gauges how well the regulation is working, something that will need to be resolved in order to reach the aim of this research. When we discussed how success can be measured, seeking the opinion of industry professionals emerged as a key tool. With that in mind, in order to further assess why the regulation might be failing we will seek the opinion of seafarers, pilots and industry professionals.

2.4 What about Enforcement?

According to the OECD (2018), when carried out effectively, inspection and enforcement is an incredibly valuable tool to ensure regulatory compliance, a premise backed up by the CFA (2011). On the other hand, regulatory enforcement is not a simple task and must be approached carefully. The OECD (2018) state that enforcement should look to prevent and mitigate risk while maintaining stakeholder trust and minimising conflict. What they mean by this, is that enforcement should result in regulatory compliance without making the activity so restrictive that it would not function, for example, due to excessive cost. The UK Government (Crown Copyright 2011) produced a code of practice for regulators which proposes three main principles of enforcement. The emerging principles were accountability, transparency and promoting best practice. Let us go on to investigate if this is, indeed, the case for the boarding and landing of pilots.

The Maersk Kensington and many other vessels have been sailing around the world, since build, with dangerous pilot transfer arrangements (IMPA, 2021). Not only are they dangerous, but they contravene a recommendation by the Maritime Safety Committee as far back as 1979. A recommendation which was adopted by the IMO through Resolution A.426 (XI) and carried forward all the way into A.1045(27). The problem is, vessels are bypassing the recommendation using a grandfather clause in SOLAS Regulation 23 which states vessels built prior to 2012 need not comply. When we dig deeper though, the clause also states that due regard shall be had to the safety standards adopted by the Organisation. In other words, standards adopted through IMO Resolutions as far back as 1979. Furthermore, the regulation also stipulates that the vessel must provide safe and convenient access and take into account the adopted safety standards. Taking this into account we would assume that port and flag states are engaging with ship owners to modify these PTA on vessels built pre-2012 and promoting best practice, especially when we consider a pilot recently lost his life when trying to circumnavigate such an arrangement. Unfortunately, they are not, and at the time of writing, over one year later, Maersk Kensington and countless other vessels are still operating with this arrangement. As previously discussed, there is a balance when it comes to enforcement and minimising conflicts with stakeholders. However, when a human loses their life on their way to

work, and the cost of modification is realistic, the only conclusion that can be drawn is that regulators are not following the principles of accountability, transparency or promoting best practice. More significantly, though, we begin to question why?

In the Routledge Handbook of Maritime Regulation and Enforcement (Warner et al. 2016, p.xxxiv), several emerging themes develop throughout the book, two of which are particularly relevant. Essentially, the themes suggest that the current Maritime regulatory framework surpasses industry capability, and there are gaps in the regulation, particularly relating to global best practice. In other words, member states do not have the resources to enforce the regulation and global best practice is missing. When we couple this with the fact that the regulation may be particularly complicated, we can begin to see why.

Both Warner et al. (2016 p.xxxiv) and The UK Government (Crown Copyright 2011), discussed the importance of industry wide best practice and codes. Unfortunately, there is no industry wide best practice or code when it comes to the boarding and landing of pilots. Therefore, more research is required to gauge the level of enforcement being conducted on vessels. Something else which can be achieved in this paper through the collection of empirical data.

2.5 Training

On World Maritime Day 2015, the UN Secretary-General highlighted how important seafarer education and training was for a safe and successful maritime industry, (United Nations 2015). When we relate this back to defences, barriers and safeguards, as explained by Dyck et al. (2005), training is indeed another tool in support of the regulation which can be used to make an activity as safe as possible. The key tool surrounding seafarer training is the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978. (STCW 95). The issue here, is that the entire STCW 95 framework recently came into the spotlight when the International Chamber of Shipping questioned if it is even fit for purpose. The Chairman stated that ship owners and operators are compelled to take training in-house to ensure acceptable standards, (Wee 2018). The only problem with this statement for us is the lack of a direct link to PTA. Even so, taking this idea further Evans, Mkpandiok & Okanna (2017) recently investigated seafarers awareness surrounding the STCW 95 convention and found it to be poor across the board.

All Deck Officers and Able Seaman (AB) receive seamanship training, which should include some basic instruction on how a pilot ladder is rigged and maintained. For example, in the United Kingdom in order for to become a certified AB you must complete the Efficient Deckhand Course. The problem is though, this training will vary from training establishment to training establishment. It could also be the case that it was completed up to 40 years ago. Some states also allow training to be conducted on the vessel, this raises the question, what happens if the trainee was trained to rig a non-compliant PTA? By collecting empirical data, we can build upon this picture and gauge whether seafarers are being properly trained to provide safe

and convenient access for pilots. On the face of it, the sheer number of non-compliant transfer arrangements would suggest that they are not. However, owing to the fact training and education plays such a pivotal role in ensuring regulatory success, it is imperative to seek the views and opinions of seafarers, pilots and industry professionals.

2.6 Accidents and Incidents

When we think about things going wrong, it is very easy to simply point the finger of blame at the human. The Chartered Institute of Ergonomics & Human Factors (2021) state that a large proportion of shipping incidents are incorrectly blamed on the human. A prime example being the Torrey Canyon accident, which was initially blamed on a catalogue of human errors at the hands of the Master. It was only years later, after society's understanding changed and a new open-minded investigation was carried out, that it came to light that the Master was actually under undue pressure from his company and was fighting with technical issues on the vessel's bridge. Dekker (2017, p.7) sums up this thought well when he said, "if it made sense for people to do what they did, then it may make sense for others as well". What Dekker means here is to truly prevent an accident happening again, we need to look at what caused the human to make the decisions they made. For example, can we really blame a seafarer for rigging a pilot ladder incorrectly when the regulation is not simple to understand, the vessel has not been designed to allow proper rigging and the operator has not received adequate training? By learning from mistakes, it becomes clear it is not the human we need to change, it is the regulation, enforcement, training and vessel design.

A fundamental and highly recognised way to learn from mistakes is to catalogue and share data by collating accidents, incidents and near misses (Crown Copyright, 2021). Despite this, when it comes to the boarding and landing of pilots, this data is not collated and shared by flag states, and neither is it shared between ports. For that reason, this research will later assess whether such statistics would be of value on our industry.

2.7 Vessel Design

When talking about regulatory enforcement we touched upon vessel design. The Maersk Kensington is an excellent example of how ships are being designed where, from build, they are unable to comply with the regulation. As described by (Peansupap & Rothmony 2015) design errors are not uncommon in the construction industry – as a whole - and range in severity. They go onto say known errors should be studied and assessed relative to their impact. For example, Andrew (2021) explains how fundamental and catastrophic design errors in the shipping industry are studied and evaluated and the learnings are brought forward into new builds. Unfortunately, there appears to be a lack of research which relates to PTA design or failure, and whether lessons learned are being examined and brought forward. That said, Evans (2020) recently investigated the strength of pilot ladders and their associated securing

points and the results were interesting. For example, the report showed that pilot ladders are breaking significantly before the requirement; which is 24Kn for the side ropes. Furthermore, the breaking strength of associated pilot ladder securing equipment contradicts both the regulation and industry best practice. When we take into account that it is standard practice for safety critical equipment to be studied, tested and regulated it would be safe to say that a full overhaul of pilot ladders design requirements and securing methods is required.

Moving back to vessel design, the IMPA have produced specific guidance to assist new build vessels in complying with regulation "Guidance for naval architects and shipyards on the provision of pilot boarding arrangements 2012" (IMPA 2012). The guidance was created owing to the sheer number of compliance enquiries the IMPA received from naval architects and shipbuilders. Could it also be the case that naval architects and surveyors also struggle to interpret the rules? Before we can draw any conclusions and in order to understand how much of an impact vessel design is having on the issue of non-compliance, we will need to conduct more research in this area.

2.8 Culture

The final piece of the puzzle which may affect how the maritime community interact with PTA, is culture and its associated behaviours. Although cultures will vary from vessel to vessel and port to port, the overall maritime safety culture will have a profound influence on the way PTA are rigged, but also on the way non-compliant PTA are reported, investigated and rectified. Cooper (1998), explains that even with the best legislation, engineering solutions and staff training, every major large-scale disaster in recent years have shown that the culture and associated behaviours are paramount in ensuring good safety management. The main tools the maritime industry has at its disposal, are the International Safety Management Code (ISM Code), and the IMOs Human Element Vision. Jung (2017), recently reviewed how well the ISM Code was impacting safety culture. The results were good, and it showed the ISM Code was improving safety at sea. Unfortunately, Jung (2017) went onto conclude that although it is making a difference, it is not going far enough. For example, Laverick (2018) explains that the ISM Code is indeed making a difference, but there is complacency when it comes to managing and enforcing the code; something which we discussed previously when it came to regulatory performance. Likewise (Rattray 2019) concluded that the IMO Human Element Vision is not meeting its aims and objectives. This could suggest that although the tools are there, the culture is failing, the exact premise explained by Cooper (1998). This thought brings everything together that we have discussed. For example, the tools might be there to regulate the boarding and landing of pilots, but if the regulation is unsatisfactory, enforcement is lacking, training is failing, and accident and incident data is not shared industry-wide, the underlying culture will not be one of good safety management. To expand upon this notion, and to gain a deeper understanding regarding the associated cultural failings that have emerged, we will take these key points forward into the data analysis.

2.9 Summary of Literature Review

The literature review has identified that there are industry failings in all key areas, which affect the safe boarding and landing of pilots and a large number of non-compliant transfer arrangements. Overall, the literature review was limited to identifying industry-wide problems but was unable to find specific data which related these findings to PTA non-compliance. Further data is required in order to compare and contrast these failings to that of non-compliance. With that in mind, this paper intends to address the missing link, this will be achieved through the collection of empirical data. Data which as described by Kelly, Sadeghieh & Adeli (2014) is crucial for answering meaningful questions in a scientifically acceptable manner.

3.0 METHODOLGY

The literature review highlighted a distinct lack of any research surrounding pilot injuries, and fatalities, at the hands of non-compliant transfer arrangements or any research which investigated why non-compliant transfer arrangements are so prevalent in our industry. The primary aim of this research is to provide verifiable data which can be used to understand and improve the boarding and landing of pilots. The following section will lay out the research strategy which will achieve this aim.

3.1 Research Strategy

Mertens (2015), describes a wicked problem as a social and cultural problem that is difficult to solve owing to its interconnected nature. Clarifying a wicked problem can be as difficult as the solution, something which became evident during the literature review. Not only was it difficult to clarify the problem, but the problem is heavily interconnected and influenced by other factors in the maritime industry. Braun & Clarke (2013, p.4-9), explain the difference between quantitative and qualitative research paradigms, particularly the benefits of qualitative research, when dealing with people and behaviours. The dilemma being, is that the aim of this research is to understand the relationship between both what is happening and what people think is happening. Bearing that in mind, Greene (2008) explains how a mixed methodology study can result in an insightful understanding of a complex social phenomena, when work calls for both generality and particularity. What she means by this, is that when there is a particularly complex issue which calls for both defensible patterns of recurring regularity, as well as an insight into variation and difference - such as the issues surrounding boarding and landing of pilots - using different methods and different forms of data can result in a deeper understanding, and data which displays both magnitude and contextual stories. Therefore, owing to the complex nature of the problem, a mixed-methods approach was used, to collect and analyse the data required to meet the aims of this research.

3.2 Perception Survey

The perception survey contained 19 questions and was designed around the main issues identified in the literature review and spread into thematic blocks, ranging from regulation and enforcement, non-compliance, training, culture, vessel design to accident and incident statistics. The questions were organised in a thematic structure such that the themes could be easily assessed alongside data from a focus group.

The questions were both open-ended and closed-ended. The closed-ended questions contained pre-defined answers as a Likert scale and formed the base and foundation by creating patterns and regularity. The open-ended questions were used to collect a large amount of qualitative data to build upon the foundation, adding insight and variation. Thematic analysis was used to analyse the qualitative data from the open-ended questions - this data can be seen in Appendix A.

3.3 Focus Group

The focus group contained 3 industry leaders: representatives from the United Kingdom Maritime Pilots Association, the International Maritime Pilots Association and a PTA safety expert. The focus group was unstructured but contained guided discussion. The guide can be found in Appendix B. As explained by Wilkinson (1998), focus groups are a means of sense-making where topics are elaborated, disputed and justified. The researcher felt it was important to compare and contrast the findings from industry leaders, with the views and opinions from the perception survey; or as previously described by Greene (2008) a means of including both generality and particularity to arrive at a more insightful opinion. Thematic analysis was also used to analyse this data and the emerging themes were compared against those from the perception survey, this data is contained in Appendix A.

3.4 Sampling

Unfortunately, owing to the sheer size of the industry, it would be exceptionally difficult to collect data from every vessel and every pilotage district. Consequently, a study was used for ease of accessing respondents. The respondents were selected through convenience sampling, it was convenient as the respondents were accessed through pilot ladder safety forums - accessed by both pilots and seafarers. The survey was also sent to worldwide pilotage associations and The International Harbour Masters' Association. Although convenience sampling was used, the possibility for selection bias was greatly reduced by setting strict criteria for the respondents to meet, for their data to be included in this research. This was achieved in Questions 1 to 5 by filtering out respondents who were not certified, or whose job did not involve boarding and landing of pilots. The strength of the data was further enhanced by ensuring the respondents were familiar with the regulations.

Although the study utilises mixed methodology, the main aim of the quantitative aspect served to identify and underpin the weight of the problem, whereby the qualitative data, led us to a deeper understanding through an exploratory methodology. With that knowledge in mind, a 10% margin of error was acceptable for the survey (SurveyMonkey 2021). This resulted in a minimum sample size of 100 at 95% confidence level. After filtering the data, the respondents totalled 185. As previously mentioned, the value of the data was further strengthened by running a comparison against the views and opinions collected from the focus group.

4.0 FINDINGS: Mixed Methodology Results

4.1 Introduction

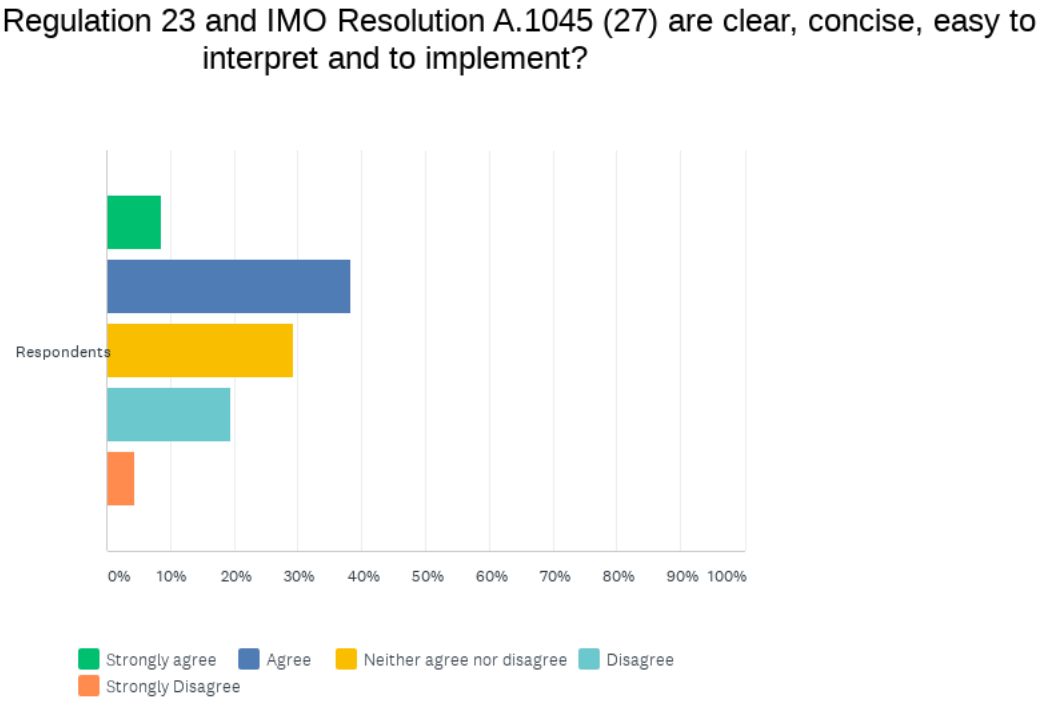
This mixed methodology study has been approached with a fixed structure in order to ensure the results are meaningful and scientific. Therefore, the following section will firstly describe the results and then go onto analyse the results taking the literature review into account. Appendix A details the themes which emerged from coding and thematic analysis and is a fundamental part of this section.

4.2 Results

Question 1 - 5

Questions 1-4 ensured the respondents held a valid certificate of competency, were employed in a relevant job role, were actively involved in boarding and landing of pilots, and were fully conversant with the regulation. Any responses which did not meet this criteria were excluded from the results.

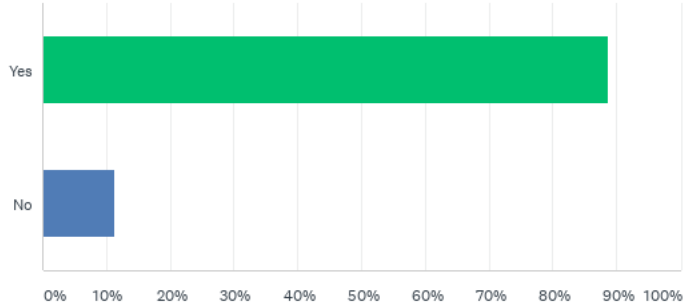
Question 6



Although the single largest majority agreed with question 6, the overall majority were either ambivalent, or disagreed. However, we take into account the margin of error, it is a 50% split between those who agreed and those who either disagreed or were ambivalent. If we think about this another way, it would suggest that half of the people who use and rely upon the regulation to make boarding and landing as safe as possible do not find it clear, concise, easy to interpret and implement. This theory was heavily supported up by the qualitative data and the emerging themes. Both groups detailed complicated ambiguous regulation, which does not meet its remit of safely regulating the boarding and landing of pilots. Furthermore, even if they did, the regulation contains get-out-clauses which vessels regularly use thus avoiding compliance.

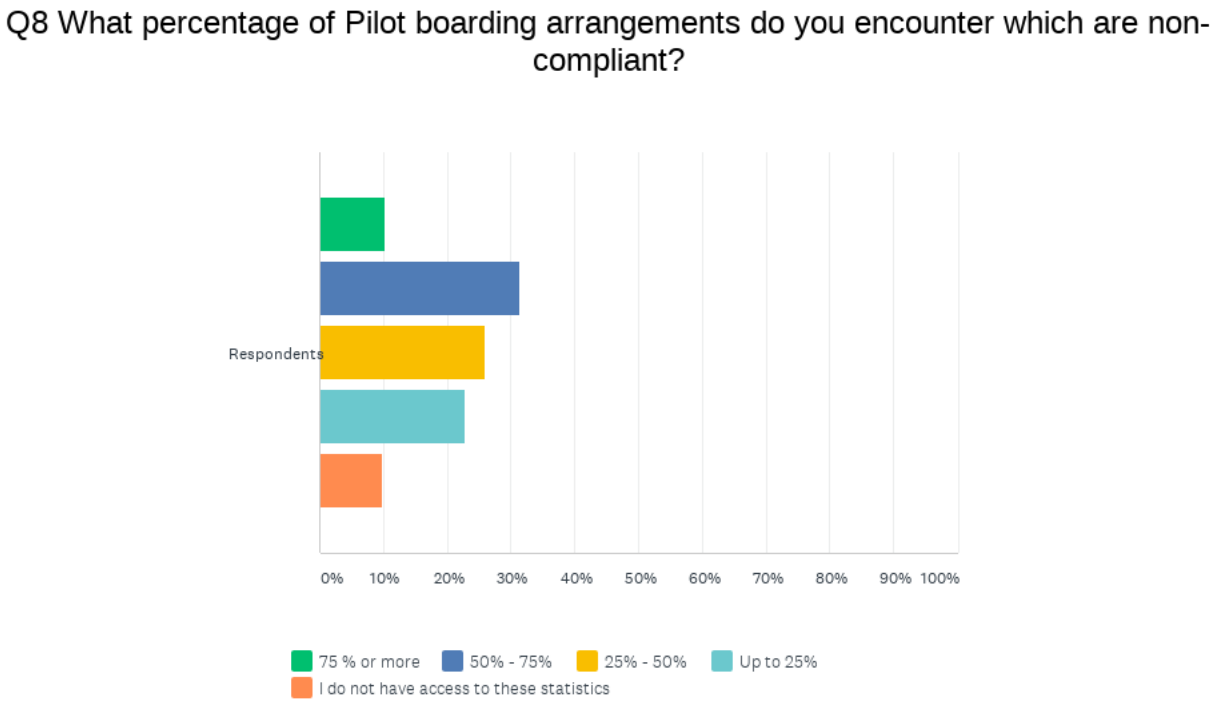
Question 7

Q7 Do you feel the regulation surrounding pilot boarding arrangements could be improved?



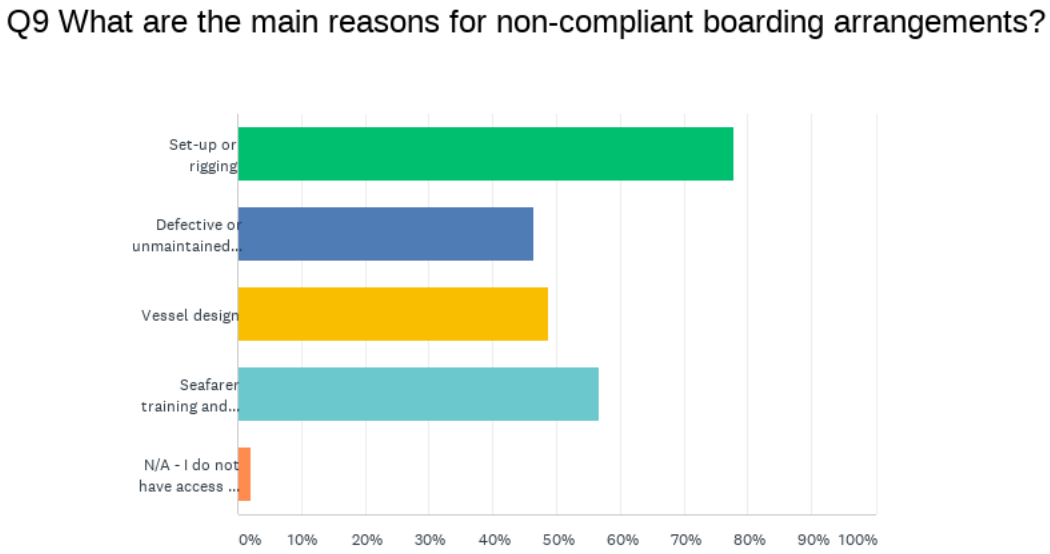
Between 79-99% of respondents believed the regulation could be improved. The main themes which emerged from the data were consistent from each data set and identified standardising, consolidating and simplifying the regulation, with particular reference on the regulation being clear with no ambiguity. Once again, the respondents mentioned that the method of securing a pilot ladder onto deck and at intermediate lengths requires proper regulation. Enforcement was high on the agenda in both groups, with both feeling enforcement is lacking in our industry.

Question 8



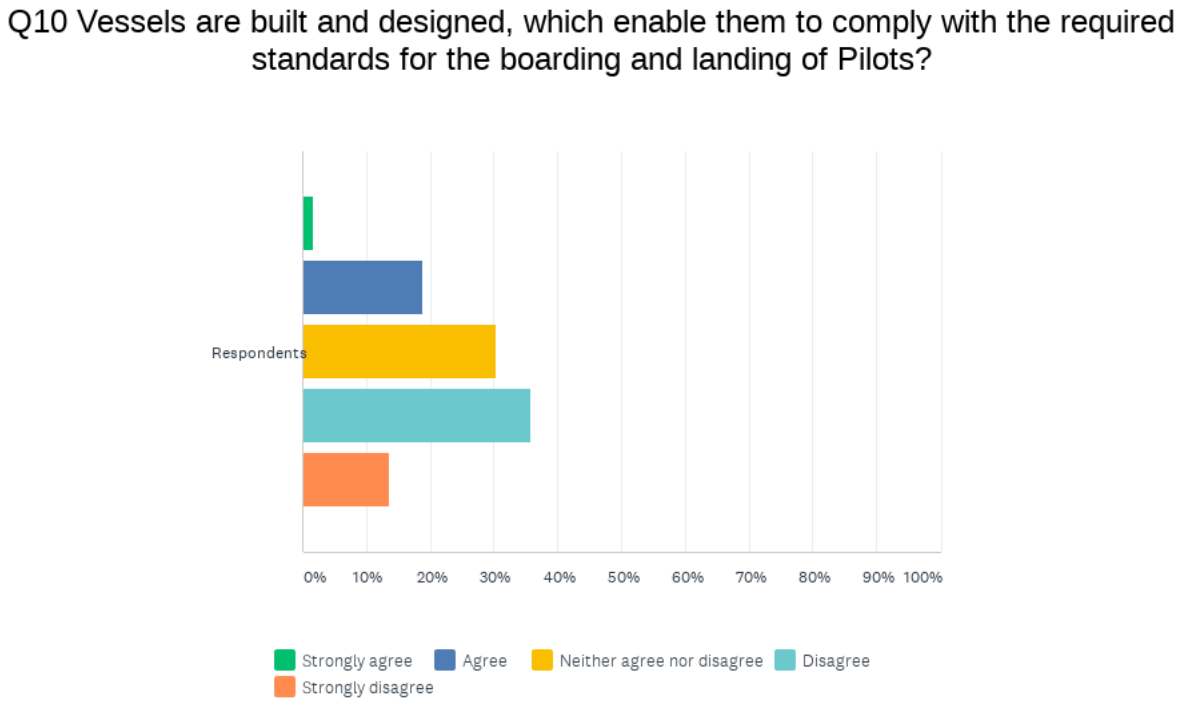
There was an option to omit this question if respondents believed a non-compliance rate of zero. An option was also included if respondents did not have access to statistics, for example, a seafarer serving on one vessel for many years. Worryingly, when we discount those who did not have access to the statistics, 65-85% of the respondents encountered either up to or over 50% non-compliant PTA. The remaining group encountered up to 25%.

Question 9



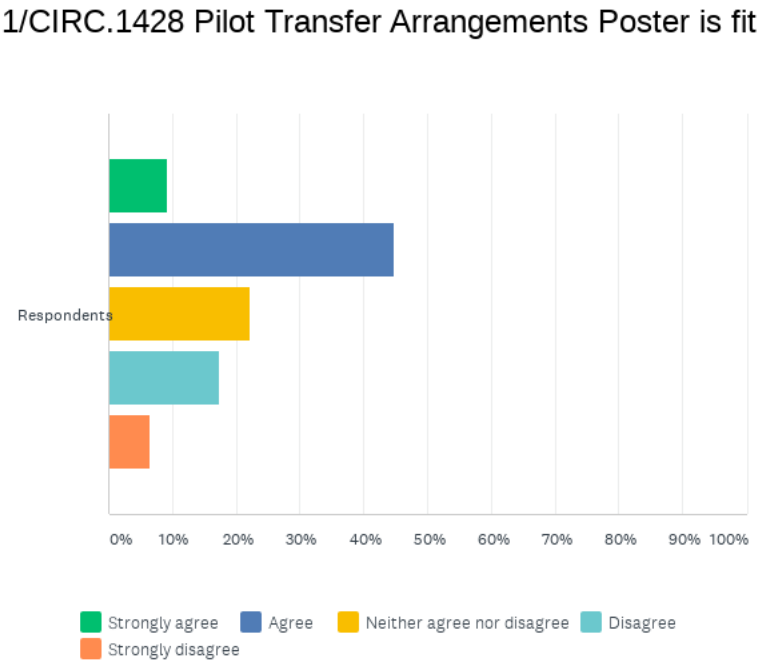
This questioned aimed to assess if there was any one particular reason for non-compliance. Although the largest response was attributed to setting-up or rigging, it was evident that not one reason alone could be identified. This was consistent with the literature review which found non-compliance is often interlinked with many factors. This was backed-up by the themes which emerged from the qualitative data. For example, a poorly trained seafarer working on a poorly designed vessel will struggle to set up a compliant transfer arrangement. This suggests that it is necessary to address each issue individually resulting in a collective improvement.

Question 10



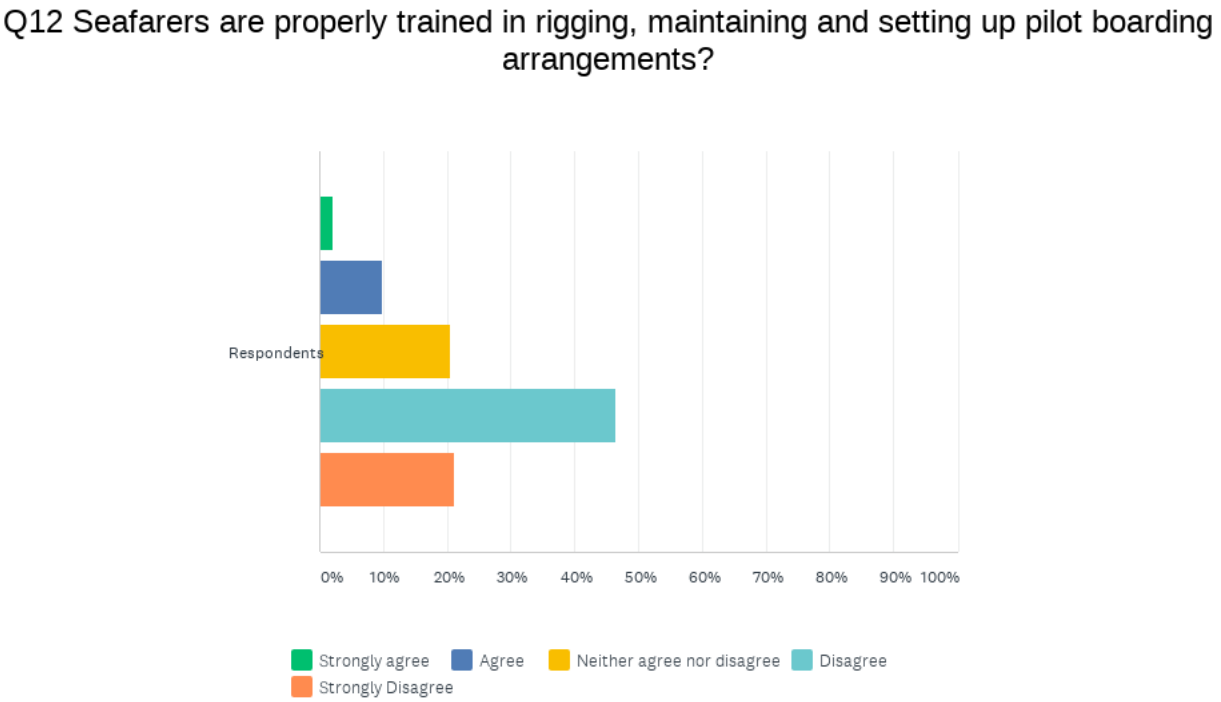
The majority of respondents do not think vessels are designed which enable them to comply with the regulations. Even so, a fairly large number of respondents were either ambivalent or agreed, suggesting this is not true for all vessels. The results from the qualitative data suggests the same. Although not for every vessel, there are still a large number of vessels - even new builds -which through design, make it difficult for seafarers to comply with the regulation.

Question 11



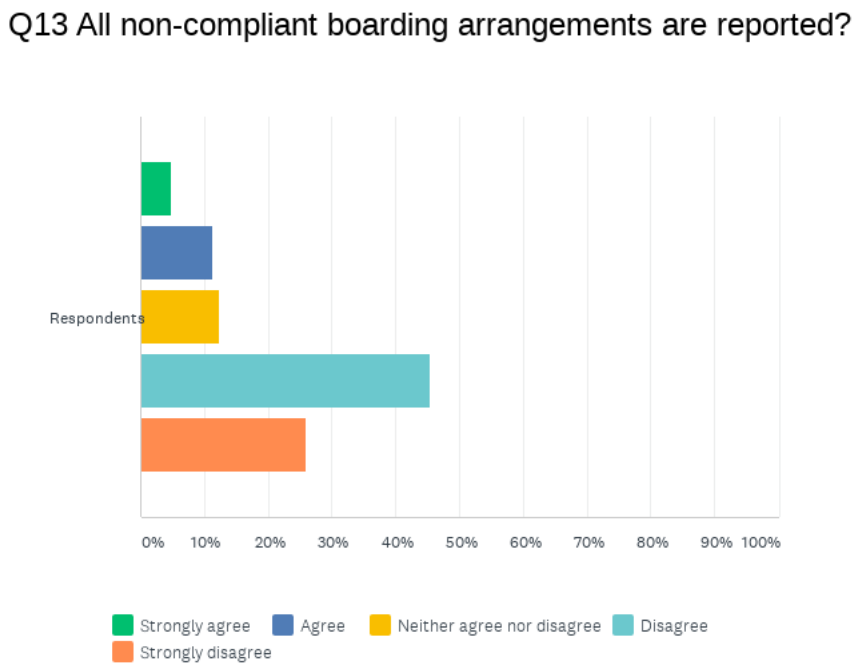
On the whole, respondents believed the MSC.1/CIRC.1428 Pilot Arrangements Poster is fit for purpose. Of those who did not, they attributed this to several mistakes with the poster. It became evident, though, that professional industry bodies are currently working on renewing and updating the poster.

Question 12



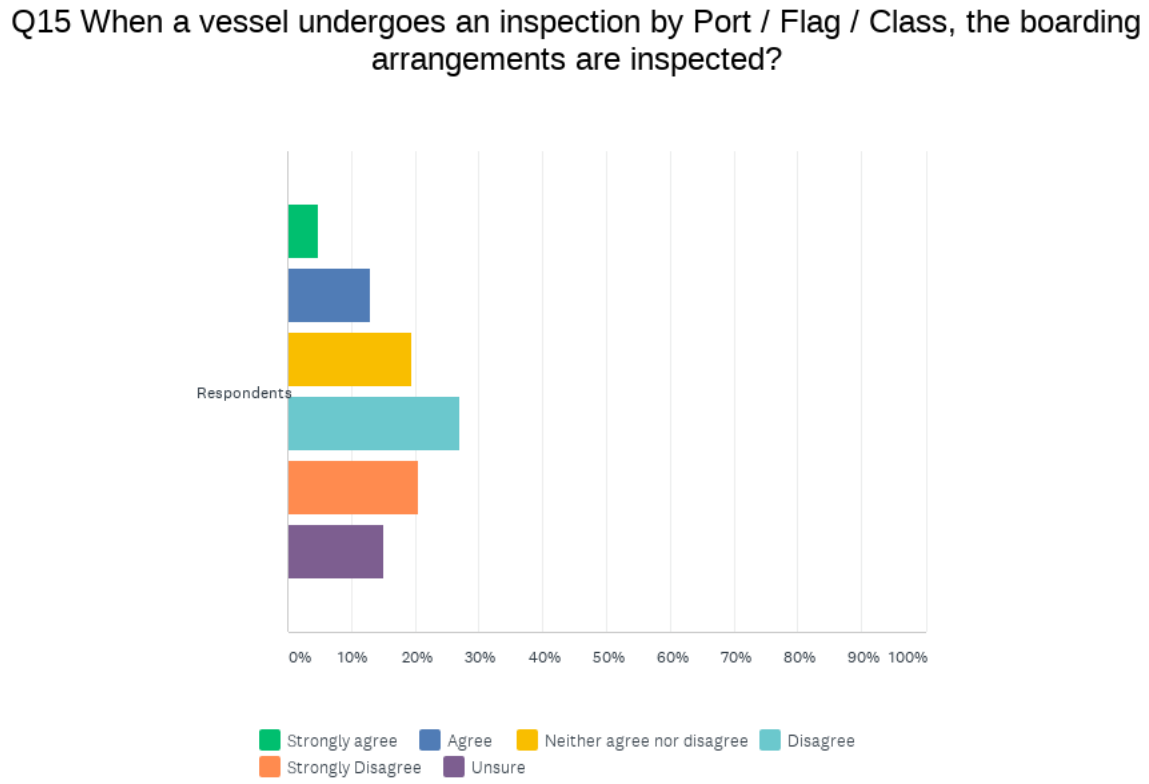
Between 60-80% of respondents felt that seafarers are not properly trained in rigging, maintaining and setting up PTA. This was consistent with the emerging themes, whereby both groups felt not enough was being done to train seafarers regarding boarding and landing pilots. One key issue which emerged was that the regulation requires a responsible officer to be in attendance when pilots are boarding and landing. The problem is, the regulation does not detail how an officer becomes responsible or what training they should receive.

Question 13 and Question 14



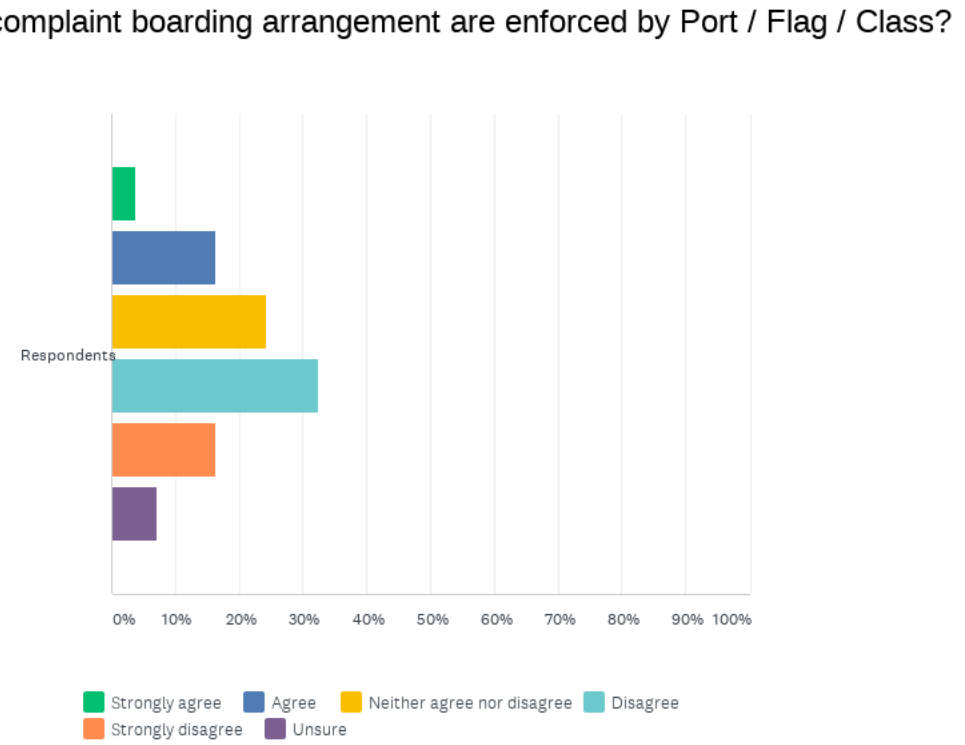
77-97% of respondents did not agree that non-compliant transfer arrangements are reported. The respondents felt that reporting non-compliant arrangements did not achieve anything as they were not followed up, and nothing was done to correct them. Further to this, they felt they received no feedback after a report was issued. Some pilots stated they reported non-compliant arrangements directly to the Master but also commented that this could result in confrontation and, in-turn, may negatively affect the Master pilot exchange and ultimately the safety of navigation.

Question 15



Only 5-15% of respondents felt that transfer arrangements are inspected during port/flag inspections or class audits. Interestingly, the study group felt that not only do port/flag states not enforce the regulation, the focus group took this further and suggested that the regulators themselves do not fully understand the regulations and often ask the industry bodies for advice. This suggests, seafarers, pilots, surveyors and executives, all struggle to understand and interpret the regulation. The consequence is a safety critical activity which is not enforced as it should be.

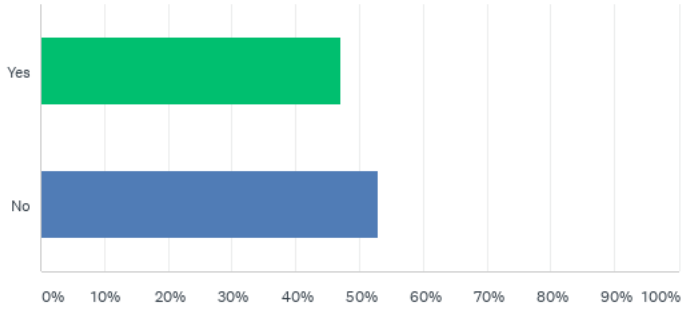
Question 16



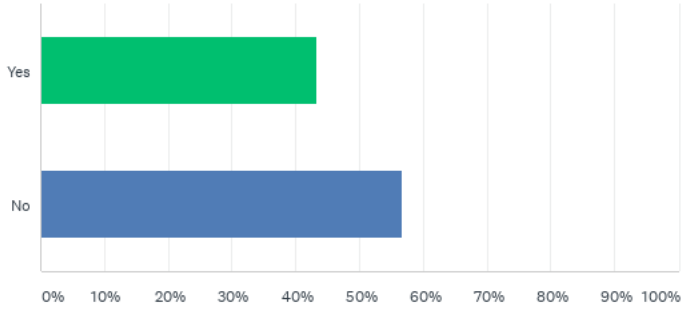
Respondents do not feel non-compliant transfer arrangements are enforced and both groups strongly felt that enforcement should be increased and would indeed help combat the problem. This ties-in with the sentiment surrounding the reporting of non-compliant arrangements and inspectors / surveyors not understanding the regulations themselves which we discussed in Question 15.

Question 17 and 18

Q17 Are you aware of industry wide statistics surrounding non-complaint boarding arrangements?

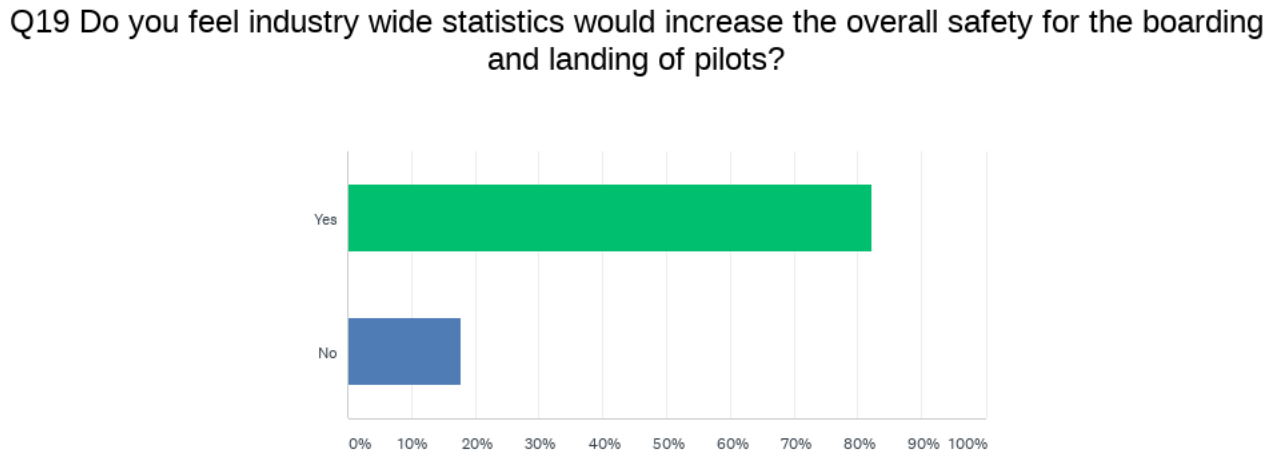


Q18 Are you aware of industry wide accident and incident statistics for the boarding and landing of pilots?



Only between 36-56% of respondents were aware of any statistics. The only available statistics are collected annually by the International Maritime Pilots Association and rely upon individual pilots submitting them. The data revealed however, that many accidents, incidents and near-misses occur worldwide which are not reported. Not only is this deflating the scale of the issue, but the industry is losing out on valuable statistical data which could be used to prevent further avoidable accidents.

Question 19



The overwhelming majority felt that industry wide statistics would improve the safety regarding the boarding and landing of pilots. This would involve ports and industry working together. The respondents felt that if the industry were able to collate and analyse incidents, near-misses and non-compliant arrangements, we would be better placed to identify trends and make boarding and landing safer.

4.3 Discussion

In line with the methodology section, data was collected and analysed using thematic analysis. The results of which would then be coded and created into themes contained in Appendix A. It is these themes which will now be used to compare and contrast against the finding in the literature review. These comparisons in this discussion will then be brought on to create meaningful observations and to form a conclusion.

The literature review highlighted a high level of non-compliance surrounding pilot transfer arrangements, unfortunately there was no data which could identify a definitive reason for this. Thankfully, though, the literature review also investigated ways in which regulatory success could be measured and set us upon a path of assessing certain key areas. Namely, the regulation itself, compliance, training culture, vessel design and accident and incident investigation. By assessing these key areas, we could begin to understand why there might be such a high level of PTA non-compliance and, once documented, it could underpin ways to improve. The literature review identified general failings in each of these areas but there was no definitive data which could connect these to PTA non-compliance, yet through the collection of empirical data we could begin to truly understand why. With that in mind, we will look at each area in turn comparing the underlying findings in the literature review to that of the data analysis.

When we began to look at the regulation it became evident that despite the regulatory foundations being in place, the regulation is spread over many different documents suggesting it may be difficult to interpret – certainly not the goal of any regulation. These sentiments were backed up by the empirical data which found that majority of the users did not find the regulation clear, concise, easy to interpret and to implement. Further themes which emerged highlighted that the regulation was complicated and ambiguous. Further to this, respondents felt that pilots, seafarers and even the regulators themselves struggled to successfully interpret the regulation. They also felt the legal manner in which the regulation is written was perhaps a barrier to its success, and a simplified code for the end user would be of great benefit. This tied in with the notion and suggestion from the UK Government regarding the creation of Codes.

The good news is, the qualitative survey data identified areas where the regulation could be improved by consolidating, simplifying and removing any ambiguity and removing the grandfather clause. The procedure for securing the pilot ladder to the deck was one key area where the regulation was found to be ambiguous. For instance, there is no definitive guidance on how a pilot ladder should be secured to deck. Another example is low freeboard transfers. Although the regulations state that it should be safe and convenient, different vessels are open to interpret what is safe and convenient in different ways. To give an illustration of this, some ships may decide to provide a ladder, some ships may decide to provide a gate, or some ships may provide both.

Both the study from the IMPA and the data collected in this study returned a high level of non-compliance. It was interesting to see there was not any one particular reason which could be attributed to non-compliance. This ties-in with the sentiment from the literature review, whereby there are potential shortcomings in each of the main areas of regulation, training, culture, vessel design and accident and incident reporting. The literature review detailed and discussed the importance of enforcement when it comes to compliance. Interestingly, though, a recurring theme was that the regulation is so complicated the regulators struggle to understand and enforce it, so-much-so that they often ask industry bodies for advice when interpreting the rules. Further to this, seafarers felt the transfer arrangements were not high on the agenda when it came to inspections. A key fact to remember, is that the act of boarding and landing is of high consequence when it goes wrong. With that in mind, why wouldn't the transfer arrangements be given as much thought as any other safety critical equipment onboard? This could once again be attributed to the fact the regulation is difficult to interpret and to understand, how can a regulator enforce something they themselves struggle with? The result of poor enforcement has also contributed to a lack of reporting in the industry.

Moving onto training in the maritime sector, it became evident when reviewing the literature that successful training is of paramount importance to ensure a safe and efficient industry. The problem is though, the literature also highlighted that seafarers are not being trained properly. The empirical data backed this up, and the overwhelming view was that seafarers are not properly trained when it comes to safely boarding and landing pilots. A perfect example of this, was Regulation 23 requires a responsible officer to be in attendance during a pilot transfer, this is to ensure the transfer is carried out safely and in accordance with the regulation. The problem is, there is no mention on how the responsible officer is trained or deemed responsible, it is a matter for the vessel to decide. How can a crew who doesn't understand the regulation or aren't trained properly appoint a responsible officer to oversee the safe transfer of a pilot?

An equally significant factor in the puzzle was ship design. The literature suggested that successful design involved effective research and development, the literature review also discovered the regulation may not reflect the safest possible standards available for pilot transfer arrangements. Further to this, the literature review also identified evidence that ships are being built which are unable to comply with the regulations as shipbuilders also struggle to interpret the rules. This has led to seafarers having to work around bad design. The illustration provided by the data sets supported the literature and detailed an industry where ships are designed to maximise cargo or function and the transfer of pilots is an afterthought. For instance, ships often leave the yard with an inability to comply with the rules. Some key examples of this were an inability to secure a ladder to deck or - as was the case with the Maersk Kensington – dangerous trapdoor arrangements. Some other common concerns were transfer positions towards the extremity of a vessel and no consideration to transfer positions when the vessel is at an intermediate draught.

With the Maersk Kensington in mind, a key fact to remember is many vessels are still trading with similar non-compliant trapdoor arrangement, which likely contributed to the death of a pilot. Let us take a moment to think about that. Not only have the IMO recommended a safe way of rigging a trapdoor arrangement since 1979, but pilots and industry professionals have been voicing their concern over these arrangements for quite some time, a key theme among the respondents was that these trapdoor arrangements are incredibly dangerous and unacceptable. It would be safe to assume that upon learning something is so dangerous it can result in death; our executive agencies would be working hard to combat the issue. Sadly, this is not the case. In view of this, we are entrenched in a system without enforcement and where we are not learning from accidents or incidents, and there is a complete lack of any safety statistics. Furthermore, pilots have become so disheartened they have resigned themselves to the fact that there is nothing they can do. All key indicators of a broken and damaged culture.

With culture in mind, the culture is the glue which holds together everything we have discussed. In light of this, the literature review painted a picture of a very sub-standard safety culture when it came to the boarding and landing of pilots. Unfortunately, the data analysis painted a very similar picture. An equally significant factor is, not only did the data demonstrate a substandard safety culture, it demonstrated a culture whereby some pilots are often subject to commercial pressure and confrontation when they raise their concerns. For example, when raising a non-compliance with the Master. Not only has this resulted in a pilotage industry who are subjected to large scale non-compliance, it has resulted in a pilotage industry who feel powerless and compelled to get the job done regardless. This has led to a very dangerous culture throughout our whole industry whereby all other safety barriers have failed, and the pilot is left wondering if the transfer arrangement is indeed safe. With that in mind, it must be noted that it is impossible for a pilot to properly assess the compliance of a pilot transfer arrangement when they are standing on one moving platform looking at another; all the while concentrating on the safety of navigation, not only for the vessel they are boarding but all vessels in the vicinity. A very rudimentary example of this being, how can a pilot be expected to sign off on a pilot ladder, when they cannot even see how it is secured? Some pilotage authorities ask the vessel over VHF if their boarding arrangement comply with IMO requirements, unfortunately, on analysis this is not an effective means of ensuring compliance; The focus group illustrated that all vessels will state that their arrangements comply even when they do not.

The role of a pilot is to mitigate risk through ensuring the safe navigation of a vessel, it is not their job to ensure the transfer arrangements are safe. Much like any person who drives to work - it is not their job to ensure the roads are safe. On the other hand, much like a driver avoiding a pothole, a pilot should refuse to board a vessel if they feel they are putting themselves at risk. There is no doubt that it is the responsibility of the regulation, training and enforcement to ensure the pilot is provided with a safe means of transfer to and from a vessel.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of findings and Conclusion

To conclude this research, this final chapter will summarise and document the key findings from both the literature review and the data analysis. To ensure the research has met its objective of identifying any shortfalls, conclusions have been drawn and recommendations will be made to facilitate a positive change throughout our industry.

After identifying both fatalities and a high level of non-compliance in the industry, the literature review set out to exam the regulation, and the factors which contribute to regulatory success. This led us onto analysing the key areas which affect the boarding and landing of pilots, namely the regulation itself, training, enforcement, culture and accidents and incidents. Worryingly, the theme that emerged from the literature review was one of non-compliance and one which highlighted failings in all key areas which affected the safe boarding and landing of pilots. The aim of the research was to identify what was affecting non-compliance and with that in mind, further research was carried out to align the literature review through the collection and analysis of empirical data.

Compelling evidence emerged when data was collected and analysed. After coding the data, the emerging themes set the scene whereby pilots felt helpless in the battle against non-compliance. So-much-so, that non-compliant transfer arrangements have become an everyday feature. Furthermore, pilots have very worryingly and wrongly been left as the only line of defence in what could be a catastrophic journey to work. To put it more simply, the pilot's journey to work is un-supported by failing regulation, enforcement, training, culture and vessel design and all wrapped up in a system which does not support, encourage or learn from reporting errors.

However, on a positive note, the foundations are in place. Above all, it should also be noted that these foundations can be worked upon and the shortfalls easily addressed. No human being deserves to face life-or-death on their way to work. Although each and every pilot has a duty to report and refuse a non-compliant transfer arrangement, it is the fundamental shortfalls that have been identified in this paper which must be addressed in order to make a real difference. The assessment of life and death must not be left to a pilot when all other barriers have been left to fail. The pilot should be concerned with the safety of navigation and not whether they have landed on a snake or landed on a ladder.

5.2 Recommendations

The researcher recognises that certain recommendations can take longer than other to implement, with that in mind, they have been grouped into three phases, short, medium and long term.

Each recommendation must be implemented and then maintained; collectively the recommendations will serve to greatly improve the safe boarding and landing of pilots.

Short Term

- Enforcement is incredibly important for regulatory compliance, this needs to be heavily increased to combat the problem we are facing but in a positive, open and transparent manner.
- Enforcement must take into account due regard for safety standards adopted by the IMO prior to 2012 and ship owners must not be allowed to use Regulation 23 Section 1.3 as a get-out-clause for unsafe arrangements.
- Securing a pilot ladder at intermediate lengths must be clearly regulated.

Medium Term

- A unified and international code or best practice would simplify the regulation for seafarers, pilots, ship builders and industry professionals. It would form a clear set of instructions which are easy to interpret, implement and also serve to remove any ambiguity.
- A Responsible Officer should be defined. Furthermore, they should receive regular and specific training approved by the administration.
- Transfer arrangements should be studied and tested to ensure the best possible design solution; a tool used in all other safety critical industries.
- Without robust accident and incident statistics, it is very difficult to create a learning culture. Government Authorities should collate information surrounding non-compliance, accidents and incidents. It should be mandatory for both vessels, regulators and port and pilot authorities to feed information in.

Long Term

- All of the regulation and associated documents must be consolidated, simplified and brought into The International Convention for the Safety of Life at Sea.
- All ambiguity must be removed from the Regulation.
- The clause in Regulation 23 section 1.4 must be removed, and any future safety critical changes must be time-bound for all vessels.

6.0 Reference List

ANDREWS, 2021. Design Errors in Ship Design. Journal of marine science and engineering, 9(1), 34

BRAUN, V. and V. CLARKE, 2013. Successful qualitative research. 1. publ. ed. Los Angeles [u.a.]: SAGE

CFA SOCIETY UNITED KINGDOM, 2011. EFFECTIVE REGULATION [viewed 30.08. 2020]. Available from: https://www.cfauk.org/-/media/files/pdf/pdf/5-professionalism/3-research-and-position-papers/effective-regulation.pdf

CHARTERED INSTITUTE OF ERGONOMICS & HUMAN FACTORS, 2021. Safety at sea: human factors onboard ships [viewed 08.02. 2021]. Available from: https://www.ergonomics.org.uk/Public/Resources/Articles/Safety_at_sea__human_factors_aboard_ship.aspx

COOPER, D., 1998. Improving safety culture. Chichester: Wiley

CROWN COPYRIGHT, 2011. TRANSFORMING REGULATORY ENFORCEMENT: FREEING UP BUSINESS GROWTH [viewed 08.02. 2021]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/31427/11-989-transforming-regulatory-enforcement-consultation.pdf

CROWN COPYRIGHT, 2021. Investigating accidents and incidents [viewed 12.10. 2020]. Available from: https://www.hse.gov.uk/managing/delivering/check/investigating-accidents-incidents.htm

DEKKER, P.S., 2014. The field guide to understanding 'human error'. 3rd ed. Ashgate

DYCK, C.V. et al., 2005. Organizational Error Management Culture and Its Impact on Performance. Journal of Applied Psychology, 90(6), 1228-1240

EDWARDS, S., 1979. Interpretation of Leal Documents. Jurimetrics, 20(2), 174-194

EUROPEAN COMMISSION DIRECTORATE-GENERAL FOR MOBILITY AND TRANSPORT, 2012. Study on Pilot Exemption Certificates [viewed 04.01. 2021]. Available from: https://ec.europa.eu/transport/sites/transport/files/modes/maritime/studies/doc/2012-09-18-pec.pdf

EVANS, T., 2020. Strength of pilot ladders and intermediate securing of pilot ladders [viewed 13.02. 2021]. Available from: https://underway.nz/pilot-ladders/

EVANS, U.F., A. MKPANDIOK and K.O. OKONNA, 2017. An evaluation of the level of awareness of the STCW-78 as amended in Manila 2010, using maritime education and training institutions as collective compliance mechanism. Australian Journal of Maritime & Ocean Affairs, 9(3), 168-181

FRIEDMAN, L.M. and J. LADINSKY, 1967. SOCIAL CHANGE AND THE LAW OF INDUSTRIAL ACCIDENTS. Columbia Law Review, 67(1), 50

GREENE, J.C., 2008. Is Mixed Methods Social Inquiry a Distinctive Methodology? Journal of mixed methods research, 2(1), 7-22

HSE EXECUTIVE, 2020. Fatal Injuries in Great Britain [viewed 30.05. 2020]. Available from: https://www.hse.gov.uk/statistics/fatals.htm

IMO, 2019a. Brief History of IMO [viewed 01.02. 2021]. Available from: https://www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx

IMO, 2019b. International Convention for the Safety of Life at Sea (SOLAS), 1974 [viewed 07.02. 2021]. Available from: https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-(SOLAS),-1974.aspx

IMO, 2019c. Vision Principles and Goals [viewed 07.02. 2021]. Available from: https://www.imo.org/en/OurWork/HumanElement/Pages/VisionPrinciplesGoals-Default.aspx

IMPA, 2012. Guidance for naval architects and shipyards on the provision of pilot boarding arrangements [viewed 10.02. 2021]. Available from: https://www.impahq.org/admin/resources/guidancefornavalarchitects.pdf

IMPA, 2021. IMPA - International Maritime Pilots' Association News [viewed 04.02. 2021]. Available from: https://www.impahq.org/news.php

IMPA, 2020. Safety Campaign 2020 [viewed 04.01. 2021]. Available from: https://www.impahq.org/admin/resources/impa-safety-campaign-results-2020high.pdf

JUNG, M., 2017. A STUDY ON THE EFFECTIVENESS OF THE ISM CODE ON THE SEAFARERS' AWARENESS OF SAFETY CULTURE [viewed 06/06/ 2019]. Available from: https://commons.wmu.se/cgi/viewcontent.cgi?article=1560&context=all_dissertations

KELLY, J., T. SADEGHIEH and K. ADELI, 2014. Peer Review in Scientific Publications: Benefits, Critiques, & A Survival Guide. EJIFCC, 25(3), 227-243

LAVERICK, C., 2018. Enforcing the ism code, and improving maritime safety, with an improved corporate manslaughter act: a safety culture theory perspective, ProQuest Dissertations Publishing

LEGISLATION.GOV.UK, 2020. Pilotage Act 1987 [viewed 06.06. 2020]. Available from: http://www.legislation.gov.uk/ukpga/1987/21/contents

MAIB, 2017. Very Serious Marine Casualty Report No 21/2017 [viewed 15.06. 2020]. Available from: https://assets.publishing.service.gov.uk/media/59dcba79ed915d493abd4f19/MAIBInvReport21_2017.pdf

MERTENS, D.M., 2015. Mixed Methods and Wicked Problems. Journal of mixed methods research, 9(1), 3-6

NAUTILUS INTERNATIONAL, 2020. IMO urged to improve pilot ladder safety after fatal accident [viewed 02.02. 2021]. Available from: https://www.nautilusint.org/en/news-insight/news/imo-urged-to-improve-pilot-transfer-safety-after-fatal-ladder-accident/

OECD, 2012. Measuring Regulatory Performance [viewed 02.02. 2021]. Available from: https://www.oecd.org/gov/regulatory-policy/1_coglianese%20web.pdf

OECD, 2018. OECD Regulatory Enforcement and Inspections Toolkit [viewed 08.02. 2021]. Available from: https://www.oecd-ilibrary.org/docserver/9789264303959-en.pdf?expires=1612782196&id=id&accname=guest&checksum=A66179A2475D2D7517594D647F01BEF7

PEANSUPAP, V. and R. LY, 2015. Evaluating the Impact Level of Design Errors in Structural and Other Building Components in Building Construction Projects in Cambodia. Procedia engineering, 123, 370-378

RATTRAY, E., 2019. An investigation on how the Human Element was intended to be incorporated by the IMO and to analyse if it has been an overall success, Solent University

ROSSITER, T., 2013. Effective Business Writing. 1st ed. United Kingdom: In Easy Steps Limited

REASON, J., 2000. Human error: models and management. BMJ, 320(7237), 768-770

SURVEYMONKEY, 2021. Calculating the Number of Respondents You Need [viewed 12.01. 2021]. Available from: https://help.surveymonkey.com/articles/en_US/kb/How-many-respondents-do-I-need

THE AMERICAN CLUB, n.d. Every Step Matters - Pilot Boarding Safety [viewed 4.01. 2021]. Available from: https://www.american-club.com/files/files/slips_trips_falls_case_5.pdf

UKMPA, 2020. Latest News [viewed 06.06. 2020]. Available from: https://ukmpa.org/news/

UNITED NATIONS, 2015. On World Maritime Day, UN highlights importance of maritime eduction and training [viewed 02.02. 2021]. Available from: https://news.un.org/en/story/2015/09/509592-world-maritime-day-un-highlights-importance-maritime-education-and-training

WARNER, R. and S. KAYE, 2016. Routledge handbook of maritime regulation and enforcement. London ; New York: Routledge

WEE, V., ICS asks if STCW Convention 'is still fit for purpose' [viewed 06/06/ 2019]. Available from: https://lloydslist.maritimeintelligence.informa.com/LL1124956/ICS-asks-if-STCW-Convention-is-still-fit-for-purpose?vid=Maritime&processId=db6b0198-351e-4eae-9548-ba4c3f8ec8a4

WIKIPEDIA, 2021. *Snakes and Ladders* [viewed 18.02. 2021]. Available from: https://en.wikipedia.org/wiki/Snakes_and_ladders

WILKINSON, S., 1998. Focus group methodology: a review. International journal of social research methodology, 1(3), 181-203

WOOD, B., 1917. The Laws of Oleron [viewed 29.05. 2020]. Available from: https://snr.org.uk/laws-oleron/

WRIGHT, E., T. BEARDSLEY and C. BORAIKO, 2008. Accident Investigations One Element of an Effective Safety Culture. Professional Safety, 53(9), 26

XANTHAKI, H., 2014. Drafting Legislation. 1st ed. London: Bloomsbury Publishing (UK)

Appendix A – Emerging Themes from Thematic Analysis

Survey Themes	Focus Group Themes
Regulation	Regulation
The legal wording and phrases are difficult to understand. The legislation is spread over many difficult documents, making it very difficult to piece together and to understand. ISO 799 should be regulation and written into SOLAS not merely a reference from an external organisation. The Regulation is ambiguous and can be interpreted differently by different people or organisations. The regulation must state how pilot ladder is secured to deck and these securing methods should be tested and approved. All grandfather rights should be removed. A large number of seafarers and pilots do not fully understand the Regulations. Enforcement needs to be increased. The pilot ladder poster has some errors and does not show how to secure a pilot ladder.	The regulations are not written for the seafarer, the people who are implementing the regulations. The regulations are spread far and wide spanning several different documents. This on-top of them being difficult to read, is a massive barrier to successful implementation. The regulations are too ambiguous and contain get-out-clauses. ISO 799 goes beyond its remit and contradicts IMO. It has good purpose but may be part of the problem. Terminology across the regulation must be made consistent, the use of acronyms is confusing. Enforcement is difficult because port / flag states also struggle to correctly interpret the regulation. The MCA ask pilots for advice which is wrong. There is no definitive guidance on how to secure a pilot ladder. Low-freeboard transfers are among the most dangerous, but the regulations leave too much room for the seafarer to interpret in any way they wish.

	There is no guidance regarding how a responsible officer is trained or where they should be positioned. Amendments must be made time-bound. Different countries interpret the regulations differently resulting in further confusing for vessels. All vessels state that their boarding arrangements are compliant over VHF even if they aren't.
Training	Training
Pilots do not understand the rules and regulations. Seafarers should have better / regular training on setting-up PTA.	Both seafarers and pilots do not fully understand the regulation. Properly and effective training is essential to solve the issue. There is no guidance regarding how a responsible officer should be trained or deemed responsible.
Culture	Culture
Some Pilots feel they are under commercial pressure to get the job done irrespective of the transfer arrangements. Pilots feel flag / port states are not enforcing the regulation. Pilots may board a non-compliant vessel through either pressure or not realising there is an issue or ignoring an issue. This makes the ship wrongly believe the transfer arrangements are compliant as other pilots use them.	Pilots like to get the job done and will board non-compliant arrangements. Nationally and internationally it is uncommon for pilots and harbours to share accident data to learn from incidents. Seafarers are demotivated and look for the quick and easy way to rig transfer arrangements. Pilots like to keep a positive relationship with Masters so do not question non-compliant arrangements.

Pilots have stopped reporting non-compliant PTA because they feel nothing is being done to rectify them, therefore it is a waste of their time. Pilots feel that a successful Master Pilot Exchange is very important when it comes to ensuring the safety of navigation, and they feel confronting the Master may jeopardise this relationship.	
Accident / Incident	Accident / Incident
There is no effective or worldwide reporting system to report and follow up non-compliant PTA. Pilots are demoralised reporting incidents and receiving no change or feedback. International statistics would improve understanding and help the industry learn from mistakes.	The ports and the industry need to work together to share data in order to learn from accidents and incidents. International accident and incident data would be very useful.
Vessel Design	Vessel Design
The regulation does not take account for the vessel's draught. Boarding positions can be close to vessel extremities making boarding more dangerous. Vessel design often makes it difficult for the vessel to comply with the regulation. Classification societies are approving ships which do not comply with the regulation. New build vessels are still being built where they leave the vessel unable to comply through design.	Vessels are leaving shipyards unable to comply with the regulation, they are being signed off by surveyors when they simply can't comply. This results in seafarers trying to work around bad design.

Appendix B – Focus Group

Boarding and Landing Focus Group

The aim of this focus group is to gain thoughts and options regarding the boarding and landing of pilots from leading experts in the field. The data gathered forms part of a research project and will be used to compare and contrast data gathered from a perception survey.

Regulatory Framework and Enforcement

- Are the current regulations fit for purpose?
- Are they easy to interpret and implement?
- Are the regulations an effective safeguard against accident and injury?
- Are the grandfather rights acceptable?
- What is missing when it comes to the regulation?
- Is the regulation properly enforced?
- What is your view on ISO 799?
- Does the poster help?
- Is asking the vessel over VHF an effective means of ensuring compliance?

Training

- Are seafarers properly trained in setting up pilot transfer arrangements?
- Are pilots properly trained in setting up pilot transfer arrangements?

Culture

- With culture in mind, what factors are preventing correctly set-up pilot transfer arrangements?
- Are pilots subject to commercial pressure?
- Do pilots receive feedback when they report a NCTA?
- Are the vessels accountable for NCTA's?

Vessel Design

- Are vessels designed with pilot transfer in mind?
- Is the vessels draught taken into account?

Accident and Incidents

- Are accidents and incidents involving pilot boarding and landing properly investigated?

- Would International statistics be of benefit regarding accidents, NCTA's, and near-miss incidents?

Resolution

- What can be done to resolve NCTA's?

Conclusion

- Are there any other pertinent issues you would like to raise?
- Can you describe why you decided to participate in this Focus Group?
- Do you feel the Focus Group met the overall aim?