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The Lloyd's Register Educational Trust (The LRET) is an independent charity working to achieve advances in transportation, science, engineering and technology education, training and research worldwide for the benefit of all.
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Foreword

Professor Helen Sampson

The Seafarers International Research Centre (SIRC) is a policy-related Centre which undertakes research on the human and organisational aspects of the shipping industry. Academic staff at the Centre are drawn primarily from Social Science disciplines and some originally worked in the maritime industry as officers. The Centre produces a range of work intended to be of benefit to the broad maritime sector. This work is largely funded by the sector and is published in a variety of forms which are designed to be accessible to stakeholders and policy makers.

Across the Centre a range of work has been produced in relation to: regulation; education and training; human resource management; the management of risk; seafarer and vessel casualties; health and welfare; industrial relations; and work processes. The Centre’s success is built upon the support of key stakeholders within the maritime ‘community’. Across the sector organisations have: commissioned projects; provided ‘core-funding’ for the Centre; facilitated research access; and provided funding for events such as this which, in 2011, has been generously supported by The Lloyd’s Register Educational Trust (The LRET) to which we are grateful.

The SIRC Symposium is held every two-years with the intention of feeding back our research findings to those across the sector who may find them of benefit. It attracts an international audience from a wide range of organisations. This year we will have ‘delegates’ from sixteen countries including India, Myanmar, Singapore and the Philippines and we will have representatives from a wide range of industry organisations. Some organisations are primarily focussed upon seafarers’ welfare, some upon health and safety, some upon the operation of ships, some upon the representation of seafarers, and some upon the regulation of the sector. Whatever the reason for taking an interest in our work, however, we hope that the papers presented will be of use, and that our research might impact, if only in small ways, upon the improvement of policies and practices in the industry, most particularly those which effect seafarers’ health, safety and welfare.
Introductory Address

Mr Thomas Thune Andersen, Lloyd’s Register

Ladies, gentlemen and industry colleagues,

Let me start by saying how delighted I am to be here today, speaking at a forum that has done much to progress merchant shipping's understanding of the events and trends that affect the safety of our people and protect the environments in which they work.

It seems our industry has been talking about the importance of improving the safety of our mariners since the beginning of commercial shipping. Yet, despite the steady advances in maritime safety, the topic never grows old, precisely because the lives of our friends and family members are as valuable as ever.

This is why we must remain vigilant and continue our collective search for new and innovative ways to keep our people safe.

I am pleased to see that our colleague, Dr Lijun Tang, will speak this afternoon about training and new technology. His is the first of several presentations during this symposium that will highlight the unique challenges within the people, plant and process triangle that is the key to improving workplace safety across all industry.

Gaining greater understanding of the relationship between our employees, our systems and our assets must be at the centre of efforts to make them safer, just as it must receive significant investments from organisations whose business it is to keep people safe.

As past beneficiaries of awards from the Lloyd's Register Educational Trust, you as alumni of Cardiff University and members of SIRC probably will be aware of my organisation's charitable status, and our public-benefit mandate. We take that mandate very seriously.

As the newly appointed Chairman, I believe it is not enough for the members of Lloyd's Register Group to be satisfied with achieving industry standards for safety.
We must aspire to a higher, Lloyd's Register safety standard for ourselves and our clients, and in doing so potentially create a new benchmark for industry. We are not there yet, but we recognise where we need to be and are putting the pieces in place.

It will require a steadfast commitment to training and the type of multi-disciplinary research and development that ensures we will remain on the leading edge of the new technologies.

And as ensuring industrial safety demands the commitment of all parties, it will require us to continue to share the global best practices and the knowledge we have accumulated as one of the world's first independent risk-management firms.

**The merchant fleet**

There will always be critics, and some criticism is justified -- even productive -- but there is ample evidence of positive signs with regard to safety and the merchant fleet. Port State Control figures clearly show that total ship detentions are falling around the world; the PSC regime has also led to a global decline in the number of flag-states that are black-listed.

What this means is that the quality of the ships we are asking our people to work on has significantly improved in the past decade. But there is no question we must do more. There are still too many commercial vessels in operation that you and I would not want our sons and daughters to work on. And the construction and maintenance of quality ships are only parts of our safety challenge, significant though they may be.

Ask 10 different people about our collective progress in making the merchant fleet a safer place to work and you are likely to get 10 different answers. While the reports will vary, this much we know: people are still getting hurt in the same ways they have always been hurt.

They are still being hurt while working in confined spaces, they are still falling from heights and they are still being injured when being transferred from vessel to vessel. There thus remains much room for improvement.
People, plant and process

The effectiveness of any modern business enterprise depends on critical interactions between people, technology and processes. Creating a strong safety culture is no different.

In the wider process industries, where high-risk, capital-intensive assets are equally common, we know that the human element has played a major role in 70-90% of recent major incidents, from the Exxon Valdez and the Texas City Refinery fire, to Buncefield and the Deepwater Horizon.

Yet you would be hard pressed to find any company that earmarks up to 90% of its safety-related resources towards understanding the influence that the human element has on workplace safety performance.

Here, there appears to be a fundamental disconnect. We tend to rely on new technology and systems to drive operational efficiency, and therefore improved safety -- and to some extent this has delivered the desired results. But I firmly believe that the next meaningful incremental advances in workplace safety will result from a greater understanding of the influence of the human element.

Over the past 20 years, the energy and transportation sectors have made significant advances in the quality of the assets they build and operate. They are not yet perfect, but they are clearly safer by design.

Similarly, the management systems we have developed and adopted -- from quality and environmental standards, to health and safety -- have greatly improved the way we operate.

Because there are limits to how much more we can squeeze from better technology and systems, I believe understanding the human factor is the next frontier where significant advances in workplace safety will be found.

Improving safety is fundamentally reliant on the human element involved in operations. Maintenance, inspection and operational tasks are all performed by people and so rely on the constant execution of skilled behaviour by the workforce.
Training and a commitment to developing new technologies -- and usable interfaces for those technologies -- are part of the solution. Dr Tang will undoubtedly elaborate on that later. But it is self-evident that having the best infrastructure in the world means little if your people don't now how to operate and maintain it.

Similarly, having a highly qualified workforce means little if the size of that workforce and the resources they have at their disposal does not match the required levels of activity, increasing the temptation to cut corners, often at the expense of safety.

Encouraging a healthy safety culture within your company is therefore one of the keys to reducing the risk of accidents and incidents. And this starts from the top. The ability of any staff to identify hazards is wasted if they are discouraged from reporting them.

Fully understanding the influence of the human factor can be a complex assignment. At a minimum, it involves: identifying the tasks that are critical to managing safety; demonstrating leadership in attaining those goals; learning to effectively design jobs, processes and procedures; ensuring competence; managing workloads; encouraging two-way communications; learning and improving; and a dedication to effective change-management.

It may require a company, organisation or industry to shift priorities or change the way they look at things. But it is a new perspective that all companies would be well-counselled to explore.

It is often said that people are our most valuable assets. This is undoubtedly true; but we also need to recognise that, of people, plant and process, our people now hold the keys to assuring their own safety.

And we, as the leaders of industry, have a duty to provide the interfaces that are fit for purpose to ensure that our people are competent to perform their tasks safely, and to encourage trust and learning by resisting the temptation to attribute blame.

Thank-you
Programme Overview: Day One

Professor Helen Sampson

Variety is the key word that characterises this year’s SIRC symposium. Whilst there is some research which is well-advanced in the Centre, and as such may be familiar, this year we also report on some new studies undertaken in 2010/11 and some long-standing individual pieces of work undertaken by PhD students.

Our first paper reports on the latest stage of an established study funded by The Lloyd’s Register Educational Trust (The LRET). In its first phase this research, on training and new technology, focussed closely on the introduction on a new piece of shipboard equipment, known as AIS\(^1\). Over a period of several years the study demonstrated that there were decreasing numbers of errors in the data transmitted, via AIS, by vessels. This indicated that seafarers’ knowledge of the shipboard AIS equipment had improved over time. The second phase of the study has sought to establish in some detail the kinds of training seafarers receive in relation to new shipboard equipment more generally, how adequate such training is perceived to be, who it is provided by, and on what terms. As such, it is based upon the administration of a large-scale questionnaire to serving seafarers. At today’s event we will report how it is that seafarers currently learn about new equipment on board, when they receive any training associated with such equipment, and how they would ideally like to learn about new shipboard technology. More detailed findings from the questionnaire will be presented on line, in a full report, before the end of 2011.

Moving away from the cargo sector, our second paper reports on some of the findings from a study conducted in collaboration with the Professional Yachtsmen’s Association (PYA). The research considers the living and working conditions of yacht crew including those members working in both operational and hospitality jobs. This is a sector in which we have not previously undertaken any work at SIRC, and as such, the research completed in 2010, broke new ground. It was quickly apparent, however, that whilst there are some considerable differences in the quality of life for yacht crew members and seafarers aboard cargo vessels (particularly in relation to isolation and shore-leave), there are also many similarities in their

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1 Automatic Identification System
experiences including: long working hours, limited space, noise, vibration, and fatigue. The paper presents selected findings from the research which was again questionnaire-based. A full report of the study is available through the PYA (www.pya.org).

The final paper of the afternoon, deals with a topic of widespread concern and significance. For some years now, Captain Mohab Abou-Elkawam has been undertaking a PhD considering pollution and the perspective of seafarers on pollution controls and regulation. As a SIRC-Nippon Foundation Fellow\(^2\), Captain Abou-Elkawam has conducted a series of interviews with seafarers with the objective of gaining a penetrating understanding of their values and priorities vis a vis the environment and the imperatives of vessel operation. In this paper he conveys a strong sense of these. They are important if the efforts of policy makers are to be effective in this area.

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\(^2\) SIRC has been awarded a grant by The Nippon Foundation to support people with a social science or maritime-related background (including former seafarers) through a programme of post-graduate level research which has the potential to culminate in the award of a PhD. The objective of the funding is to support the development of an international network of social scientists focussing on ‘human-related’ work in the maritime sector. There are currently twenty SIRC-Nippon Foundation fellows and eight alumni from the programme. For further details of their backgrounds and research please visit the SIRC-Nippon Foundation Fellowships website at [www.sirc.cf.ac.uk -> Nippon Fellows](http://www.sirc.cf.ac.uk -> Nippon Fellows).
As with the sessions on the first day of the SIRC symposium, today’s papers begin by reporting recent analysis of data collected in the course of established research projects. These projects may be familiar to those of you who remain in touch with the work of the Centre, however the specific findings reported here will be ‘new’ to all members of the audience as they have not been reported previously. Later in the morning we will see a transition to research which has had less exposure, to date, as we discuss the health and self-medication of seafarers and the challenges of cadet training.

In the first paper we revisit data collected from Maritime Administrations concerning seafarer injuries and deaths (these data were originally collected as part of The LRET-funded study of Risk Perception that many of you will be familiar with). At the previous symposium we presented a paper which outlined the difficulties, for any serious researcher, in interpreting and analysing injury data of this type. We also suggested that datasets for fatalities at sea were likely to be more robust. This was a consequence of an assumption that there would be a lower incidence of under-reporting in conjunction with deaths. This year we revisit the data considering fatalities alone and building upon the 2000-2005 dataset with additional data for the years 2005-10.

Whilst under-reporting of fatalities may be considered to be less likely than the under-reporting of injuries it remains a strong possibility in connection with some Flag State administrations. This is not the main problem that is faced when attempting to construct ‘fatality rates’ for seafarers, however. The main difficulty to be overcome, is the absence of data relating to the numbers of seafarers employed on the vessels registered with any given Flag State. The absence of this information prevents the calculation of rates, as such, thereby inhibiting our capacity to make comparisons between sea, and land-based, industries, between Flag States, and over periods of time. The collection of data on seafarer numbers is seen as desirable in a number of quarters, however, the widespread collection of such data remains unlikely in the foreseeable future. In the absence of such data the need to consider
fatality rates over time, and across administrations/flags remains pressing. This paper, therefore, proposes two alternative methods for calculating seafarer death rates based upon our relative confidence in the prevalence and coverage of the Lloyd’s Register *World Fleet Statistics*. In theory, should administrations collect and collate fatality data a little more effectively in the future it should be possible to calculate rates based upon tonnage and upon vessel numbers (using the *World Fleet Statistics*) which would allow us to compare administrations with each other and also produce trends over time.

The second paper, is presented by Professor Walters. It reports on data collected as part of an established study of the ways in which the management of health and safety may extend down the supply chain. This research has been funded by the Institution of Occupational Safety and Health (IOSH) and it encompasses work in three sectors, of which maritime transport is one. The paper reports some very early findings based upon the study of one (of two) maritime sector case studies. The reported case study focuses upon tankers involved in the transport of oil and oil-based cargoes. It indicates clearly how in some sectors of the maritime trade pressures from charterers (in this case oil majors) may have been brought to bear on vessel operators in relation to the daily practice of health and safety management. In these early stages of study, it leaves the issue of the extent to which such pressures are positive or negative as an open question.

The penultimate paper of the symposium discusses the health and self-medication practices of seafarers. Seafarers typically demonstrate a so-called ‘healthy worker effect’ because they are subject to medical screening that eliminates most unhealthy workers from the workplace. Nevertheless in some areas, ship operators complain that medical repatriations remain too high presenting a significant cost and jeopardising company profits. There are also anecdotal reports that seafarers engage in considerable self-medication at sea. These, (alongside incidents such as the collision of the COSCO *Busan* with the Oakland Bay Bridge when a pilot was found to be under the heavy influence of a cocktail of prescription drugs) have encouraged us to explore this issue in further detail. Thus, in 2010 we administered a self-complete questionnaire to over 1,000 seafarers. Our intention was to compare the data collected by the SIRC team with other data available about land-based populations. We anticipated that we would see the impact of medical screening with seafarers appearing to be remarkably healthy (the so-called ‘healthy worker effect’). We also anticipated that seafarers would be likely to under-report health problems and unhealthy lifestyle behaviours for fear of
negative consequences. In this context, significant findings would seem to include: higher rates of smoking amongst seafarers at sea than when they are at home and higher levels of smoking than identified in a UK land-based sample; the consumption of alcohol aboard ‘dry’ [alcohol free] ships; and relatively high levels of stomach problems resulting in the self-prescription of indigestion remedies.

Finally, we may have saved the best for last, as Elizabeth Gould presents her work on UK cadets. This research was originally undertaken as part of a PhD thesis which can be viewed in full via the SIRC website (www.sirc.cf.ac.uk). Dr Gould’s work provides us with a considerable insight into the lives and experiences of UK-based cadets and provides us with a better understanding of what motivates them, what inspires them, and what may ultimately deter them from progressing with their training/employment plans.

We very much hope that you enjoy the papers presented at the SIRC 2011 symposium.
Training and Technology: Findings from the Questionnaire Study

Tang, L. & Sampson, H.

Abstract

This paper reports some of the early findings from a questionnaire administered to seafarers as part of a study of training associated with the introduction of new technology. These findings relate to: seafarers’ perceptions of their own knowledge of a selection of equipment on the bridge and in the engine room, their preferred training methods in relation to new shipboard technology and the learning activities that have contributed to their knowledge of existing ‘new’ equipment.

Introduction

Technological innovation has underpinned social and industrial transformation, in general, and the shipping industry in particular. It makes it possible to operate bigger, faster, safer, and more specialised ships with fewer people on board. In the last few decades, a range of new equipment developed as a result of technological innovation has been introduced aboard ships. This includes ARPA, GMDSS, AIS, ECDIS, and automated engine and cargo control systems.

Inevitably, the introduction of new technology demands new skills of shipboard personnel. In relation to new technology the literature indicates that these are best developed as a consequence of education and training. Over the past two decades, a large body of research literature has repeatedly confirmed that training increases productivity in both the manufacturing and service sectors (e.g. Barrett and O’Connell, 2001; Bartel, 1994; Dearden et al., 2000; Trucotte and Rennison, 2004; Zwick, 2006). More specifically there are indications that training is important in relation to the introduction of Information and Communications Technology (ICT). Having analysed the 1999 Canadian Workplace and Employer Survey data, Trucotte and Rennison (2004) found strong evidence that use of ICT was positively associated with higher productivity. They further discovered that the productivity increase associated with ICT use was enhanced when more workers received ICT training.
In the shipping industry, training and technology is also a much discussed topic, though often the indications are that training in this area is lacking. A recent survey of British seafaring officers’ perceptions of shipboard technology suggests that while, in general, officers embrace new technology, they are greatly concerned about the sufficiency of relevant training and an over-dependence on technology (Allen, 2009). Furthermore, several Maritime Accident Investigation Branch (MAIB) reports have suggested that inappropriate use of shipboard technology, due to poor training, has caused accidents. Lack of familiarity with the shipboard ECDIS equipment, for example, was a contributory factor in several accidents, including the groundings of *Pride of Canterbury* and *CFL Performer* (MAIB, 2008a; 2009). Similarly, the inappropriate use of ARPA radar was identified as a factor leading to the collision between *Costa Atlantica* and *Grand Neptune* (MAIB, 2008b). In another incident where the vessel *Prospero* made contact with a jetty, ship officers’ inadequate knowledge of the vessel’s podded propulsion system was found to be a contributory factor (MAIB, 2007). In the wake of the introduction of AIS, studies monitoring its usage found that seafarers appeared to be insufficiently familiar with AIS which led to transmission of erroneous information (Bailey, 2005; Bailey et al., 2008; Harati-Mokhtari et al., 2007; Norris, 2007). In the face of such information researchers, commentators, and policy makers have recommended the provision of adequate training on, and sufficient familiarisation with, new technology/equipment (Bailey, 2005; Gray, 2008; Grey, 2008; Hadnett; 2008; Harati-Mokhtari et al., 2007; IMO, 2003; Lloyd’s List, 2007; Norris, 2007). It remains unclear, however, to what extent such calls have been met and, in part, this paper seeks to address this question.

**The Study**

This paper reports some of the early findings from a questionnaire administered to seafarers as part of a study on new technology being undertaken under the auspices of The Lloyd’s Register Educational Trust research unit at SIRC¹.

New technology is likely to be applied on the bridge and in the engine room and deck officers and engineers are the major operators and users on board any vessel. It is also generally

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¹ A full report will be available online later in 2011 (Sampson and Tang, forthcoming).
officers and engineers who require related training. Therefore, the target population for the questionnaire was deck officers and engineers.

Before designing the questionnaire, a pilot study, which involved thirteen interviews with seafarers and college lecturers, was carried out. Its aim was to identify issues to be explored in the questionnaire. We also did an extensive review of the literature on ICT adaptation and training in other contexts (such as schools and business firms). This gave us a better understanding of training and technology in general, which was of help in designing the questionnaire. At various stages of the design process, we consulted people with seafaring experience, and we also piloted an early version of the questionnaire. All these measures helped us to refine the questionnaire.

In the process of questionnaire distribution, we utilised 27 seafarer centres in 14 countries. One advantage of this approach, compared with distribution through training centres/colleges or shipping companies, is that seafarers visiting centres are less likely to be under direct influence of their employers and/or immediate training environments, and are more likely to be able to reflect on their learning experiences. A number of port chaplains kindly helped us to distribute questionnaires to seafaring officers visiting their ports. Our researchers also went to several big centres to administer questionnaire distribution and collection. Via these efforts we achieved a broad and varied distribution which produced a diverse sample of seafarers. However, this is not a random sample in the strict sense of the term which limits the extent to which we can generalise from the findings.

**Sample Characteristics**

Our sample consisted of 1,007 seafarers. These were roughly divided between engine officers (524) and navigation (deck) officers (478). In terms of hierarchy (see Figure 1), the sample included 405 senior officers (including captains, chief officers, chief and second engineers), and 597 junior officers (including second and third officers, third and fourth engineers, electricians, and cadets).

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2 Five respondents did not specify their rank.
3 Because cadets were in the transitional stage and they had very limited experience, they were not included in the analysis for this paper.
Overall, respondents represented 52 countries. To facilitate analysis, we divided them into six groups the largest of which were single nationality groups: Filipino; Indian; Chinese; European; ASEAN; and Others. Figure 2 shows the sample distribution in relation to these six groups.

Figure 1: Sample Distribution by Rank

Figure 2: Sample Distribution by Nationality

Approximately fifty percent of respondents were working aboard container vessels and a quarter were working on bulk carriers. To facilitate analysis, we grouped ships into five main groups: container; bulk; tanker; general cargo; and others. The percentage of each group is
shown in Figure 3. The age range of the sample was from 17 to 69. They were divided into four age groups, the details of which are shown in Table 1.

Figure 3: Sample Distribution by Ship Type

Table 1: Age Distribution

<table>
<thead>
<tr>
<th>Age group</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 30</td>
<td>349</td>
<td>34.7</td>
</tr>
<tr>
<td>30s</td>
<td>301</td>
<td>29.9</td>
</tr>
<tr>
<td>40s</td>
<td>210</td>
<td>20.9</td>
</tr>
<tr>
<td>50 and above</td>
<td>138</td>
<td>13.7</td>
</tr>
<tr>
<td>Unspecified</td>
<td>9</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Knowledge of Specific Equipment

In the questionnaire, deck officers were asked to indicate how much they felt they knew about specific pieces of equipment on the bridge: AIS; GPS; RADAR/ARPA; GMDSS; and ECDIS. Overall, and as one might hope, they appeared to feel confident in operating such equipment, and the majority self-reported ‘good’ or ‘excellent’ knowledge. Further analysis indicated that respondents did not have equal confidence in relation to all the specified equipment, however. Their knowledge of ARPA/RADAR was reported to be the best,
followed by that of AIS and GPS. Confidence with ECDIS was reported to be the lowest of the five items specified and more than 30 percent of deck officers reported either ‘zero’ or ‘basic’ knowledge of it\(^4\) (for details, see Figure 4).

We further interrogated these findings to establish whether or not any significant variations between groups of seafarers were present.

When senior and junior officers were compared, no significant difference was found with regard to four pieces of equipment: AIS, GPS, RADAR/ARPA, and ECDIS. Regarding GMDSS, however, senior officers reported better knowledge than junior officers, as Figure 5 shows.

\[\text{Figure 4: Knowledge Levels of Bridge Equipment}\]

\[\begin{array}{|c|c|c|c|c|}
\hline
& \text{Zero} & \text{Basic} & \text{Good} & \text{Excellent} \\
\hline
\text{AIS} & 0 & 6.9 & 65.4 & 27.7 \\
\hline
\text{GPS} & 0 & 7.4 & 64.1 & 28.5 \\
\hline
\text{ARPA/RADAR} & 0 & 4.1 & 60 & 36 \\
\hline
\text{GMDSS} & 0 & 13 & 65.9 & 21 \\
\hline
\text{ECDIS} & 9.3 & 21 & 50.5 & 19.2 \\
\hline
\end{array}\]

\(^4\) NB: ECDIS has not been universally installed on all vessels.
Engineer respondents were asked to state their knowledge of engine room machinery including the main engine manoeuvring and control system (ME) and the oily water separator (OW). While the majority of engineers expressed confidence in operating both pieces of equipment, they reported a better knowledge of oily water separators (see Figure 6).

In the engine room, rank was found to have an impact. Senior engine officers reported a better knowledge of both pieces of equipment than junior ones (see Figure 7 and Figure 8). Because rank is strongly related to age and sea time, seniority in terms of the latter two were also likely to predict better knowledge.
It is encouraging that the majority of respondents felt confident with shipboard equipment. However, it is simultaneously of concern that a number of them (and it is important to note that cadets have been excluded from these findings) reported ‘basic’ or even ‘zero’ knowledge of some equipment.

The questions posed by our questionnaire required respondents to *self-rate* their knowledge. Whilst there are likely to be some people who underestimate their own knowledge, a substantial amount of research evidence has demonstrated that on the whole people tend to think of themselves in a rather positive light (Taylor, 1989). Taking this insight into account, it may be that self-rated answers overestimate the knowledge levels of seafarers with regard to new onboard equipment. In this context, the small percentage of respondents whose...
answers indicated a lack of confidence may be of some concern. This is particularly the case given the ‘safety-critical’ nature of the shipping industry.

**Preferred training methods**

In the course of the questionnaire, we asked seafarers which training methods they would recommend in relation to different pieces of equipment. With regard to bridge equipment, in general, deck officers tended to express a preference for onshore training and onboard training delivered by instructors, as shown in Figure 9. Thus, instructor led training methods were favoured. Interview data with seafarers supported this finding (see Tang, 2009 for a fuller account of interviews conducted for this research). Other research indicates that instructors may be favoured by learners in some contexts because they posses not only in-depth knowledge of the subject, but also training and mentoring skills. The guidance from instructors can also save learners time and effort in finding relevant information and solving problems.

![Figure 9: Preferred Training Methods of Deck Officers](image)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Onshore Training</th>
<th>Onboard CBT</th>
<th>Onboard Training by Instructors</th>
<th>Self-Learning</th>
<th>Learning from Colleagues</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIS</td>
<td>27.1</td>
<td>12</td>
<td>29.5</td>
<td>20</td>
<td>11.4</td>
</tr>
<tr>
<td>GPS</td>
<td>28.9</td>
<td>10.4</td>
<td>32.8</td>
<td>14.9</td>
<td>13</td>
</tr>
<tr>
<td>ARPA</td>
<td>55.6</td>
<td>8.1</td>
<td>23.6</td>
<td>3.2</td>
<td>9.5</td>
</tr>
<tr>
<td>GMDSS</td>
<td>60.6</td>
<td>6.2</td>
<td>23.5</td>
<td>3.8</td>
<td>5.9</td>
</tr>
<tr>
<td>ECDIS</td>
<td>47.8</td>
<td>7.8</td>
<td>32.3</td>
<td>6.9</td>
<td>5.2</td>
</tr>
</tbody>
</table>

*NB: ‘Onshore training’ can generally be presumed to be understood by seafarers as formal training courses ashore. For the purpose of this paper it is therefore categorised as ‘instructor-led’.*
Whilst there was a general preference for instructor-led training, the responses of deck officers were more nuanced than this implies in as much as they gave varying responses in relation to the five specified pieces of equipment. While the preferred training method for ARPA/RADAR, GMDSS, and ECDIS was onshore training, respondents indicated that onboard training was their favoured option for training in relation to AIS and GPS. The difference is likely to reflect the different technical characteristics of the equipment. ARPA/RADAR, GMDSS, and ECDIS are more complicated than AIS and GPS. Information acquisition and interpretation associated with GPS and AIS is relatively straightforward, compared with the skill required to read and make correct use of ARPA/RADAR and ECDIS displays. Research relating to ICT implementation suggests that formal training is more appropriate with regard to some pieces of equipment than others (Sharma and Yetton, 2007). Technologies characterised by high technical complexity are associated with high knowledge barriers and in this situation, formal training is more effective in helping learners overcome these (Robey et al., 2002). This could explain why deck officers felt that onshore training was the most beneficial for more complicated equipment, even though attending such training is often associated with the loss of leave time. In contrast with regard to less complicated technology such as AIS and GPS, seafarers might feel that onboard training, though brief, is sufficient, and can be put into immediate practice.

Respondents were also more likely to display a preference for other forms of learning, such as ‘self-learning’, ‘learning from colleagues’ and ‘onboard CBT’ for AIS and GPS than they were for the other three pieces of equipment. This further suggests that the operation of AIS and GPS may be regarded as less complicated than ECDIS, ARPA/RADAR, and GMDSS by seafarers and thus produces a lower demand for formal training.

Engineer respondents’ preferences for learning about engine room machinery repeated the pattern found amongst deck officers. Overall, they also favoured instructor-led training methods. With regard to the main engine, ‘onshore training’ was the most favoured method of training, while ‘onboard training delivered by an instructor’ was the preferred training format for oily water separators. Arguably, this indicates that the latter was regarded as less complex in terms of its operation than the former. Perhaps as a result, engineer respondents were also more likely to suggest a preference for ‘self-learning’ and ‘learning from colleagues’ in relation to oily water separators than in relation to the main engine.
In general, engineers were more likely to suggest that they preferred ‘learning from colleagues’, and less likely to express a preference for ‘onshore training’, than deck officers. In the next section of the paper we explore which learning activities have contributed to seafarers’ knowledge in practice.

**Learning activities contributing to knowledge**

In the first stage of this study we considered the use of AIS and the errors associated with it. Over a period of several years observation we determined that seafarers’ competence in operating AIS had improved over time (Bailey et al. 2008). This finding raised a question about how seafarers had learned to use AIS equipment. In the questionnaire (phase two of the study), we asked a series of multiple response questions to find out which activities, from a given list, had contributed to respondents’ knowledge of on board equipment. The list of possible responses included ‘cadet training, onshore training, onboard computer based training, onboard training from technicians and dedicated trainers, consulting manuals, handover familiarisation and notes, and consulting colleagues’. Figures 11 and 12, show the replies of deck officers and engineers respectively.

The responses suggested that both deck and engine officers rarely believed they had learned from ‘onboard CBT’ and ‘onboard training from installation technician/dedicated trainer’.
They most commonly suggested that they had learned from ‘consulting manuals’. This may seem inevitable given the requirement for manuals to be available on board regardless of the time of day or night whereas this cannot be said of colleagues or trainers. The response highlights the importance of manuals. As such, the user friendliness of manuals can be seen as a concern, especially when they are not written in seafarers’ first languages.

Notwithstanding the importance of manuals, however, they cannot be seen as a substitute for formal training (IMO, 2003). As mentioned earlier in relation to much equipment, seafarers preferred instructor-led training methods. Ideally and in this context, the role of manuals should be supportive: they should serve to provide well-trained seafarers with a constantly available reference and an additional means for obtaining specific information.

Figure 11: Learning Activities Contributing to Knowledge of Deck Officers

<table>
<thead>
<tr>
<th></th>
<th>Cadet training</th>
<th>Onshore training</th>
<th>Onboard CBT</th>
<th>Onboard training from technician/trainer</th>
<th>Consulting manuals</th>
<th>Hand-over familiarisation</th>
<th>Consulting colleagues</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIS</td>
<td>22.0</td>
<td>34.0</td>
<td>23.9</td>
<td>26.3</td>
<td>74.4</td>
<td>31.6</td>
<td>32.8</td>
</tr>
<tr>
<td>GPS</td>
<td>35.2</td>
<td>32.8</td>
<td>24.2</td>
<td>24.4</td>
<td>76.6</td>
<td>36.6</td>
<td>40.4</td>
</tr>
<tr>
<td>ARPA</td>
<td>44.2</td>
<td>65.0</td>
<td>24.0</td>
<td>23.8</td>
<td>70.6</td>
<td>35.9</td>
<td>39.8</td>
</tr>
<tr>
<td>GMDSS</td>
<td>38.3</td>
<td>77.8</td>
<td>25.5</td>
<td>22.4</td>
<td>63.4</td>
<td>29.6</td>
<td>39.3</td>
</tr>
<tr>
<td>ECDIS</td>
<td>26.8</td>
<td>68.2</td>
<td>26.8</td>
<td>20.4</td>
<td>64.2</td>
<td>33.0</td>
<td>40.2</td>
</tr>
</tbody>
</table>
Learning about equipment via formal training was another route identified by respondents. More deck officers stated that onshore training contributed to their knowledge of ARPA/RADAR, GMDSS, and ECDIS, than said that onshore training contributed to their understanding of AIS and GPS. This seems to suggest that formal onshore training is focussed more on ARPA/RADAR, GMDSS, and ECDIS.

Engineers similarly highlighted the contribution that onshore training had made to their knowledge of the main engine manoeuving system whilst fewer identified on shore training as important in relation to the operation of the oily water separator. This difference corresponds once again with the relative technical complexity of the equipment: onshore training had made a greater contribution to knowledge about the more complex equipment and had made less of a contribution to knowledge about simpler technology.

The analysis of the responses to questions about individual pieces of equipment suggested that nationality and rank made a difference. When we combined the answers to the questions about the learning activities that had contributed to knowledge of the five individual pieces of equipment we found a marked rank and nationality effect. Overall, junior deck officers were more likely than their senior counterparts to suggest that ‘cadet training’ had contributed to their knowledge of bridge equipment. Given that some pieces of equipment were introduced
relatively recently and so will only have been covered by more recent cadet training courses this is entirely as we would expect. However, nationality variations were less predictable.

In terms of nationality (for detailed information see Appendix One), Chinese and ASEAN deck officers were the most likely to state that ‘cadet training’ had contributed to their knowledge of the equipment on the bridge whereas Filipinos were the least likely to suggest that this was the case. In contrast, Filipinos were the most likely group of respondents to suggest that ‘onboard CBT’ had contributed to their knowledge of bridge equipment, while Europeans, Chinese and Indians were far less likely to do so. As a group, Indian seafarers were the most likely to suggest that ‘onshore training’ had contributed to their knowledge of bridge equipment, and the least likely to do so were Chinese seafarers. Filipino and Chinese seafarers were also more likely than seafarers of other nationalities to state that ‘handover familiarisation and notes’ had contributed to their knowledge of the equipment on the bridge.

Arguably, the nationality differences point to several things. Firstly, Chinese deck officers seemed more likely to get something out of their cadet training in relation to developing an understanding of modern bridge equipment than other groups. However, there may be other explanations for this. For example it might be that Chinese seafarers had fewer opportunities to attend onshore training and therefore relied more on cadet training than other groups. In another question which asked respondents about the adequacy of training provision in their companies, Chinese respondents turned out to be the group who were the most likely to say it was ‘inadequate’. While this question is not the focus of the paper, it nevertheless serves to shed light on the nationality differences here and to highlight the extent to which training issues are complex and interconnected. It further serves as a reminder that there may be several contributory explanations for patterns of response and that we should remain open to the idea that the most obvious explanations may not always be the strongest explanations. In this context it is worth considering the responses of Filipino seafarers in a little more detail. In a separate study of seafarers’ perceptions of onboard CBT (Ellis et al. 2005) Filipino seafarers were identified as having a more positive view of CBT than other nationalities. One possible interpretation of this was that seafarers found the quality of the internationally supplied computer-based training modules superior in comparison with locally provided tuition. Thus it is conceivable that Filipino seafarers express a preference for CBT because of the poor standard of alternative training provision, a notion which would be supported by the tendency for Filipinos to be less likely than other groups to highlight cadet training as
contributing to their knowledge of equipment. Finally, in relation to differences between groups of seafarers of different nationality, both Chinese and Filipino deck officers appeared to gain more from the effective use of handovers in terms of getting familiar with navigational equipment.

We also combined the answers given by engineers to questions in relation to two pieces of equipment—the main engine and the oily water separator. When considered in combination it became clear that senior engineers were more likely to suggest that ‘handover familiarisation’ and ‘consulting manuals’ had contributed to their knowledge of the two pieces of equipment than junior engineers (see Appendix Two). To make sense of this finding, two questions in the questionnaire which are not featured in this paper are worth mentioning. One was about the duration of handovers. Responses to this question indicated that senior officers had longer handover periods than juniors. This could explain why senior seafarers are more likely to state that they have contributed to their knowledge of equipment. The other question related to the action they usually took when not familiar with equipment. In response to this question senior respondents were slightly more likely to choose ‘consulting manuals’ than their more junior colleagues. This may be interpreted as suggesting that where there is a willingness to spend time reading manuals, seafarers can find that they have the capacity to enhance knowledge. The analysis also revealed that senior engineers were slightly more likely to suggest that ‘onshore training’ had contributed to their knowledge of the two pieces of equipment, than their more junior colleagues. This may indicate that senior engineers had more onshore training opportunities than junior ones, indeed our interview data do suggest that, perhaps for obvious reasons, companies prioritise senior officers in their training provision.

In terms of nationality (see Appendix Three), like their deck officer counterparts, Chinese engineers were most likely to feel that ‘cadet training’ had contributed to their knowledge, while Europeans and Filipinos were the least likely groups to do so. Similarly Filipino engineers, like their deck officer counterparts, were more likely to state that their understanding had improved as a consequence of ‘onboard CBT’, and Chinese, European, and Filipino engineers were more likely than other nationalities to suggest that ‘handover familiarisation and notes’ had contributed to their knowledge of engine room equipment.
Conclusion

Effective and sufficient training helps to harness the benefit of technology in enhancing productivity (Trucotte and Rennison, 2004). In contrast, however, a lack of training coupled with the introduction of technology can result in serious accidents. This may be particularly the case with regard to the operation of ships. Shipping can be seen to be a ‘safety critical’ industry where small operational errors have potentially great consequences.

In terms of seafarers’ own assessments of their knowledge of new onboard equipment, the questionnaire study found that while the majority of respondents were confident about their understanding, there was nevertheless a small percentage of seafarers who reported that their knowledge with regards to specific items was either ‘zero’ or ‘basic’ indicating a perceived need for training.

Deck officers’ self-reported knowledge levels did not vary significantly with rank. By contrast, engineers’ self-reported knowledge levels in relation to engine room machinery were likely to vary with rank and experience.

In terms of preferred forms of training, both deck and engine officers stated that when learning about new shipboard equipment they would favour instructor-led training methods. They were more likely to desire onshore training for technically more complex equipment and to prefer onboard instructor-led training for relatively simple equipment. In practice, respondents did tend to receive more onshore training on the most complex equipment. However, they did not seem to get the onboard training on simple equipment that they would like, but largely relied on manuals instead.

The means via which seafarers had already acquired their knowledge of equipment was to a certain extent affected by nationality. This is likely to reflect the relative strengths and weaknesses of training provision in different regions and also regional training provision by companies.
Acknowledgments

We gratefully acknowledge the support of The Lloyd's Register Educational Trust (The LRET) in supporting this work. We also wish to thank the seafarer respondents and those who provided help in designing, piloting, and distributing the questionnaire.

The Lloyd's Register Educational Trust (The LRET) is an independent charity working to achieve advances in transportation, science, engineering and technology education, training and research worldwide for the benefit of all.

References


### Appendix One

#### Kruskas-Wallis Test Ranks

<table>
<thead>
<tr>
<th></th>
<th>Nationality</th>
<th>Mean Rank</th>
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<tr>
<td>Cadet training (deck officers)</td>
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### Appendix Two

Kruskas-Wallis Test Ranks

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<td></td>
<td>Junior officers</td>
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### Appendix Three

Kruskas-Wallis Test Ranks

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Abstract

The large yacht sector is an economically important and growing sector of the maritime industry. This paper reports on the living and working conditions for crew onboard these vessels. The findings are based on research undertaken by the Seafarers International Research Centre (SIRC) on behalf of the Professional Yachtsmen’s Association (PYA), and in light of the Maritime Labour Convention (MLC) 2006. Specifically, the paper reports on terms and conditions of employment, standards of accommodation, hours of work and rest, and areas of concern to seafarers. Tentative comparisons are also drawn between the large yacht sector and the merchant navy.

Introduction

The large yacht sector is associated with luxury, opulence, extreme wealth and exotic locations. With some 6,000 yachts registered worldwide (Errico, 2010), varying in length from 24 metres to 150 metres plus, it is a substantial and growing industry. It was claimed by Hughes in 1993 that “Superyachts are a $2 billion a year industry”, and it is reported that demand for such yachts has grown at a rate of 500% a year over the last decade (BBC, 2008). Despite the economic downturn, in 2010 twenty eight superyachts (i.e. yachts 24m +) were sold at a value in excess of 300 million Euros (Liveyachting, 2010). At the extreme end of the market mega-yachts can cost in the region of $4-500 million. In 2009/10 the UK sector of the industry alone, involved in design, building, refit, supply chain and service provision, employed some 3,500 employees and was reported to be valued at £420 million - a growth of 3% on the previous year (BMF, 2010). While the Mediterranean, the Balearics and Florida have traditionally been the central hubs of superyacht activity and operation, growing markets and yachting activity are now reported to also be developing in the Gulf region, China and South America (Liveyachting, 2010).

Amongst the huge wealth and glamour of this sector are the thousands of workers that operate and maintain these boats and provide hotel services for owners and guests. This paper reports on the findings of a questionnaire survey that examines the working and living conditions of such workers.
The survey was a commissioned study by the Professional Yachtsmen’s Association (PYA) and undertaken by the Seafarers International Research Centre (SIRC) in response to the International Labour Organisation’s (ILO) Maritime Labour Convention (MLC) 2006. The convention sets minimum standards for size and design of crew accommodation which superyachts typically do not meet. The argument presented by the PYA was that the standards were primarily intended for workers aboard merchant ships whose working life is very different to those aboard yachts, and further, that to require yachts to meet these standards would be highly damaging to this lucrative and flourishing industry. Thus the survey was designed to provide independent and impartial evidence as to what living and working conditions aboard superyachts are actually like.

Methods

The staff at SIRC in consultation with the PYA developed a questionnaire to examine living and working conditions. This was then made available online on 2nd July 2010 and links to the site were distributed by the PYA to its members, and others, via crew agencies, management companies and various media outlets. After one month the 1,503 responses posted were analysed by staff at SIRC and a report of the findings produced. This paper gives a brief overview of those findings.¹

Findings

The Respondents

Completed questionnaires were received from 1,503 individuals. The sample was notably skewed towards senior officers with 44% of the sample being captains and further 8% chief engineers. Similarly the sample was largely comprised of men (85%), and the majority of respondents reported being single (65%). The average age of respondents was 39 years old, and most were from OECD countries, including 41% from the UK. The average time worked

¹ For the full report see: www.pya.org
in the yacht sector was 12 years. Very few individuals were members of a trade union with 93% indicating that they were not.

*The Boats and their Crews*

Respondents worked on both motor (83%) and sail (17%) yachts. Individuals worked on a range of yacht sizes from less than 24m in length to larger than 100m, but with the majority employed on boats of 24-60m in length. As can be seen in Figure 1 below, the largest group working on sail boats was on vessels of 25-40m, whereas on motor yachts it was 41-60m.

*Figure 1: Percentages of respondents employed onboard motor and sail yachts respectively by length of boat*

Crew sizes varied according to size of yacht, but average crew sizes were eight on sail boats and thirteen on motorboats. Despite the large number of responses from males, it was reported that onboard there tends to more of an even split of male and female workers. On both motor and sail yachts the most frequently recorded number (i.e. the mode) of male and female crew onboard varied according to the size of the boat, as can be seen in Table 1 below.
Table 1: Crew sizes (n=mode figure) and distribution by gender

<table>
<thead>
<tr>
<th>Length (metres)</th>
<th>SAIL</th>
<th></th>
<th></th>
<th>MOTOR</th>
<th></th>
<th></th>
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<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Total</td>
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<td>41-60</td>
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<td>9</td>
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<td>61-100</td>
<td>4</td>
<td>8</td>
<td>12</td>
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<td>100+</td>
<td>19</td>
<td>22</td>
<td>41</td>
<td>10</td>
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<td>40</td>
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</tbody>
</table>

These figures include both permanent crew and additional crew employed for the season. The majority of yachts worked on were privately owned (59%), while 41% of respondents worked on commercially owned boats. The boats were registered under some 45 different flags, although there were three main groupings: Cayman Islands (44%), UK (17%), and Isle of Man (7%).

**Terms and Conditions of Employment**

The majority of respondents (61%) had permanent contracts. For those who reported being on fixed term contracts the average length of contract was 1.44 years. The principal currencies for payment were US dollars and Euros. Those paid in Euros tended to be slightly better paid than those in dollars, although this is clearly subject to variation with changes in exchange rates. For those paid in Euros the most common salary was in the range of 5-7,000 Euros per month. Although basic salaries were good, for most, their employers did not make any national insurance contributions (77%) or pension contributions (94%). On average these workers were entitled to 41 days paid annual leave, including public holidays.

**Working Hours**

Working hours varied according to whether the boat was at sea or in port and crucially whether there were guests onboard. As can be seen from Figure 2 below, crew worked fewest hours when in port without guests (on average 8.6 hours per day) by comparison the busiest times were at sea with guests onboard (on average 14.3 hours per day).
The period that guests were onboard varied considerably but on average those on motorboats tended to have guests onboard more frequently than those on sail boats. For those on motorboats the average time that guests were reported to have been onboard over the preceding eight weeks was 19.3 days, whereas for sail boats this was 14.8 days. That is, approximately a third and quarter of the time respectively. Length of boat was also a clear predictor of the amount of time guests were reported to stay onboard, with larger boats having guests onboard more frequently. On average boats spent more than three quarters of their time in port and just 23% of their time at sea.

Figure 3 shows the mean number of days spent at sea during the last twelve months for different lengths of both sail and motor yachts.

It can be seen that, in general, larger boats and sail boats were more likely to spend longer times at sea.
Likewise length of boat was a clear indicator of whether individuals were likely to report having adequate rest, with those on larger boats more likely to give an affirmative response.

When not working, and in port, individuals reported being able to get ashore regularly, although the extent of this varied and was dependent upon whether there were guests onboard. When there were no guests onboard 99% of respondents said they could get ashore at least weekly; of these, 88% could get ashore on a daily basis and 33% of them could go ashore several times a day. Moreover two thirds of respondents stated that they could stay ashore for more than six hours.

With guests onboard there was less opportunity to get ashore, but 58% still reported that they could get ashore weekly, and of these 15% could do so several times a week and 9% several times a day. Eighteen percent indicated that they could not get off while guests were onboard. Those that could get ashore said they could typically do so for one to six hours.

Importantly time ashore was usually in places considered glamorous and offering good access to facilities such as cafes/bars, restaurants, and cinema/theatre, etc.

This contrasts sharply with life aboard a merchant vessel. For instance, Kahveci (2007), in a study into port base welfare facilities, reported that 64% (i.e. 2,160) of 3,375 seafarers
surveyed had not had shore leave in the previous eight weeks. Moreover, when they had enjoyed shore leave, it was said to last about two hours and seafarers tended to stay in the port area.

*Accommodation onboard*

A notable feature of the crew accommodation aboard these luxurious yachts was the fact that the majority had to share a cabin (64%) and of these 43% shared with a member of the opposite sex and only half (51%) of these had any choice over the matter. Consequently of those that did share a cabin 53% reported that they objected to doing so, at least ‘sometimes’. On the positive side 85% of cabins had en-suite bathrooms. Nonetheless when asked their preference, as a first choice, 79% of respondents expressed a preference for a *single* en-suite cabin. However, in terms of their second choices more respondents expressed a preference for a *single* cabin *without* en-suite facilities (40%) than a *double* cabin *with* en-suite facilities (35%). It appears therefore that greater importance was attached to having a *single* cabin than en-suite facilities for many respondents.

While the majority (59%) were happy with the standard of their cabins, less than half (48%) were satisfied with cabin sizes. By comparison 29% reported that they were unhappy about the standard of the cabins and 21% with the size. The rest were neither satisfied nor unsatisfied. Facilities within cabins varied, as can be seen in Figure 4. Most respondents had access to a wardrobe and drawers, as well as TV, radio and internet within the cabins. However, less than half had access to a table / desk, and only about a fifth had comfortable seating in their cabins.
The Attractions of the Yachting Lifestyle

Individuals that responded to the survey made clear that they had a real enthusiasm for the work which rewarded them with a good salary, allowed them to work in a ‘luxurious context’, and allowed access to places and facilities ashore and onboard associated with a glamorous lifestyle. Moreover it was reported that there was good camaraderie amongst crews as individuals took pleasure and pride in their work. The following comments are typical of those made by respondents.

I love the sea…the camaraderie along with the special places we visit on magnificent vessels makes it a great lifestyle (#296, Cpt.)

There is nothing else out there that comes close. Travel, interesting places, out-going people and I love boats (#482, Chief Engineer)

Downsides of the Yachting Lifestyle

When given the option to suggest possible improvements a number of issues were mentioned and accommodation was the most frequent. Specifically respondents complained that there was often a lack of storage space, that noise was an issue, communal space for crews was reported to often be very limited, and more generally individuals expressed their
dissatisfaction with the lack of privacy. A number of these features are captured in the following comments.

[It would be nice to be able to have a good space to escape, to be able to store your belongings, write a letter or to actually sleep without hearing the crew mess. Although it is the owner’s yacht, I feel that there is too much emphasis on their accommodations... The two forward cabins have NO portholes & we have 2 x 3 berth cabins as well and the Captain’s Cabin is on the LOWER crew deck (so the owner can have more space) this jeopardizes the yacht’s SAFETY (#538, Head Chef)

I would rather have my own cabin with shared or private facilities than sharing a cabin with another crew member. (#1074, Deck hand)

Other areas mentioned as a cause of dissatisfaction were as follows:

• Long working hours when guests were onboard. As stated previously (see Figure 2), when guests were onboard crews could work up to 14 hours a day. This compares unfavourably to Merchant Navy crews on car carriers who, on average, are reported to work 11 hours per day (Kahveci & Nichols, 2006). However when there were no guests onboard, working hours onboard yachts were reported to reduce to an average of 8.6 hours per day.

• A degree of bullying / harassment from owners and captains. Eleven percent of respondents reported having experienced such behaviour often or more frequently. In a study for the UK Government in 2008 (Fevre et al, 2009), 7% of respondents reported harassment, 1% reported sexual harassment and 7% reported having experienced discrimination. Thus the figures for the yachting sector could be seen as high.

• A lack of formal employment regulation meaning individuals felt insecure in their employment. We can but speculate, but it would not seem unreasonable to argue that this point is related to the above issue of harassment.

• It was also felt that there was room to improve the terms and conditions of employment with better leave and the inclusion of social security and pension provision. With reference to the latter, the limited available evidence suggests that in the Merchant Navy more seafarers may receive some form of pension contribution. The Shiptalk survey of
2007/8, for instance, indicates that 30% of respondents in the Merchant Navy received pension contributions (Shiptalk, 2008). Similarly a 2006 study (Shiptalk, 2008) of seafarers in the car carrier sector claimed that of the 276 ratings surveyed, 68% of those working on nationally flagged ships, 28% of those on FOC ships with ITF agreements, and 20% of those on FOC ships without an ITF agreement, received pension contributions.

Generally there were differences in responses between men and women, and dependent upon type and length of boat worked on. Typically men, those on motorboats and those working on larger boats, reported more favourable conditions.

In summary, the yachting sector is an important and growing industry. It provides workers with the opportunity to travel, earn reasonable salaries and to participate in a lifestyle marked by luxury and glamour. However despite the obvious enthusiasm conveyed by workers in this sector there are clearly areas for improvement in terms of formalising working conditions and providing better accommodation.

**Conclusion**

As discussed in the introduction the reason for the study was to identify the living and working conditions for crew in the large yacht sector in relation to the MLC (2006).

The study provided key insights into living and working conditions in this sector. It revealed a complex and varied situation that largely related to type and size of boat, but was also influenced by factors like gender, and position held onboard. As was stated earlier, the sample of respondents was skewed towards male senior officers and so we can assume that the conditions presented may be more favourable than would be obtained from a more balanced sample.

There was a general enthusiasm for working in the sector that related to pay, travel, and participating in a sector of the maritime industry associated with luxury in terms of the vessels worked on, and time spent in glamorous locations. However there were a number of areas where it was generally agreed that improvements could be made.
Terms and conditions of employment were generally seen to be good with the majority of workers (61%) on permanent contracts; although concern was expressed that lack of employment regulation in this sector meant workers felt insecure in their jobs. It was also felt that better provision could be made in terms of contributions to crew pensions.

A clear benefit of the occupation was seen to be access to a wide range of facilities both onboard and ashore. This contrasts sharply with conditions in the Merchant Navy where seafarers have very limited facilities onboard and get little opportunity to get ashore or to partake of shore based facilities.

Despite the opportunity to spend time ashore, crew still spend extended times onboard and typically have to share their cabins, often with individuals of a different gender – which around half objected to. There were further complaints about limited space for both storage and recreation and many experienced issues with noise.2

References


2 As a consequence of lobbying by the sector (especially the PYA) the ILO has recognised that the application of the MLC to Large Yachts is an issue, and has allowed for a sliding scale of substantial equivalents.

Seafarers and Growing Environmental Concerns: To Comply or Not to Comply – Choices and Practices

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Abstract

This paper reports on my tracking of the mobility and multiplicity of seafarers’ perceptions in their journey from the normality of ‘dumping at sea’ practices to more responsible environmental behaviours. It focuses, in part, on how seafarers perceive the marine pollution and their aspirations to protect their own countries’ marine and coastal environments. The arguments presented in this paper are based on a wider qualitative study that involved talking to seafarers worldwide in different work settings (i.e. shipping companies) and working onboard fleets trading in various parts of the world. Whilst marine pollution is depicted by seafarers as a ‘beast’ that needs mitigation, they are still divided on the optimum way forward. They assign some blame for pollution to new entrants to the profession, to uneducated, untrained, or ignorant seafarers, to some shipping companies, and even to some countries for not adopting appropriate or adequate environmental programmes to protect their marine and coastal environments. Such themes emerged from the data gathered by conducting qualitative semi-structured interviews with seafarers from different countries, companies, and areas of trade. Moreover, interviewees in this study are frequently resorting to ‘demographic based’ backgrounds prioritising how preventing marine pollution from ships could save their countries’ coasts, beaches and shorelines and how this would reflect on their national economy and children’s health. This paper aims to trace the source of what could be termed ‘environmental integrity’ perceptions and to contribute in uncovering the motivations, interests and difficulties faced by seafarers in relation to compliance practices with MARPOL as an exemplary marine environmental convention.

1.0 Introduction

This paper highlights the perceptions and compliance practices of seafarers when interacting with one of the pioneer and major marine environmental conventions which has been in force for more than quarter of a century (i.e. prevention of pollution from ships known as MARPOL). Such perceptions can significantly open a communication window to policy makers to verify the impacts of compliance and enforcement difficulties on the perceptions and actions of regulatees in such an exemplary globalised industry. Throughout this paper I argue that seafarers are continuously evaluating (often critically) and using their job’s extremely mobile nature to monitor the status of the marine and coastal environments in various parts of the world. Further, this continuous monitoring of the compliance levels of countries, companies and peers, creates and establishes a set of perceptions which might
govern and direct their own short and long term environmental behaviour and compliance practices.

2.0 Methodology and Methods

The arguments presented in this paper are based on a wider qualitative study that involved talking to seafarers worldwide in different work settings (i.e. shipping companies) and trading in various parts of the world. The semi-structured interviews conducted with seafarers aimed - among other issues - to verify the difficulties regarding MARPOL compliance requirements (focusing on Annex I – oil) among active seafarers. The main aims of this wider study could be summarised in the following:

- To identify how involved parties view the pollution problem differently in order to fully appreciate the compliance dynamics and to, eventually, seek ways to address them;
- To verify the impacts of different implementation and enforcement levels in various geographic and organisational arenas on the perceptions and environmental practices of seafarers (i.e. compliance to MARPOL).

To achieve these aims, a set of carefully designed interviews (total of 40) were conducted with seafarers from various parts of the world whilst their tanker ships were in port or at a Maritime Education and Training Institution. The shipping companies varied between national flags and 2nd registers to open registers - also known as flag of convenience countries - and voyage patterns ranged between coasters to deep sea going vessels. Respondents presented three main types of perceptions in relation to the marine pollution and compliance problems namely ‘economic-based’ perceptions, ‘value-based’ perceptions, and ‘socio/political-based’ perceptions. Such perceptions, in many cases, acted as barriers to being able to comply with MARPOL even when the vast majority of respondents were clearly willing to. The following sections present and discuss the data coded under the main types of characterisations, perceptions, and practices, focusing on the implications of the formation of such established perceptions on the environmental practices not only for seafarers, but also to shipping companies and countries as well. For the sake of clarity, compliance with MARPOL was chosen to depict clearly the problems faced by seafarers in
their daily attempts to fulfil the statutory requirements of this major environmental convention in force for almost three decades. This is presented in the form of different themes/barriers to sound compliance practice resulting from seafarers’ experiences with issues regarding marine pollution in different shipping companies operating in different geographic areas, while facing different environmental priorities adopted by state parties worldwide.

3.0 The Economic/Cost Barrier

This was one of the most prominent barriers to sound environmental compliance detected amongst seafarers in this study. In order to interpret and understand the implementation and enforcement difficulties encountered by different countries, seafarers adopted a dominant preconception that differentiates between affluent European countries and developing countries. They often linked the political will of nations to protect their waters from pollution with the availability of economic resources. Doing this, they reported how many affluent nations they visited are performing better than less developed counties on the MARPOL enforcement front. However, when some respondents observed high levels of pollution in the territorial waters of some affluent Gulf nations, and lack of compliance to MARPOL requirements for providing port reception facilities in many EU ports, this triggered frustration and ambivalence about the actual reasons behind what they perceived as institutional ‘passivity’ or lack of political will to protect the marine environment. An experienced Middle Eastern Chief Engineer working onboard a ship trading between the Gulf and European ports contends:

…in our areas…I mean the developing countries regions…our seas have no respect…have no value…even the Europeans when they come to our waters…they do whatever they like.

This respondent is referring to the scarcity of oil dumping, monitoring, and surveillance capabilities, in developing countries due to the lack of political will of such nations - as he perceives - to protect their waters. The argument is that seafarers experiencing such national and/or institutional practices tend to become complacent - as evidenced from this study - in their own MARPOL compliance activities asking questions such as: “no one cares here! why should I care?” However, the problem takes a slightly different form in the EU region as
interpreted by a European Chief Officer (trading in EU waters only) when explaining his views about non-compliance practices:

...a lot of us have to deal with the fact that maybe some of these companies have a prohibitive cost ...they don’t want to pay the cost...and the seafarers are finding it....very difficult to get rid of certain waste products...the only place you can get rid of it in the continent (Europe) is in the barges....but for a charge and not cheap either.....

This senior ranked officer, while reporting the non-existence of such facilities in many of the ports his ship visits, interpreted also that one of the reasons may be the very high cost that certain shipping companies incur to use the port reception facilities (for discharging oily waste). Such an established ‘prohibitive’ economic barrier was utilised by some respondents trading in this area as a justification for their own oil dumping activities at sea in breach of MARPOL.

3.1 The Regulatory Enforcement Barrier

This dominant perception tends to develop among seafarers having sailed for a number of years and interacting with different countries adopting different environmental priorities. In other words seafarers cannot ignore the different levels of rigor countries adopt in enforcing MARPOL. In the context of regulatory compliance and enforcement, scholars contend that any regulated entity weighs the marginal costs of compliance with its marginal benefits. Such benefits often relate to the accepted value of fines avoided, which in turn is a function of the probability of inspections conducted, the likelihood of a violator being found, and the magnitude of penalty imposed (Brehm and Hamilton 1996). The scarce literature focusing on regulating marine pollution on the international level suggests that maritime policy makers (mainly at the International Maritime Organisation - IMO) had to choose between ‘effectiveness oriented’ and ‘compliance oriented’ information. The former is mainly used to assess whether regime members (i.e. state parties) are achieving regime goals, while the latter is to assess whether particular actors are fulfilling regime commitments (Mitchell 1994, 2003; Mitchell 1995, 1998; Raftopoulos 2001). Initial observation of IMO’s policy concerning MARPOL compliance deficiencies shows an inclination towards the ‘compliance oriented’ notion. This notion is stipulated by responding to the rise of environmental protection demands with amending the convention and adding new protocols, despite many state actors
still failing to fulfil the basic treaty requirements (e.g. providing adequate port reception facilities mandated by the classic Annex I) either due to inadvertence or in-capacitance (Levy et al. 1993; Mattson 2006a).

Focusing on the case of MARPOL compliance, previous research argues that many governments - while being member parties of the convention - are either unwilling or unable to fulfil their obligations according to the convention (Brookman 2002; Mattson 2006b; Sahatjian 1998). Such practices by governments intermingled with corporate economic determinism and micro-situational difficulties on board ships (e.g. difficulties in dealing with overboard discharge monitoring equipment), elicits, as this study suggests, the development and establishment of a set of salient perceptions among seafarers as a social and professional group. Perceptions raise many doubts about the seriousness of these key actors (i.e. governing bodies and state parties to MARPOL) and whether they are genuinely pursuing environmental goals or just accommodating contemporary political agendas. Being influenced by such perceptions and experiences, many seafarers build up a significant level of distrust regarding the intentions of global policy making institutions governing the marine pollution agenda. The argument is that this distrust is not yielding significant improvements in compliance practices with the growing body of marine environmental regulations mandated by international governing bodies such as the IMO. Moreover, amongst all these tensions, when contemporary seafarers feel the ‘global’ cry to protect ‘the environment’ they feel more committed and stressed especially if they face any prohibitive barriers to comply. These types of ‘global’ stressors are discussed below.

3.2 The ‘Globality’ Factor / Barrier

This section discusses the political and environmental priorities/pressures as perceived and voiced by seafarers representing a set of ‘global’ factors affecting their general understanding of marine pollution and compliance problems. In this context, many participants stressed the importance of the power of politicians and the importance of a country’s political will to materialise and enforce the globally adopted marine environmental conventions. Because no questions were explicitly posed on this topic, interviewees who talked about issues of ‘global’ environmental concerns did so autonomously. Many seafarers from various nationalities and shipping companies commented on the importance of ‘global’ political agendas and various regional and local levels of implementation and enforcement of the MARPOL convention.
This unanticipated theme (at the beginning of the study) may be considered as another source of stress and pressure - as discussed below – for a transnational workforce in a globalised industry.

In contrast to policy makers, seafarers are often observed to evaluate the effectiveness of marine environmental conventions and especially the MARPOL convention in their own way. Interestingly, they are engaged in their own evaluation of the attitudes and behaviours of countries, shipping companies, and their peers in relation to MARPOL daily compliance. Their tool for this evaluation is by simply observing the sea water parameters and coastal areas in their own countries and comparing this with different coastal waters and ports of the world in terms of which is more polluted. Following these comparisons and observation autonomous tasks, it is clear from the data analysis that many respondents are also falling under the influence of ‘global’ public discourses intermingling issues such as ‘global warming’ and green house gas ‘GHG’ emissions with marine pollution problems in a rather confused way. In their accounts, seafarers are also ambivalent about the role of the shipping industry in protecting the marine and coastal environments. This ‘confused’ perception is expressed clearly by an Asian Second Officer when asked about the reasons behind protecting the marine environment in general:

*Well, it is what we know at the moment about the global warming…that is the main issue I think…there are so many phenomena happening because of this global warming…*

However, along similar lines, a Nordic Master in the same company summarises the ‘global’ pressure he feels with this explicit account:

*…the more talk out there about the environment…the more you feel the pressure to apply…and you don’t want to do things that will result in a pollution…you want to behave as good as you can….*

This perceived ‘global’ pressure is seen by most respondents (from all nationalities contributing to this study) as being dynamically progressing during recent years and some respondents go as far as speculating that it is going to be harder in the years to come. This theme is clear from the account of an experienced Chief Engineer referring to criminalisation of seafarers in the aftermath of any pollution incidents:
regarding these incidents or accidents that are happening...and I can say things are going to be harder in the days to come as we have all these environmental issues ....all these rules and regulations coming in...

In this context, my argument is that adding a global ‘macro’ socio/political stressor to the ‘micro’ situational compliance atmosphere on board ships represents significant pressure on individual seafarers as they try to fulfil perceived social and professional roles. A view supported by previous shore-based regulatory compliance studies which argued that this multiplicity of social and professional commitments can lead to a significant level of stress on regulatees potentially affecting their professional performance, especially when they try to pursue, simultaneously, incompatible goals (Haines and Sutton 2003).

3.3 The National Theme

Interestingly, amidst all the above mentioned tensions, many seafarers have chosen a ‘national’ self representation when asked about their feedback regarding compliance levels with marine environmental regulations. For example, some European respondents are claiming that their care for the environment was due to their native countries’ culture and how they were brought up and taught how to preserve the environment in their childhood. In employing such a position they are acknowledging their countries’ efforts for environmental protection, in general concluding by showing their national superiority in environmental issues. This can be seen, on the one hand, from the explicit account of a Nordic Chief claiming his country’s superiority in environmental protection:

…for example (country name)...we divide our garbage to glass, paper...what do nine million people do...we do our best...but you think what are they doing in (another densely populated developing country name)... nothing....

On the other hand Asian and Middle Eastern seafarers reported their despair of the lenient environmental policies adopted by their countries regarding the protection of the marine and coastal environments (i.e. territorial waters, beaches, ports etc.). The account of an Arab Chief Engineer depicts the state of the marine environment in some Arab countries and the associated feelings of despair:
I feel great pain when I see our Arab countries’ ports...the pollution in it can be easily seen with your bare eyes. It is a disgrace ...

This account - and many others - depicts these general feelings of victimisation that could be sensed in many interviews with seafarers from less developed countries. It is clear that such feelings contribute, to a large extent, to the establishment of ‘interest based’ perceptions that negatively impact on environmental practices of seafarers in various geographic areas. In other words it elicits negative perceptions that may lead to a general feeling of despair - as sensed from the account - among seafarers witnessing such persistent pollution especially when this pollution is observed in their own countries. My argument is that these evaluating/monitoring processes ultimately result in more dumping activities in these sea areas belonging to such countries, which end up to be perceived by seafarers as environmental pariahs.

To explore these issues further, differences between developed and developing countries were explored in the literature in an attempt to locate the links between seafarers’ socio-demographic variables and their behaviours towards the marine environment. This was explored in a more holistic approach about differences between developed and developing countries citizens’ behaviours toward the environment in general. Some of the existing literature suggests that; in developed nations the government and industry’s rising level of environmental concern are mainly due to public perception and demand for corrective and preventive actions. The case of developing countries differs as pro-environmental behaviours are mainly emerging from government and Non Governmental Organisations (NGOs) rather than from the public at large (Rice 2006). Bearing in mind the internationalised structure of ships’ crews in the contemporary shipping industry, and within the context of different behaviours towards the environment, a very relevant study by Inglehart (1995) implied that the inhabitants of such poorer countries are less likely to demonstrate concern and pro-environmental behaviour. This study also tried to identify the links between sound environmental behaviours and demographic variables, beliefs, values and religiosity (Inglehart 1995).

In this context recent studies identified some pivotal elements affecting a person’s engagement in Environmental Responsible Behaviour (ERB). This person must feel that their
efforts make a difference, and avoid the feelings of helplessness which depress pro-
environmental behaviours (Kaplan 2000). This body of literature also suggests that there are
differences between peoples’ perceptions of the environment within a certain country and
between countries. Such comparative studies provided some explanations to different
seafarers’ perceptions about marine pollution and compliance problems, which proved to be
helpful in studying seafarers’ environmental compliance practices.

3.4 The Shipping Companies’ Theme/Barrier

Ship Masters, in this study, clearly perceive themselves as targets of contradictory coercive
environmental policies adopted by their shipping companies. They, while positioned in
command of their ships, strongly feel that they are being remotely managed much more than
ever with the rise of environmental concerns and the resultant regulatory instruments. Such
instruments usually mandate certain compliance elements on shipping companies who try - at
times - to evade and/or to reduce the cost of their implementation by adopting implicit
dumping policies across their fleets. These evading policies can be popular among seafarers
especially when they are overworked, fatigued or when they feel over regulated. The
feedback of a European Master when asked about new environmental policies of his
company exemplifies the feeling of ‘over regulation’:

I can tell you...I don’t need it....because I have the feeling inside to protect the
environment… [...]...for myself …the ISM code guide the company….for good guys never
necessary…now we have the paper work growing and growing……I can’t manage anymore...
the company just adds to our agony with this array of environmental stuff….

Along similar lines, some shipping companies, taking advantage of the insecure employment
situation and deregulation of the maritime industry, keep switching between ‘complete
control’ and ‘semi-autonomy’ management models causing more confusion and stress to
ships’ Masters. Other companies (the ones mainly flagged at open register countries for their
lenient taxation and labour laws- also known as flag of convenience countries - FOCs), for
example, are reported to put the ship’s Master in the position of “handle the situation
Captain” (quote by one Master) in relation to oily waste disposal which is widely perceived
as a deceptive form of “responsible autonomy” by Masters (Willmott 1993). Similar
experiences re-emerge from the accounts of ships’ Masters and other members of staff during

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interviews affecting their understanding of their daily compliance tasks on board ships. Following this, it is reasonable to argue that such experiences lead to the establishment of salient negative perceptions regarding compliance practices, and contribute to the building up of an un-healthy environmental culture on board ships.

Taking this point further, it is clear, on the one hand, that corporate and management environmental strategies in some shipping companies (mainly FOCs) compel concentrated and stressful work experiences among seafarers. It clearly disrupts the basic social aspirations of seafarers as humans and as professionals amidst the ‘global’ cry to preserve/protect the environment for future generations. This resulted in accounts and feelings of tension, anxiety, contradiction, confusion and distrust, explicitly and implicitly expressed in this study’s data. On the other hand, EU national flagged ships are a clear example of corporate regulation which achieved many of its goals. However, the question still remains: was the intent to produce seagoing staff that are competent and committed to corporate strategies; or to produce staff identities that are only receptive to managerial? For example, in this study, Masters of EU flagged ships perceived the ‘quasi-autonomy’ given to them by management as ‘trust and liberation’, while Masters of FOC ships interpreted any form of autonomy as a ‘trap’ that could lead to ‘self-incrimination’ in case of polluting the marine environment either intentionally or accidentally.

4.0 Conclusion

Within the context of enhancing environmental compliance to marine environmental conventions, seafarers viewed dumping pollutants overboard as a non professional as well as a non ethical act. However, as professionals in the current competitive shipping market, they neither enjoy being autonomous (through their involvement in power relations and regulatory discipline), nor fully alienated from the professional values from which they derive their environmental practices and around which they articulate their personal and ethical desires.

Trying to cope with such demands not only creates a conflict between seafarers’ personal interests (professional excellence) and being ‘compliant’ to MARPOL as an example of an established marine environmental convention, but also with a set of growing ‘global’ environmental values dominating today’s world. As a result, seafarers as a global work force
appear to suffer from ambivalence regarding MARPOL compliance practices, especially when being employed by a very cost-conscious industry in a volatile labour market (Donn and Morris 2001; Wu and Winchester 2005). According to this study, shipping companies tend to mask their dominant commercial ethos by embedding it in counter-norms and unwritten policies rather than in formal management control systems (Bloor and Dawson 1994; Kosmala and Herrbach 2006).

This research suggests that one of the major challenges for seafarers is trying to fill in the gap between compliance demands, professional practice, and personal interests which require all stakeholders to fulfil their social and legal obligations. While most shipping companies are largely driven by their economic revenue and competitiveness agendas, some are choosing to force their seagoing staff to solve waste disposal problems in the most, as they term it, ‘economic’ way possible. At the same time, many countries have also chosen to limit their investment in providing ‘adequate’ reception facilities as per MARPOL requirements (both developed and developing as reflected from respondents’ accounts), or to provide proper surveillance for their coastal and territorial waters. These implementation and enforcement difficulties clearly reflect on seafarers’ understanding of the whole marine pollution issue.

On micro-situational and daily compliance levels, one of the findings of this study is the detected struggle in seafarers’ accounts that their persistent attempts in trying to link a sense of trustworthiness to higher ranks on board, is mixed with fears of disappointing them. In doing this, they are attempting to avoid being overwhelmed with helpless feelings in relation to their personal aspirations (i.e. to stop polluting the marine environment). On a wider level, seafarers are clearly influenced by ‘global’ environmental discourses which seem to have added pressures to their personal and professional demands. The data provides evidence of their attempts to balance between one’s satisfaction of doing a ‘good and professional’ job, with the potential guilt resulting from committing ‘back stage’ or environmental non-responsible behaviours as demanded by their corporate masters.

From the above discussion, I may argue that the established perceptions presented by experienced and new entrants to the seafaring profession in relation to countries, companies and peers are, to a large extent, a result of global, managerial and micro-situational compliance experiences. Such experiences -at times- force the regulatees to re-interpret the whole environmental legislative process in the maritime sphere and question its legitimacy.
A more in-depth understanding of such perceptions may aid the maritime policy makers to reconsider their compliance monitoring systems associated with current and future marine environmental conventions. However, so far, for seafarers, it is clear that they are continuing their attempts to protect the beautiful ocean from the pollution beast.

References


Fatalities at Sea

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Abstract

There are many problems with the available data relating to seafarer fatalities such as poor recording, limited coverage, and a lack of reliable and robust information on overall seafarer populations. These issues mean that it is often impossible to produce accurate fatality rates using traditional methods, such as fatalities per number of seafarers. This paper therefore presents fatality rates using alternative measures which rely on data which is more readily available in the industry, such as the number of vessels and tonnage.

Introduction

It is often suggested that, relative to other occupations, seafaring is a dangerous profession, and although the overall number of fatalities has dropped compared to levels at the turn of the century, recent studies show that fatality rates are still much higher for seafarers than for those in other occupations (Roberts, 2008; Rodriguez and Formoso, 2007; Roberts, 2002a; Roberts, 2002b; Roberts and Hansen, 2002; Li and Wonham, 2001; Nielsen and Roberts, 1999; Larsson and Lindquist, 1992). For example, Rodriguez and Formoso (2007) reported that fatality rates in the Spanish maritime transport industry were nearly six times higher than for the general population. Similarly, Hansen (1996) found that mortality rates for Danish seafarers were 11 times higher than comparable shore based workers. Others have found even higher rates, with Roberts (2002a) reporting that UK seafarers were 26.2 times more likely to have a fatal accident at work compared to shore based workers in the UK.

All of these studies, however, have limitations. The calculation of fatality rates such as these requires reliable, accurate information about both the number of fatalities and the overall number of seafarers. Although many administrations record generally reliable data on fatalities, because of the serious nature of such incidents, those with smaller fleets and flags of convenience do not always do so (Li and Wonham, 2001; Nielsen and Roberts, 1999; Jepsen, 1991). Some authors have also voiced concern over possible under-reporting of fatalities (Nielsen and Roberts, 1999; Larsson and Lindquist, 1992).
In the calculation of fatality rates the numbers of seafarers in the group from which the fatalities derive is as important in establishing an accurate ‘rate’, as the numbers of fatalities per se. Obtaining accurate information about the overall number of seafarers associated with a register (flag) is, however, highly problematic. Although there are administrations which do consistently record and publish accurate and reliable data about their seafarer population, for example Denmark (see Danish Maritime Authority, 2009), this is very much the exception rather than the rule. More often than not these data are not available at all or, if they are available, there is significant concern about their accuracy (Roberts, 2008). This stems, in particular, from the ways administrations attempt to ‘count’ seafarers. For example, Li and Wonham (2001) suggest that in many cases records of employment or lists of ‘qualified’ seafarers (i.e. lists of certificates for seafarers) are used to provide these data. However, these will include seafarers who are on leave and those that are working ashore (Li and Wonham, 2001), as well as, in some instances, those no longer working in the industry, leading to seafarer numbers being artificially high and not representing those actually working at sea. Artificially high numbers of seafarers will produce artificially low fatality rates for the industry. There are inevitably, as a result, significant doubts over many of (even) the most recently reported seafarer fatality rates.

Partly due to these problems, perhaps, many studies have focused only on individual or a small number of national fleets, and frequently cover different time periods (Li and Wonham, 2001; Nielsen and Roberts, 1999). Only one study has compared fatality rates for different vessel types (see Nielsen, 1999), but this too was limited to a single national fleet. This limited focus and poor coverage, coupled with the widespread problems concerning data on overall seafarer numbers, has made it impossible to examine and compare rates across the industry as a whole, across administrations, or by vessel types.

There are, however, other ways of presenting accident rates. For example fatality rates can be presented in relation to ‘exposure’, such as kilometres travelled (predominantly used in the non-maritime transport industry), or in terms of years worked. For example, Roberts and Hansen (2002) reported an accident rate of 37.8 per 100,000 seafarer years for British merchant ships. Similarly Hansen, et al., (2008) found an accident rate of 84 accidents per 1,000 years onboard ship in a study of Danish cargo ships (note, this figure includes non-fatal accidents). On the face of it, this is a better unit of measurement as it takes into account how much exposure a person has to the risk of an accident. For example, although there is a high
number of accidents in the road transport sector, there is also a high level of mileage covered. However, for the maritime industry such exposure data, for example, hours worked, is frequently not readily available, and where it is, can often be unreliable (Evans, 2003). This has lead to some authors using questionable measures to calculate such information (for example, Roberts and Hansen 2002).

The aim of this paper, therefore, is to try to address some of these difficulties. In addition to trying to collect data on seafarer fatalities from a number of administrations worldwide for all vessel types, the paper focuses on considering alternative ways of calculating fatality rates. Two possibilities are considered: rates by vessel (as opposed to seafarer) numbers, and rates by gross tonnage. The advantage of these approaches over the more traditional rates by seafarer numbers or exposure levels is that they do not rely on ‘population’ data from administrations which, as we have described, may be collected in varying ways or may not be collected at all. Rather, both these alternative rates are based on reliable and accurate data which are publicly available from the Lloyd’s Register *World Fleet Statistics* (Lloyd’s Register Fairplay, 2010). The paper also briefly touches on fatality rates by ship type, a measure which, to date, has attracted relatively little attention and has not been looked at for multiple administrations.

**Methods**

Accident data were originally obtained as part of an earlier study conducted by The Lloyd’s Register Educational Trust Research Unit (The LRETRU1), Cardiff, which collected data from Maritime Administrations worldwide. Initially the top 30 administrations (as defined by the volume of gross tonnage) were approached and asked if they collected data on accidents involving vessels under their flag and/or occurring in their national waters. Twenty six Administrations responded and of these 25 indicated that they did collect such data. These Administrations were then asked if they would be willing to share these data for the period of 2000 to 2005 with The LRETRU for academic research purposes. After lengthy negotiations, sixteen administrations provided accident data, with seven of the datasets including

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1 The Lloyd's Register Educational Trust (The LRET) is an independent charity working to achieve advances in transportation, science, engineering and technology education, training and research worldwide for the benefit of all.
information on accidents that involved personnel onboard\textsuperscript{2}. As part of a separate initiative, these data were updated in 2011 when the seven administrations were again asked to provide accident data, with four administrations providing the information to date. We are still in the process of collecting further data from the other three administrations.

The seven administrations that provided detailed data were additionally asked if they could provide information about the overall number of seafarers employed. Four provided these data for the complete period of study (2000-2010). As anticipated, the sources of this information varied, with one being a national register of employment, whereas another was compiled from the number of articles of agreement signed by national seafarers (i.e. contracts). As noted in the introduction, and in common with other studies, these differences seriously undermine the construction of comparable fatality rates.

\textit{Inclusion Criteria}

The sampling criteria for the seafarer data were similar to those used by Roberts (2008), Roberts and Hansen (2002) and Nielsen (1999) and included those that worked onboard merchant vessels, including officers, ratings, cadets, and other crew such as stewards and catering staff. Non-crew members, such as passengers, visitors to the vessel, and other non-working individuals, were excluded. Those seafarers that were recorded as missing were included as fatalities, as in the Roberts and Hansen (2002) study.

In terms of vessels, a number of ship types were excluded from the current analysis. These included non-merchant ships such as fishing vessels, non-commercial pleasure craft, and vessels that worked only in port or on inland water networks, such as barges and tugs. A full list of vessel types excluded is shown in Appendix 1.

For each of the Administrations, only vessels flying the national flag were included.

\textit{Ship Type Coding}

The vessel types which seafarers were sailing upon, as listed in Administrations’ datasets, were re-grouped using Lloyd’s Register \textit{World Fleet Statistics}, Level 3, ship type definitions (see Appendix 1). There are 24 separate ship types under the Level 3 definitions which have

\textsuperscript{2} For full details of methods used to collect accident data from the Maritime Administrations, see Ellis (2007).
been combined into five broad categories: Tankers, Bulk Carriers, Cargo Vessels, Passenger/General Cargo Vessels, and Other (including offshore industry vessels). For full details of how the vessel types were combined see Appendix 1.

**Results**

Table 1 shows the range and nature of the data that were provided by each of the administrations. In terms of the factors relating to the key exclusion criteria, only five administrations supplied information about whether the fatalities were crew members or passengers. In addition, although six administrations provided information about the flag of the vessels involved, in one case, this was only partial. Furthermore, only four administrations provided the overall seafarer numbers data needed to calculate fatality rates per number of seafarers.

Looking at the coverage of the datasets in general, only four of the seven Administrations provided data for the full 10 year period. Although they all provided ship type information, two only gave partial data. Very few kept seafarer demographic and job-related information (i.e. age, rank) and only two provided information about the nationality of seafarers. All Administrations did, however, provide details of the type of incident that occurred to the vessel (i.e. collision, sinking).
Table 1: Data Provided by each of the Seven Administrations

<table>
<thead>
<tr>
<th>Administration</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship Type</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Partial</td>
<td>✓</td>
<td>Partial</td>
<td>✓</td>
</tr>
<tr>
<td>Flag</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Gross tonnage</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Age of Vessel</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vessel Incident Type</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Fatality or Injury</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Crew or Passenger</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Seafarer Nationality</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Seafarer Rank</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Age of Seafarer</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cause of casualty</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td>Overall seafarer numbers (2000-2010)</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Fatality rates by administration per 100,000 seafarers

Looking initially at the standard measure of fatality rates (per number of seafarers), it was only possible to calculate these rates for the four Administrations that provided overall numbers of seafarers. Table 2 shows fatality rates per 100,000 seafarers, a similar unit to that used by Roberts (2008) in his study of UK seafarers.

Table 2: Fatality Rates per 100,000 Seafarers Split by Year and Administration

<table>
<thead>
<tr>
<th>Admin</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>34.11</td>
<td>0.00</td>
<td>5.87</td>
<td>65.43</td>
<td>0.00</td>
<td>0.00</td>
<td>16.75</td>
<td>42.77</td>
<td>19.63</td>
<td>17.57</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>38.01</td>
<td></td>
<td>4.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.04</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26.38</td>
</tr>
<tr>
<td>Mean</td>
<td>31.15</td>
<td>10.79</td>
<td>9.29</td>
<td>34.71</td>
<td>5.35</td>
<td>4.11</td>
<td>14.32</td>
<td>39.29</td>
<td>12.31</td>
<td>16.45</td>
<td>17.78</td>
</tr>
</tbody>
</table>

Mean fatality rates for all Administrations varied between 4.11 seafarer deaths per 100,000 seafarers for 2005 and 39.29 seafarer deaths per 100,000 seafarers for 2007. Mean rates by administration (across years) varied between 14.04 seafarer deaths per 100,000 for Administration C and 26.38 seafarer deaths per 100,000 for Administration F. Rates for each administration by year are shown in Figure 1.
For Administration B there is a very apparent spike in 2003. This was due to the total loss of a vessel where all crew were killed (n=11). Such cases where there is a total loss are problematic for fatality rates, and some researchers suggest that multiple deaths should be treated as single incidents in order to get more consistent and reliable rates (see O’Connor and O’Connor, 2006).

Looking at the general pattern of rates, although there were a number of years where data were missing for Administration C, where they were present the rate was generally lower than those for Administration F and G, which had similar rates. Figure 1 also seems to suggest that the Administration C fatality rate falls over time. However, the missing years make it impossible to say whether this is a consistent trend, and thus any such claims should be made cautiously.

**Fatality rates by administration per 100 vessels**

Next, two alternative fatality rates were calculated. This was possible for all five of the Administrations that provided flag and crew/passenger information for their fatality data. Table 3 shows the first of these rates, fatalities per 100 vessels.
Table 3: Fatality Rates per 100 Vessels Split by Year and Administration

<table>
<thead>
<tr>
<th>Admin</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.09</td>
<td>0.84</td>
<td>1.64</td>
<td>2.25</td>
<td>1.76</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.46</td>
</tr>
<tr>
<td>B</td>
<td>1.15</td>
<td>0.00</td>
<td>0.22</td>
<td>2.60</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.66</td>
</tr>
<tr>
<td>C</td>
<td>0.63</td>
<td>0.00</td>
<td>0.00</td>
<td>0.07</td>
<td>0.00</td>
<td>0.07</td>
<td>0.00</td>
<td>0.14</td>
<td></td>
<td></td>
<td>0.13</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td>0.44</td>
<td>1.16</td>
<td>0.53</td>
<td>0.96</td>
<td>0.66</td>
<td>0.32</td>
<td>0.06</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>0.31</td>
<td>0.31</td>
<td>0.29</td>
<td>0.09</td>
<td>0.26</td>
<td>0.18</td>
<td>0.26</td>
<td>0.66</td>
<td>0.32</td>
<td>0.38</td>
<td>0.31</td>
</tr>
<tr>
<td>Mean</td>
<td>0.79</td>
<td>0.29</td>
<td>0.72</td>
<td>1.23</td>
<td>0.52</td>
<td>0.45</td>
<td>0.35</td>
<td>0.63</td>
<td>0.29</td>
<td>0.49</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Overall mean rates for all Administrations varied from 0.29 seafarer deaths per 100 vessels in 2001 and 2008 to 1.23 seafarer deaths per 100 vessels in 2003. The mean rates by Administration (across years) varied from 0.13 seafarer deaths per 100 vessels in Administration C to 1.46 seafarer deaths per 100 vessels in the Administration A. These rates are shown in Figure 2.

Figure 2: Fatality Rates per 100 Vessels Split by Year and Administration

Although only covering the period 2000-2005, the fatality rate for Administration A can be seen to be much higher than for other Administrations (except in 2003 where a spike in the rate for Administration B can be seen again). Administration C, as before, has the lowest fatality rate, with Administration F and G showing slightly higher levels.
**Fatality rates by administration per 1,000,000 gross tonnes**

An alternative method for calculating seafarer fatality rates could rely on gross tonnage. We therefore calculated the mean fatality rates for the different Administrations using gross tonnage as the ‘denominator’ (see Table 4).

### Table 4: Fatality Rates per 1,000,000 GT Split by Year and Administration

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.45</td>
<td>0.33</td>
<td>0.61</td>
<td>0.83</td>
<td>0.65</td>
<td>0.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.55</td>
</tr>
<tr>
<td>B</td>
<td>0.94</td>
<td>0.00</td>
<td>0.14</td>
<td>1.52</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
<td>0.00</td>
<td>0.05</td>
<td>0.43</td>
</tr>
<tr>
<td>C</td>
<td>0.34</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.43</td>
</tr>
<tr>
<td>F</td>
<td>1.32</td>
<td>3.57</td>
<td>1.73</td>
<td>3.89</td>
<td>2.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>0.56</td>
<td>0.51</td>
<td>0.38</td>
<td>0.09</td>
<td>0.27</td>
<td>0.18</td>
<td>0.25</td>
<td>0.60</td>
<td>0.27</td>
<td>0.50</td>
<td>0.36</td>
</tr>
<tr>
<td>Mean</td>
<td>0.57</td>
<td>0.21</td>
<td>0.38</td>
<td>0.61</td>
<td>0.24</td>
<td>0.20</td>
<td>0.78</td>
<td>1.40</td>
<td>0.66</td>
<td>1.48</td>
<td>0.81</td>
</tr>
</tbody>
</table>

In terms of gross tonnage, overall mean rates for all Administrations varied between 0.20 seafarer deaths per 1,000,000 gt in 2005 and 1.48 seafarer deaths per 1,000,000 gt in 2009. The mean rates by Administration were again lowest for Administration C (0.06 per 1,000,000 GT) and, in this case, highest for Administration F (2.63 per 1,000,000 GT). Rates in terms of gross tonnage are shown in Figure 3.

### Figure 3: Fatality Rates per 1,000,000 GT Split by Year and Administration
Looking at fatality rates in terms of tonnage it is clear that although data are only present for 2006 onwards, the fatality rate for Administration F is considerably higher than those for the other Administrations.

Comparing fatality rates

In order to compare the three types of fatality rates, Figure 4 presents the rates together for each Administration\(^3\).

*Figure 4: Fatality Rates Using the Three Different Measures*

\(^3\) The four Administrations where it was possible to calculate all three rates are presented here; the other, where only two rates were possible, is in Appendix 2.
Looking at the four Administrations for which all three rates could be calculated, the alternative rates (i.e. fatalities by vessel number or tonnage) follow a similar pattern to that of the standard fatality rate (per number of seafarers) for all of the Administrations. In addition, the Administration with the lowest mean overall rate per number of seafarers, Administration C, also has the lowest mean overall rates by both vessel numbers and gross tonnage. Administration F, the Administration with the highest overall rate per number of seafarers also showed the highest rates for the two alternative measures, particularly that per 1,000,000 GT. These consistencies, both in terms of patterns over time and relative levels between Administrations, suggest that the alternative rates presented here are viable ways of considering fatality rates.

However, there are some specific issues which require further consideration in relation to any future development of this ‘measure’. In our sample of five Administrations, four had similar numbers of vessels on their register (an average of 1,526 vessels per fleet). One had approximately one third of this number of ships registered with it however. When it came to tonnage the variation was far greater with just two of the Administrations registering similar volumes of tonnage and with the largest register (by tonnage) having 24 times more registered tonnage than the smallest. These variations inevitably impact upon the calculation of fatality rates. We are currently in the very early stages of considering ways this might be dealt with, for example by using the information available about vessel numbers and tonnage together with details of crew sizes. Refining the approach in this way might allow it to be of greater use in making cross-register comparisons.

Unsurprisingly, within the overall patterns there are a number of Administration-specific differences. For example, the Administration F’s rate by tonnage is markedly higher than the rates presented by vessel or seafarer numbers, reflecting the composition of the fleet which contains a large number of mainly low tonnage vessels. However, for Administration G’s fatality rates in terms of both tonnage and the number of vessels are higher than fatalities per number of seafarers. For Administration B and C the three rates are generally similar, although for Administration B the spike in 2003 is apparent in all three measures, with per vessel measure highest and the per seafarers measure lowest.
Fatality rates by ship type

Previous research has paid little attention to differences in fatality rates by ship type. Although this is very much a work in progress for this project, Table 5 shows ship type fatality rates per 100 vessels for all five of the Administrations in combination.

Table 5: Fatality Rates Per 100 Vessels by Ship Type Split by Year

<table>
<thead>
<tr>
<th></th>
<th>Tankers</th>
<th>Bulk Carriers</th>
<th>Cargo Vessels</th>
<th>Passenger/General Cargo</th>
<th>Other (Inc Offshore Industry Vessels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0.35</td>
<td>0.00</td>
<td>0.54</td>
<td>2.01</td>
<td>0.11</td>
</tr>
<tr>
<td>2001</td>
<td>0.23</td>
<td>0.42</td>
<td>0.64</td>
<td>0.29</td>
<td>0.00</td>
</tr>
<tr>
<td>2002</td>
<td>0.66</td>
<td>3.16</td>
<td>0.19</td>
<td>1.16</td>
<td>1.27</td>
</tr>
<tr>
<td>2003</td>
<td>0.34</td>
<td>0.40</td>
<td>0.72</td>
<td>1.61</td>
<td>1.58</td>
</tr>
<tr>
<td>2004</td>
<td>0.46</td>
<td>0.38</td>
<td>0.74</td>
<td>1.06</td>
<td>0.43</td>
</tr>
<tr>
<td>2005</td>
<td>0.61</td>
<td>1.43</td>
<td>0.69</td>
<td>0.85</td>
<td>0.13</td>
</tr>
<tr>
<td>2006</td>
<td>1.70</td>
<td>2.94</td>
<td>0.20</td>
<td>0.36</td>
<td>0.00</td>
</tr>
<tr>
<td>2007</td>
<td>0.67</td>
<td>0.00</td>
<td>0.29</td>
<td>0.22</td>
<td>1.06</td>
</tr>
<tr>
<td>2008</td>
<td>0.16</td>
<td>0.33</td>
<td>0.84</td>
<td>0.00</td>
<td>0.09</td>
</tr>
<tr>
<td>2009</td>
<td>0.16</td>
<td>0.00</td>
<td>2.39</td>
<td>0.00</td>
<td>0.09</td>
</tr>
<tr>
<td>Mean</td>
<td>0.53</td>
<td>0.91</td>
<td>0.72</td>
<td>0.76</td>
<td>0.48</td>
</tr>
</tbody>
</table>

Looking at fatality rates across the years, we find fairly similar rates across all the vessel types. However, excluding the other category (as being too heterogeneous to compare), bulk carriers have the highest mean rate of fatalities (0.91) and with tankers the lowest (0.53).

Fatality rates per 100 vessels by ship type (excluding others) are shown in Figure 5.

Figure 5: Fatality rates per 100 vessels by ship type split by year

![Fatality rates per 100 vessels by ship type split by year](image-url)
Looking at the fatality rates for each of the ship types across the years, no particular vessel type has a consistently higher rate of fatalities although average fatality rates per ship type do vary. There are a number of years where the accident rate for a particular ship type rises dramatically. For example, bulk carriers in 2002 and 2006, where the accident rates are 3.16 and 2.94 fatalities per 100 vessels respectively. However, both of these spikes may be seen as anomalous: while there were only one and three fatalities for those years respectively, there were also particularly low numbers of vessels (total number of bulk carriers registered) in those years. Considering rates such as these over a longer period of time and for a greater number of registers would allow us a better insight into the overall patterns of fatality by ship type potentially ‘ironing out’ some of the effects of anomalous years/data.

Discussion

An important criticism of many previous studies of fatality rates in the maritime industry is that they often present rates calculated using questionable (and variable) baseline data on overall numbers of seafarers. The aim of this paper has been to try to suggestive alternative ways of dealing with these issues by: first, collecting data from a number of Administrations worldwide; and second considering alternative ways of calculating fatality rates. Although, as anticipated, we have encountered a number of difficulties in terms of the availability and content of the Administration data, we have nevertheless presented three different measures of fatality rates across a number of Administrations in the hope of stimulating discussion and a greater awareness of the issue across the sector.

It should, of course, be stressed that the lack of usable data was not the result of any unwillingness to cooperate on the part of the maritime Administrations. Rather the issue is one of what Administrations record and how they record it. For example, many of the Administrations’ datasets which we examined (10 of the 16 provided) did not include information about accidents occurring to individuals, instead focussing on vessels alone. Where details about accidents involving those onboard were included, these were often sparse. For instance, two datasets had to be excluded from this study because, although the number of fatalities that occurred per incident was recorded, there was no indication of whether these were to crew or to passengers onboard the vessel. Similarly the flag of the vessel that the fatality occurred on was only recorded in 5 of the 7 cases. This information is crucial to the accuracy, reliability and comparability of the rates. Unless the issue of poor
recording is addressed by Administrations worldwide it will continue to hamper efforts to produce global fatality rates. However, the impetus for Administrations to do this will need to come from the international legislative bodies such as the International Maritime Organisation (IMO) and the International Labour Organisation (ILO), so that global standards can be agreed upon.

The calculation of reliable fatality rates, however, is not solely dependent on what is recorded within accident data. As discussed earlier, the present study also found that for most Administrations there was a lack of available data relating to total numbers of seafarers (the information which is also required to calculate standard fatality rates). Even where these data were available, their source was often questionable in terms of its reliability and comparability across Administrations. For example, while one Administration provided data from official employment statistics, another’s source was records of certification. Furthermore, most sources raise the additional issue of whether a seafarer is ‘active’, i.e. working at sea, or not.

To address this the study looked at alternative ways by which fatality rates could potentially be calculated using data which is much more consistent and readily available in the maritime industry, i.e. statistics on the world fleet. Rates were presented by number of vessels and by gross tonnage. Although this approach has yet to be refined a comparison of these rates with the traditional measure suggested that measuring fatality rates in these ways could conceivably provide an alternative and viable approach that allows for the inclusion of more Administrations worldwide.

The paper also briefly considered differences in fatality rates across vessel types. These data are preliminary. However, they represent a first step in an exercise which would provide insight into the types of vessel where safety could usefully be improved.

We suggested at the outset that seafaring has always been, and continues today to be, a relatively dangerous occupation. This study has highlighted the current difficulties in calculating reliable and globally comparable fatality rates in the industry. However, if a “gold standard” minimum data set could be internationally agreed, this would allow not only for the calculation of accurate fatality rates, but also for the targeting of interventions to improve safety where they are needed most. This would significantly improve the industry’s ability to
reduce the relative danger of seafaring. However, until the time when such standardised recording practices are agreed upon the alternative measures presented here do seem to suggest a potentially viable alternative to traditional seafarer population-based fatality rates.

**Acknowledgements**

We gratefully acknowledge the role of The Lloyd's Register Educational Trust (The LRET) in supporting this work, and for allowing us to use data collected as part of a previous project funded by them.

The Lloyd's Register Educational Trust (The LRET) is an independent charity working to achieve advances in transportation, science, engineering and technology education, training and research worldwide for the benefit of all.

**References**


Appendix 1

Lloyd’s Register World Fleet Statistics Ship Types (WFS, 2009) – Vessel Types Coding Including Combined Categories

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Appendix 2

Fatality Rates For Administration A Using Two Different Measures (Per 100 Vessel, and Per 1,000,000 GT)

![Administration A Fatality Rates Graph](image-url)
Abstract

This paper presents the findings of a preliminary and on-going study on the role of supply chain relations in influencing the desire of tanker operating companies and their seafarers to institute and operationalise health and safety management arrangements on board their vessels. It does so by investigating the perceptions of the seafarers and the managers of these companies concerning the influence of oil company requirements on health and safety management on board their ships and the vetting, monitoring and inspection arrangements made to ensure compliance. It sets these findings in the wider context of regulating OHS management at sea and evaluates the contribution of this form of private regulation towards supporting improved OHS management performance and compliance with international regulatory requirements. In so doing it tests some of the conclusions and postulates that emerged from a previous study concerning the operation of supply chain influences on arrangements for managing occupational health and safety more widely, and contextualises them within the discourse on the effective regulation of OHS management at sea. It is however a report that concerns only part of an ongoing investigation and as such, as the paper makes clear, its conclusions are tentative and subject to further research.

Introduction

Two years ago I presented a paper at the SIRC Symposium exploring some of the links between modern business practices in relation to supply chains and their possible effects on managing health and safety at work. It was based on a study funded by the Institution of Occupational Safety and Health (IOSH), that Philip James and I had just completed, in which we had reviewed the available literature on these effects and drawn up some postulates concerning the role of supply chain relationships in supporting or undermining occupational health and safety (OHS) management practices especially among suppliers (Walters and James 2009). As I made clear in the 2009 presentation, our findings at the time were based almost entirely on the previous research of others and it was therefore important to test our postulates with further empirical research. For the last year or so we have been engaged in a study that is intended to achieve this. This work is ongoing and not yet complete. However, in this paper I would like to present some of our preliminary findings that are particularly relevant to the maritime sector.
While we were undertaking the original study, I had become separately aware of the apparent significance of an example of supply chain influences on health and safety management in the maritime industry. This was largely as a result of the investigations of Syamantak Bhattacharya who was then one of my research students, and who had been studying the implementation of the ISM Code on board tankers (Bhattacharya 2009). As a result of an interest that both Syamantak and I had shared in exploring these insights further, because of the importance of the industry in the globalised economy and the well-known challenges that it presents for regulatory intervention in OHS management, Helen Sampson and I decided we would make the maritime industry one of the sectors for further investigation of supply chain effects. In addition, our research team has looked at these effects in construction and in the food industry. In this paper however, I want to discuss some of our preliminary findings on experiences in the maritime sector, based on data originally collected by Bhattacharya and also on that collected more recently by Xue both of whom are my co-authors. We must stress from the outset that this is a work in progress and the study is not yet complete.

We begin by defining what we mean by supply chains and why we think they might be important influences on OHS management generally and with reference to the maritime industry particularly. We do this by briefly summarising the evidence found in the previous study concerning such influences and by enumerating the key postulates that emerged from a consideration of this evidence. We next outline the challenges to OHS management in the sector, highlighting the potential role of supply chain relationships in either supporting or undermining OHS management strategies on board ships. We then turn to the part of our current investigation that we have recently completed, which is concerned with seafarers’ experience of the influences of the requirements of major oil companies on OHS management on board the ships carrying their products. We outline the methods we used to collect our data on the experiences of seafarers and then try to set these findings in the wider context of regulating OHS management at sea and evaluate the contribution of this form of private regulation towards supporting improved OHS management performance and compliance with international regulatory requirements. In so doing we are also able to test some of the conclusions and postulates that emerged from the previous study concerning the operation of supply chain influences on arrangements for managing occupational health and safety, and contextualise them within the discourse on the effective regulation of OHS management at sea.
Finally, since this is a preliminary account of an on-going study we will outline the further work we need to undertake in order to complete the study.

What are supply chains and why might they be important in OHS?

Supply chains (or value chains) describe relationships involved in procurement and delivery of goods and services. They may involve simple buyer/supplier relationships between two entities or more commonly, quite long and complex chains or networks of transactional relationships involving numerous organisations involved in various business relationships between production and use. Business organisations are frequently simultaneously involved in a host of transactions in which they may be buyers in some and suppliers in others. While both private and public sector organisations have always required suppliers and been themselves suppliers of products and services, as economic globalisation and modern business methods associated with the globalised economy have grown in prominence, so too has the interest in supply chain management and the price and delivery demands dominating transactions between organisations. Current business and organisational practices such as downsizing, outsourcing, just in time management and lean production have further served to increase the importance of supply chains within business relations and the national and global economies in which they occur.

Supply chains are normally hierarchical with an uneven distribution of power within them, which provides potential for dominant actors to influence the behaviour of others in the business relationships involved. As businesses increasingly try to manipulate features of supply chains to improve their profitability, efficiency and market position, the question of what happens to the health and safety conditions of workers affected by these strategies has become the focus of some attention and debate among OHS practitioners, regulators and regulatory scholars. As we discovered in our previous study, current discourse on these consequences reveals two very different effects. In summary, the previous study of nearly 200 publications in which we found these effects demonstrated both positive and negative influences of supply chain pressures on preventive health and safety arrangements. Thus, on the negative side, the vast majority of studies demonstrate that such pressures often act to generate ‘indirect’ adverse effects (Quinlan et al., 2001; Quinlan and Bohle, 2009). For example, in an Australian investigation of the experiences of those working under sub
contract/outsourcing arrangements in four sectors, child care, hospitality, transport and building which found that these arrangements were associated with increased economic competition, as well as work disorganisation, regulatory failure and a divided workforce, leading the researchers to conclude that in ‘any organisation where outsourcing has become common, OHS standards deteriorate....’ (Mayhew et al,1996). Many other studies in, for example, the food, textiles and transport industries detail similar effects, as do the majority of studies of outsourcing in the public and third sectors (Walters and James, 2009; Walters and James, 2011; Cunningham et al., 2011).

Meanwhile, on the positive side, as these authors also show, such evidence relating to how supply chain relationships can detrimentally impact on health and safety standards, somewhat paradoxically, occasionally also points to the existence of a potential for them to be used to enhance, rather than undermine, health and safety standards within supplier (and purchaser) organisations. For it also suggests that scope exists for powerful supply chain actors to use the market power at their disposal to improve such management. They might do so for example, by laying down requirements as to how it is undertaken and by taking action to monitor and enforce compliance with these requirements. Examples of such practices have come to feature significantly in discourse around public/private regulatory strategies to improve labour standards, including those on health and safety in globalised production and also, more specifically, to improve OHS management in industries such as construction.

However, as Walters and James (2009 and 2011) have argued, for such potential to be realised a set of conditions apply. These include:

a) the extent to which the OHS management arrangements made by suppliers, create implications for their effective supply of whatever goods or services were required of them by buyers; and

b) the extent to which relevant external pressures are exerted by legislative provisions, regulatory agencies and others.

That is, attempts by buyers to influence supplier health and safety management are likely to be more effective where they are supported by adequate monitoring and penalty regimes; and occur within a relatively collaborative and trust based supply relationship. These kinds of supply relationships are mostly found where buyers and suppliers have worked together,
satisfactorily, for a relatively long period, the wider institutional context is supportive of them and again, where there is some form of public or private regulatory scrutiny in place.

Conversely, buyer attempts to influence supplier health and safety management are less successful where they: (a) clash with the business interests of suppliers and (b) where suppliers regard the risks of failing to comply with them to be relatively low.

The nature of supply chain relationships and the behavioural dynamics within them are further likely to be crucially affected by the characteristics of the goods and services provided through supply chains, the objectives and wider business interests of buyers and sellers, as well as the distribution of power between them, and the institutional (including regulatory) context within which buyer-supplier relations are developed.

**The significance of supply chains in the maritime industry**

Taking these postulates into account, we turn our attention to the maritime industry. Here we find an industry in which there has been an increased focus on the externalization of the supply of services. This is, of course, mainly because of its role in the logistics of supply internationally and its critical position in this respect has caused major transformations in the way in which the industry is structured and organized. At the same time, it continues to be one of the most hazardous industries for the workers involved, with occupationally related mortality, illness and injury rates at levels as high as those in land-based sectors such as construction and agriculture (if not even higher). However, unlike these land-based activities, the global nature of maritime activity means it takes place, for the most part, in situations that are largely beyond the reach of conventional regulatory inspection.

The industry is complex and fragmented, its vessels and the companies that own or manage them often have distinct features according to their trade. In recent decades it has undergone major transformations in its efforts to improve its competitiveness. These have been driven largely by the price and delivery demands of clients worldwide, and have profoundly affected the nature of ownership and management of shipping, the origins of the maritime labour force and its recruitment and management in the sector as well as ship design and the design and location of port facilities. It would be surprising indeed if such transformation had not also
had a significant impact on experiences of work and its management in the industry, including that of the management of health and safety at sea. Given this situation we reasoned it was an ideal case in which to test some of our previous postulates concerning both the positive and negative effects of supply chain relations on OHS management.

For our purposes, one of the most interesting elements of change in the modern maritime industry concerns that occurring in relationships between clients, shipping companies and the seafarers that crew the ships carrying clients’ goods from port to port around the world. These are precisely the kinds of change that the previous review of research on land-based industries demonstrated to be responsible for significant effects on health and safety management and outcomes. In this respect shipping operators typify the ‘porous organisations’ it identified in land-based examples, where the demands of clients superimpose upon relations between employers and employees and come to dominate concerns about the management of work. As such they are powerful and growing influences on the nature of working conditions and the work environment. While they may lead to work intensification and poorer working conditions, as is the case elsewhere there is also the possibility that, in certain circumstances these influences may contribute to the improvement of arrangements for health and safety management and the working conditions of the seafarers involved. We wished to examine both these sets of circumstances in the present study.

**Aims of the study**

The broad aim of the study was to discover more about the nature of supply chain relations, and the ways and circumstances in which they might affect health and safety at sea. The specific aim of this paper however, is to consider the application of the postulates we have derived from the previous general review, in one sub-sector of the industry in which we have some reason to believe these influences may have positive effects on OHS management – namely the petrochemical tanker trade. Here we are concerned with describing the systems in operation to achieve this, their strengths and limitations and especially the experiences and attitudes of seafarers and ship operating company managers in relation to them.
Methods

We have examined supply chain leadership and management practices relating to health and safety and their effects on board ships in the petrochemical tanker sector because we already had some information on these effects from Bhattacharya’s (2009) previous fieldwork on the implementation of the ISM code. We were able to revisit this field work, which had been carried out in 2006, on board four ships managed by two major ship operating companies, and explore his data with more detailed specific focus on seafarers’ experiences of the influences of the OHS management requirements of the oil companies to which their ships were chartered. In addition we were able to use data collected by Xue in the course of his more recent (2009-2010) fieldwork on board four tankers operated by two Chinese shipping companies to investigate the same influences. In each case we have tried to explore the operation of such influences on arrangements for health and safety management on board ships, from the perspective of both officers and ratings, and to examine responses to these issues from the management of the ship operating companies.

In the course of their combined fieldwork Bhattacharya and Xue interviewed nearly 120 seafarers while sailing with them on board eight different vessels. They also interviewed 23 shore based managers in the four companies responsible for operating these vessels. Among other things, these interviews sought information on ship operating company strategies in relation to OHS management and the seafarers’ experiences of them on board ships. This included especially the experience of the operation of systems to implement the ISM Code, covering reporting and communication systems for safety management, inspection practices and audit and review, as well as the involvement of the seafarers themselves in securing good practice on board the tankers on which they sailed. It needs to be stressed that the main focus of their fieldwork, the research questions they set out to address and the instruments they used to gather data, did not directly concern supply chain influences. In both cases these matters were raised by respondents in response to wider questions on the influences on shipboard management arrangements for OHS, and although the questions respondents were asked were different in both studies, there were substantial overlaps in the responses they elicited. In the analysis presented here we have focused solely on the material volunteered by respondents concerning supply chain influences on health and safety management practices.
Our findings on the effects of supply chains

Oil and chemical tankers normally carry hazardous cargoes and are therefore subject to particularly stringent requirements concerning their safe transport. In this account we want to focus not so much on these requirements, as on the influences on the will and capacity of ship operators and their crews to implement them.

With their capacity to choose which ships to employ, charterers have the opportunity to be highly influential in the way that ships are operated. The oil sector has arguably advanced furthest along this road, due to the small number of large players in the sector. The oil majors claim to account for some 20-30% of the market, with the other 70-80% being served by independent tanker operators. Through their representative organisation, the Oil Companies International Marine Forum (OCIMF), the oil majors are able to present their views within the IMO and other regulatory and legislative arenas. The independents are similarly represented by INTERTANKO.

To be able to compete for contracts with the oil majors, either directly or indirectly, tanker companies must ensure their ships are maintained and operated at a level dictated by the oil majors, including with respect to arrangements for the management of health and safety on board. The situation is quite complex, but generally the dominance of the oil majors is much in evidence in the sector. Vessels and the companies that operate them are vetted and required to meet rigorous standards concerning a matrix of procedural and manning requirements that influence the management of OHS among other things. Inspections are performed according to standard report formats developed by the OCIMF (see below) and provide each oil company’s vetting department with the information necessary to apply its criteria for the selection and/or continued use of tankers and their operating companies. Tanker vetting inspections are usually carried out during unloading operations, with the prior agreement of the ship owners and operators, and include access to confidential documents relating to the vessel’s maintenance and classification. Where a fleet operation fails to meet the required standards, even if it is the result of the lower performance of only one owner’s ships, it may result in the entire fleet being denied business. Oil Majors carry out vetting primarily to protect themselves and their business, to be seen to be exercising due diligence and to provide the necessary paper trails in the event of an accident. Their investment in the management of the vetting process is considerable.
In addition safety management issues with relevance to the berths at refineries where tankers load and unload their cargoes are also significant. Since many of these will be owned and/or operated by major petrochemical companies they are further able to require contractual safety management standards from tanker operating companies in relation to these too.

As well as producing technical and operational guidelines for the sector, OCIMF has developed a common ship inspection report programme (SIRE). Launched in 1993 as a response to concerns of sub-standard shipping, SIRE is presented as a ‘risk assessment’ tool. Using a standard inspection guide, information is entered into a database enabling potential charterer’s access to up-to-date inspection information concerning oil tankers (OCIMF, 2010). Since its introduction, more than 180,000 inspection reports have been submitted to SIRE. On average Programme Recipients access the database at a rate of more than 8,500 reports per month. OCIMF members appoint the inspectors who make these reports.

In addition to the SIRE inspection system, the Tanker Management and Self Assessment (TMSA) programme claims to provide a best practice guide to ship operations and means by which the determination of a quality ship operator can be undertaken. It offers ‘a comprehensive tool to help ship operators measure and improve their management systems’. As well as providing instruction and methods to encourage ship operators to assess their safety management systems against key performance indicators and develop continuous improvement, it provides an on-line tool enabling them to share their results with those who might request them for the purposes of their own internal vetting. The advantages to oil companies of the implementation of such a tool are obvious, as is the business necessity on the part of such tanker companies to ensure they comply with the requirements of the scheme. According to the latest OCIMF Annual Report (2010) the TMSA programme continues to grow, with more than 1,200 companies now registered to submit reports.

There are 576 SIRE inspectors accredited under the Programme. The majority (463) are accredited to inspect larger tankers (Category 1 ships) while a few (8) are accredited for small tankers (Category 2 ships) and others (105) for inspecting various additional kinds of vessels including barges, vessels utilised for towing vessels carrying petroleum products, and vessels carrying packaged cargoes (Category 3 ships). They are selected by OCIMF member organizations and are required to familiarise themselves with the inspection processes by attending SIRE inspections in the company of SIRE accredited inspectors, prior to attending
an OCIMF SIRE Inspector Training Course. Following the course they must complete a written examination and successful candidates are then further audited during an inspection before being accredited as inspectors. The SIRE accreditation process is cyclical and each accreditation period runs for three years. There are 28 SIRE auditing inspectors who, according to OCIMF (2010) are at the heart of the SIRE inspector accreditation programme. They are experienced inspectors, who collectively audit approximately 150 SIRE inspectors each year.

It is also worth noting that external supply chain influences in the petro-chemical tanker trade are by no means limited to the activities of OCIMF, SIRE and the TMSA programme. For example, in relation to chemical tankers, since the 1990s, the Chemical Distribution Institute (CDI), a non-profit making organisation funded by the chemical industry founded in 1994, has aimed to ensure the development and the preservation of an inspection system for transport and storage of bulk liquid chemicals (CDI, 2011). The CDI-Marine Scheme was created to improve the safety and quality performance of bulk liquid chemical shipping. It now provides annual inspection reports on the world fleet of chemical and liquid petroleum gas tankers, in which over 600 ship operators and 3000 ships participate (ibid, 2008). Ships having a CDI-Marine Scheme report on its database are also listed on EQUASIS (the European Quality Shipping Information System) used by Port State Control authorities and chemical terminals acknowledge the CDI standards so that if a ship passes the CDI inspection, it will be able to call at their berths.

Our further analysis of Bhattacharya’s (2006) data and that collected more recently by Xue shows that both ship operating company managers and seafarers take these supply chain influences very seriously indeed. It does so in several ways. To begin with, there was a view shared by the seafarer respondents that these kinds of inspections enhanced the adherence to safety management arrangements on board ships, making their ships safer. This effect was clearly welcomed by seafarers of all ranks.

We have several types of inspections from PSC, Terminal, Harbour Master, also audit internal as well as external, and from the P&I Club and on and on. They are all important. You can’t start cargo operation without Terminal or Harbour Master’s approval, deficiencies pointed out by PSC don’t help either; we need insurance cover
from the P&I Clubs but on the whole you’ll have to say that ships are safer due to Oil Majors – Captain (our italics)

‘My last ship as a cadet I was on a bulk carrier. We had nothing like this. It was a good ship but we never heard of such inspection. I think Oil Major Inspection makes this ship safer than bulk carriers’ — Junior officer

‘There are many Oil Major Inspections on this ship and lots of stores and safety equipments are coming. But I am happy to have inspection – it is good for my safety.’ — Rating

It was also a view held by the representatives of company management:

‘Tankers are better managed because they have so many extra inspections. Who takes interest in bulk carriers? We have (equivalent bulk charterer) but they don’t get excited about safety although we all know bulk carriers are probably far weaker in construction and take a lot of beating (subject to damage during cargo operation). Our tanker ship-owners have to allocate a higher level of budget for safety but the same cannot be expected from the bulk carrier ship-owners’ — Manager

And as one of the Marine Superintendents from the Chinese operating companies put it when talking about the impact of oil company inspections:

‘In terms of the safety consciousness, oil companies go a step ahead. Actually, this is good for safety. It was strict and for the purposes of safety, for everybody. — Marine Superintendent

In the case of the operating company managers, this view was often accompanied by a sense that the nature of the business relationship involved was not an equal one and the company had little choice but to follow terms dictated by the oil companies with which they did business:

‘Oil Majors are brilliant. Due to their inspection safety is enhanced yes, but there is also a lot of dominance. We always have to please them. Each inspector has his own
peculiarities and not all are reasonable. We have to stay prepared for such mad demands. Since TMSA they now have control even over us in the office. They can say how to run our ships, how to manage store supply, which courses we should conduct in-house, how many additional safety equipments should be placed on our ships and so on’— *Manager*

Seafarers also felt considerable pressure to ensure successful outcomes from these inspections. This was evident in responses from the seafarers across the full range of ships from which data was collected and among officers and ratings alike:

‘There is a lot of pressure to pass oil major inspections….if inspections fail the company will be in trouble — *Motorman*
‘…..the loss will be huge if the ship does not pass oil major inspection — *Chief officer*

A second officer from one of the Chinese vessels explained that on his ship:

“We expect those oil majors’ inspection; meanwhile, we also fear these companies’ inspection. Their inspection was very strict. They would inspect from the major part to tiny point, the glove you wore, the torch you used. The inspection was very strict. This was what we were hoping (for safety). But as seafarers, we also feared (these inspections), since their inspection included hundreds of items. The inspection was very much detailed.— *Second officer*

It was further clear that the source of this pressure came from the concerns of the operating company and the seafarers were in little doubt of the importance with which this was regarded by company management:

‘Once the discharge port gets fixed the office informs us if they plan to hold Oil Major Inspection. On most occasions we get two weeks to prepare and even the superintendent may also fly down. You need to witness the tremendous pressure from office to pass inspections. Many reminder emails fly’ — *Captain*
These feelings were confirmed in the responses from the ship operating company management, where there was a similar concern:

‘We have no choice – we have to pass them. Effectively they give us our wages. Our principles expect us to pass – simple. I dread to imagine their reaction if we ever have to convey the news of failing. You know they can always withdraw the ships from our management by giving us just one month’s notice... I’ll have to look for another job then’ — Manager

And:

‘If we fail [Oil Major Inspections] – disaster! Right from MD to clerks we start dancing. Last year on ship X we had too many observations which effectively meant that the ships could no longer carry their cargo. While that ship had problems but the issue is that our reputation gets tainted as owners. Immediately after that we had more stringent inspections across our fleet ’ — Manager

The business dependency on their oil company charters that was felt by operating company managers dominated Bhattacharya’s interviews with them (it was mentioned in nine of the ten interviews he conducted with these managers). The sense that the profitability of their business depended on them doing the oil companies’ bidding was reflected strongly in their comments:

‘When we go to any terminal [non- Oil Major] or even charter our ships to non Oil Majors we still need to be inspected and passed by them. Such is their reach in this sector. The whole [oil] industry is run by them – you can’t do business without their approval’ Manager

In the Chinese companies, there was a similar strong sense of business dependency:

Now it was the cargo-owner market. There were no other choices. If your ship doesn’t accept inspection, it doesn’t have cargoes to carry and you company goes into bankruptcy’ — Marine superintendent
It was also clear that respondents felt this dependency on approval from the oil majors went further than merely affecting the direct relationship between the company and the oil majors. The pervasive influence of the major oil companies affecting the ship operator’s relationships with other potential charters. As the captain of one of the Chinese ships explained with reference to the vessel on which the researcher was sailing:

Even if your ship is contracted to carry cargoes by the shipper, the ship would not be allowed to call at X’s (names a major oil company) berth if the ship did not receive and pass its inspection. Like this ship, it is chartered by Y (names a small Chinese Petrochemical company). In the contract terms, it is stated that the ship must pass X’s (names a major oil company) inspection since the charterer has cargo with this oil major. It is also the case with other oil majors. If the ship failed to pass (oil major) inspections, the charter party might be cancelled or hire would be deducted — Captain

It was clearly the case that such concerns had been successfully transferred to the crews of vessels. This was so with regard to the financial benefits of doing the right thing by the oil companies generally, and in the case of the crews on board the Chinese ships, in the most frequently mentioned aspect of their relations with the oil companies, seafarers pointed out that good results from the inspections improved the freight rate for their employers and were specifically linked to their own pay and bonuses:

‘There was a reward and punishment scheme in the company. For example, if your ship passed the oil majors’ inspection, you would be rewarded. If it failed….the bonus for those who were responsible for the identified deficiencies would be deducted — Second officer

They were quite specific about these consequences, which were an obvious worry for them:

If it was OK, the inspection was passed, the company rewarded 200 RMB to me. If it failed (because it received) one ‘high risk’, 1000 RMB will be deducted. If there were just minor deficiencies….100 to 200 RMB — Second officer
While such compensation may seem a positive development, studies from other sectors (see for example those reviewed by Walters and James 2009) indicate such managerial initiatives can also be interpreted as exploitive of labour through leading to work intensification and adding to stress resulting from this, as well as to stress associated with payment systems. Indeed in the present study the seafarers repeatedly identified the inspection process as ‘a source of stress’. As one of the captains pointed out:

‘When an inspection gets fixed, immediately we start getting reminder emails with a long list of suggestions from the managers... They expect us to do everything. They copy and paste the same defects we had informed them earlier [reminding us what to do]. It is pressurising.’ – Captain.

Whatever the psychosocial pressures on seafarers resulting from such arrangements, there was a strong measure of agreement between them and their managers concerning the importance with which the oil company inspections were viewed and the consequent degree of preparation they required. Both managers and seafarers believed that these kinds of inspections required a lot of preparation, that this was necessary and it was worthwhile going to some lengths to ensure they were adequately prepared in advance of an inspection:

‘We take the initiative to ensure that the ships are in order. Sometimes just to show that they are important we even visit the ship. If appropriate we also coordinate an unannounced drug and alcohol test at the time of the inspection – just to demonstrate our diligence. There is always a lot of preparation for Oil Major Inspection’ — Manager

‘We need a lot of preparation before Oil Major, sometime for days in advance we need to start working on the inspection’. ’ — Captain

‘We stop all regular maintenance jobs when we hear about Oil Major Inspections. The Chief Mate tells us do this, do that. Maybe sometime stencil this, [apply] fresh colour on the valves, clean the stores, maybe grease the mooring wires. Before oil major we would go through all the items in detail ….. we must solve all problems before inspections’ — Rating
In this latter case, it may be that abandoning regular maintenance tasks to ensure a successful inspection outcome may cause subsequent additional work pressures, when ‘normal’ work patterns are resumed and regular maintenance tasks now require additional work as a consequence of their neglect.

There was also a direct effect on the form and content of the safety management system, with a willingness on the part of the ship operating companies to alter the SMS in response to the requirements of the inspection:

    Nowadays, the revision of the SMS is directed by the syllabus of the oil majors. Since the oil majors’ inspection syllabus has often been changed, the SMS was led by their change. Since their syllabus kept changing, we must track and follow their revision and its latest requirement. — *Company quality and safety manager*

Similarly, crews were well aware of the need to inform the company concerning changes that may be needed in the SMS identified during an inspection:

    Through the oil majors’ inspection, we found that some things might not be in the SMS, then we would report to the company to revise the SMS. — *Chief officer*

Another measure of the seriousness with which seafarers regarded the inspections instigated by the oil companies was reflected in the way they rated their significance in comparison with other forms of inspection and monitoring of arrangements for OHS management on board ships. In terms of comparison with the internal company auditing and review of these arrangements, there was little question which form of inspection was treated more seriously:

    ‘Oil Major Inspections mean a wider scope of inspection than others. They are so thorough that it is never possible for us to hide anything. We have to prepare very thoroughly ’ — *Senior Officer*

Some seafarers also found the types of inspection required by oil companies more demanding, thorough and requiring of compliance than the regulatory inspections to which their vessels were subject under the requirements of Port State Control (PSC). This was the case regardless of the parts of the world in which they sailed and despite the knowledge that
failure to satisfy public regulatory inspection via PSC could mean that their ship might be subject to detention:

‘Compared to PSC these people are more organised, more thorough’ — Captain

‘We didn’t feel special in the PSC inspection. After the oil major’s inspection we felt that it was simple to deal with the PSC inspection. We felt (that we) had confidence — Second Officer

‘The strictness and thoroughness is more than PSC’ — Chief Officer

Altogether then, the data emerging from the shipboard interviews is unequivocal in the extent to which it confirms the powerful influence of the oil company requirements on safety management practice on board vessels in the tanker trade. While to some extent we can assume that the companies on whose vessels we were allowed to sail in order to collect this data represent best case situations in terms of health and safety management, it seems likely that the dominance of the major oil companies would lead to a fairly widespread occurrence of similar findings. As such, the relationship described fits closely with the postulates derived from the earlier review. Specifically, the tanker trade is comparatively highly regulated by maritime industry standards, largely because of the economic, human and environmental consequences associated with accidents and loss. There is therefore substantial external pressure on both buyers and suppliers in the sector. This comes from regulatory provisions and agencies, but even more significantly, from others potentially affected by the economic, environmental and human consequences of failure. As well as the potentially expensive losses experienced by both ship operators and their oil company charterers as the result of ship safety failures that lead to major incidents, the reputational risks associated with these high profile events ensure an exceptional degree of vigilance is practiced by buyers in the maintenance of supply chain influences on safety practices on board tankers. Equally, while the systematic OHS management arrangements made by ship operators in response to these pressures, may create cost implications for the carriage of the goods in the sector, neither the ship operators or their charterers see such costs as significant in comparison with the potential costs of failures. Price and delivery pressures are therefore unlikely to influence the actions of ship operator management towards non-application or circumvention of such arrangements. Furthermore, it is obvious that the practices we have just described in the
tanker trade are made possible because they fit with the objectives and wider business interests of the oil companies and ship operators (buyers and sellers) in the supply chain in the sector, as well as reflecting the distribution of power in the chain.

Even more specifically important for the maintenance of the effectiveness of these influences however are the arrangements for their monitoring and auditing through SIRE inspections, the quality of which is further assured by audit. As we argued previously, research has already demonstrated that attempts to influence supplier health and safety management are likely to be more effective where adequate monitoring and penalty regimes support them; and when they occur within a relatively collaborative and trust based supply relationship. Thus, in the tanker trade we have described the development of a leadership initiative from the head of the supply chain – in this case, the association of major oil companies whose dominant market position has enabled them to set up an association (OCIMF), through which they are able to influence practices of safety management on board tankers to their own requirements. This they do in part through the TMSA scheme they have set up and made available to ship operators and through monitoring compliance with their standards through the system of vetting inspections undertaken by SIRE accredited inspectors and the like. Moreover, they are able to audit the quality of this system through the intervention of a small group of experienced inspectors whose task it is to inspect the inspections. SIRE reports are made available to companies belonging to OCIMF who can use them to ascertain standards of compliance among ship operators, and thereby help them to decide which company will receive their business. Thus, further ensuring strong market incentives for involvement of both themselves and the ship operators in the scheme and an institutional, context within which longer-term buyer-supplier relations are developed.

Therefore, in these scenarios there is no clash between the supply chain influences on OHS and the business interests of ship operators, but the business risks of failing to comply with them are widely regarded by suppliers to be substantial and significant. It is the arrangements for monitoring compliance that really focuses the attention of operating companies and their seafarers. The requirement of external inspection of safety arrangements on board ships is clearly a significant presence in their minds — as are the consequences associated with failing to satisfy such inspection. As a consequence, their focus on achieving good results during these inspections and demonstrating they are meeting the requirements of their oil company charterers in terms of safety management procedures is paramount.
However this does not of course necessarily mean that such influence leads to improved health and safety outcomes. Some cautionary words are in order here.

While the experiences of the company management and seafarers presented in this paper clearly demonstrate the influence of supply chain requirements on the adoption, implementation and operation of safety management systems on board ships, it does not necessarily follow that such systems and the practices they require are of themselves entirely beneficial to the promotion and maintenance of improved health, safety and well-being among seafarers. Nor does it imply that the procedures that companies and seafarers adopt in order to demonstrate compliance for the purposes of external inspection are entirely beneficial either.

It is not the purpose of this paper to present a detailed account of the limitations of the systems approach to managing occupational health and safety on board ships. Nevertheless it needs to be acknowledged that since the introduction of the ISM Code more than a decade ago, there have been numerous studies that have failed to demonstrate its widespread effectiveness (see for example, Anderson, 2003; Bailey 2006; International Maritime Organisation, 2006; Knudsen 2009). These accounts have pointed to the over-bureaucratization of safety arrangements as one reason for the limited adoption of good practices and the growth of an appropriate ‘safety culture’ on board ships. Indeed, in his wider study of the operation of the ISM Code, from which some of the data used in this paper has been drawn, Bhattacharya (2009) noted significant limitations in the application and effectiveness of safety management systems on board ships that his subjects ascribed to such over-bureaucratization. While, there are many physical and operational aspects of shipboard safety that can be observed by inspectors during their inspections, the inspection practices described in the present paper also clearly contribute to the bureaucratization of safety on board ships and are regarded as doing so by both company management and crews:

‘The oil majors are too much paper work’ — Manager

‘Oil Majors spend a whole day on the ship, often from nine in the morning till six in the evening. First they come to my office where they check each and every logbook and file. That takes nearly four to six hours.’ — Captain
'I check the bridge chart correction, passage planning, echo sounder logbook, GMDSS logbook and many, many others on the bridge. I also have to check the old records to ensure that the records are also correct. All the old logbooks should also be in order. There is a lot of preparation before an oil major inspection, mostly paperwork’ — Junior officer

It is also of course, obviously the case that while companies and their seafarers may put enormous effort into preparing their vessels and SMS for the scrutiny of inspection, this does not necessarily mean that they will keep up such efforts once the inspection has been passed. As two Chinese seafarers put it:

‘Now the main issue in the management is to deal with the oil majors inspection. After the inspection, it happened that the work became tardy, and the work would not be as serious as the time before external inspection.’ — Second officer

‘After inspection, for a certain period of time, the (bad) situation was resumed. Pump man

In addition, like many such inspections, they are focused on the signs and manifestations of safety on board ships rather than those of health and well-being among seafarers. Since much of the current concern about the organisation of work and the work environment experienced by seafarers is addressed to its effects on their health and wellbeing, it is not obvious how such inspections aid its improvement (see for example, Bloor et al 2000). Indeed, given the obvious stress caused to seafarers by the need to be found compliant with the stringent requirements of such inspection it is possible that they actually contribute to increasing the psycho-social risks experienced by seafarers and in this sense worsen their health outcomes.

Conclusions and further work

In conclusion then, as a preliminary finding we note that relations in the supply chain in the petrochemical tanker industry both meet and confirm the potential identified in a previous review of the literature. In that review, it was argued that provided certain postulates apply, such supply chain relations may act to support the implementation of safety management
practices among suppliers and to do so in a manner that overcomes competing tendencies to circumvent OHS management arrangements in pursuit of price and delivery demands. At the same time it is by no means entirely clear whether the methods employed in the inspection and vetting procedures, or the strong business case for the seriousness with which they are taken necessarily result in improved health and safety of the seafarers involved. Further work is required in the sector to explore some of the possible contradictions here.

Moreover, as we have further noted, the conditions found in the petrochemical tanker trade are by no means universal in the shipping industry and to gain a better picture of the effects of supply chain relations more generally in the industry we need to extend our attention to other trades and forms of supply chain influence within the industry.

Therefore, as well as further work in the tanker trade, we are currently undertaking a second case study focusing attention on the supports and constraints relating to the transferability of such supply chain management strategies to other trades in the sector. To this end, we have obtained the co-operation of shipping operators involved in shipment of cargoes other than petrochemicals (in this case containerized goods and bulk products) and we will explore their relations with their charterers from the perspective of the supply chain influence on health and safety, using essentially the same techniques as those involved in the tanker study reported here. In this way it is intended, through an examination of the same elements of external and internal influence on the systematic management of health and safety, within the supply chain of labour and services in this second example of maritime supply chain relationships, to compare and contrast experiences in very different supply chain situations in the same industry. As a result, we will be well placed to not only test the key postulates identified in the previous study concerning the role of supply chain relationships in influencing health and safety management, but also gain a better understanding concerning (a) the conditions for positive or negative effects of such strategies on seafarer safety and health; and (b) the role of critical external and internal drivers in influencing the direction of these effects and sustaining them in the maritime industry more generally.

We have also noted that while the influence of the heads of supply chains is a significant influence on the adoption and application of safety management practices in the petrochemical tanker trade, it does not necessarily follow that such practices are themselves always ideal means to promote the practical and useful engagement of seafarers in the
operation of risk management on board ships, or improvement in their health and well-being as well as in their safety. Moreover, the processes available to heads of supply chains in the petrochemical sector to achieve such influence may themselves promote particular kinds of safety management practice — because for example, they are easier/more convenient to inspect than others. This may serve to skew management approaches to seafarer health and well-being in the sector. Here again, such conclusions are highly tentative at the present time and require greater investigation. It is anticipated that the fieldwork currently underway in this and other sectors of the industry will help shed some further light on these issues.

References


Walters, D and James, P (2009) *Understanding the Role of Supply Chains in Influencing Health and Safety at Work*. Leicester: IOSH.

The Health and Self-medication Practices of Seafarers

Acejo, I., Sampson, H., Turgo, N. & Wadsworth, E.

Abstract

This paper reports on the findings from a questionnaire administered to active seafarers in 2010/11. The questionnaire was designed to cover a broad range of subjects relating to seafarer health, medication, and self-medication practices. The analysis of the data remains in the early stages and in this account we limit ourselves to an overview of some of the early findings.

Introduction

As with most elements of contemporary life, the world of the seafarer has been dramatically altered as a result of developments in the twentieth and twenty-first centuries. Seafarers have witnessed the introduction of technology on board which has transformed their work and the nature of their communications with shore-based personnel. Ports have altered radically and seafarers rarely go ashore, so quickly do their vessels ‘turn around’ (Kahveci 1999; Sampson and Wu 2003).

In the course of such transformation, there have been developments which have undoubtedly benefitted seafarers such as the introduction of email (Kahveci 2007) and the mobile phone, allowing seafarers to remain in closer contact with family and friends. However, technological developments have also brought with them some unwelcome changes in the nature of work at sea some of which have been identified as being associated with increased stress and dissatisfaction (Sampson and Wu 2003). In the light of concerns about seafarer health and welfare a number of researchers have written about fatigue, weight problems, occupational accidents, disturbed sleep, stressors, common diseases and alcohol and cigarette consumption amongst seafarers (Allen et al. 2008; Grey 2000; Reyner and Baulk 1998;
However, one of the difficulties associated with any study of seafarer health is that ‘sick’ seafarers are regularly excluded from the working population via the conduct of medical examinations.

In the Philippines (the largest single supplier of seafarers to the modern cargo fleet) such examinations precede every individual contract and may exclude individuals on a variety of grounds including positive test results for HIV, Hepatitis B and C, raised liver enzymes, raised blood pressure, insulin dependent diabetes, and a host of common medical conditions. Seafarers may also find that they fail their medicals as a result of their excess weight or other lifestyle considerations.

A little closer to home, in the UK, seafarers are required to present themselves for a medical fitness evaluation undertaken by an approved doctor every two years. The MCA guidance relating to the medical fitness examination states that:

As a general principle the approved doctor should be satisfied in each case that no disease or defect is present which could either be aggravated by working at sea, or represent an unacceptable health risk to the individual seafarer, other crew members or the safety of the ship.

It continues:

Apart from the purely medical aspects, the occupational circumstances which apply at sea should be fully considered, especially in any borderline case. Particular factors which should be taken into account are:

a) the potentially hazardous nature of seafaring, which calls for a high standard of health and continuing fitness;
b) the restricted medical facilities likely to be available on board ship. Few ships carry doctors, medical supplies are limited and there will be delay before full medical treatment is available;
c) the possible difficulty of providing/replacing required medication. As a rule, a seafarer should not be accepted for service if the loss of a necessary medicine could precipitate the rapid deterioration of a medical condition;
d) the confined nature of life on board ship and the need to be able to live and work in a closed community;
e) the limited crew complements which mean that illness of one crew member may place a burden on others or impair the safe and efficient working of the ship;
f) the potential need for crew members to play a role in an emergency or emergency drill, which may involve strenuous activity in adverse conditions;
g) since many seafarers will need to join and leave ships by air, they should be free from any condition which precludes air travel or could be seriously affected by it, such as pneumothorax or conditions which predispose to barotrauma (MCA 2011).

Such criteria allow for seafarers suffering from a very broad range of medical conditions (including mental health problems) to be ‘screened out’ of the workplace and as such seafarers typify the phenomenon of the ‘healthy worker’ (Oldenburg et al. 2010; Roberts 2005; Roberts and Jaremin 2010).

In terms of research there are two major implications arising from the stringent application of medical standards to seafarers. Firstly it is extremely difficult for research to identify occupational health issues associated with seafaring as any study of seafarers will not reveal unhealthy seafarers but rather the converse (all sick seafarers having been ‘grounded’). Secondly it is likely that seafarers will be extremely wary of reporting health issues as they will fear the consequences of ‘discovery’. If they reveal a hidden health problem to a researcher and if this is subsequently exposed to their employer they risk repatriation and the end of their prospects for a career at sea.

In undertaking this research, we therefore anticipate that there will be significant under-reporting of medical conditions by seafarers. We also anticipate that seafarers may underplay any lifestyle issues that could compromise their employment status (such as drinking). Furthermore, we expect this population to be relatively healthy, because clinically unwell individuals will not have been allowed on board. Indeed, it has been established that even healthy seafarers may be excluded from the workforce on the grounds that their medical histories (for example the removal of a single kidney leaving a fully functioning healthy
kidney) present a higher risk of future illness (Schepers and Dahl 2010). This background should be given due consideration in the interpretation of the data presented throughout.

**Methods**

To understand the health and self-medication practices of seafarers, questionnaires were distributed to seafarers visiting UK and German ports from a wide range of ship types. Ports visited include Felixstowe, Liverpool, Southampton, Immingham, Bristol and Cardiff in the UK and Hamburg in Germany. Questionnaire distribution was mostly undertaken in seafarers’ centres and if it was possible and permitted, some questionnaires were also distributed onboard ships. The questions were in English which for obvious reasons limited the participation of some seafarers from countries where English is not spoken extensively.

**The sample**

A total of 1,026 seafarers completed a questionnaire. The mean age of respondents was 33.87 years. The youngest was 16 years old and the oldest was 72. The sample was overwhelmingly male. One thousand and four male seafarers and just 22 female seafarers completed a questionnaire. More than half of the respondents were in a couple (603 – 58.8%). Disaggregated into six categories, respondents were either married (553 – 53.9%), single 403 (39.3%), living with partners (50 – 4.9%), separated (10 – 1.0%), divorced (8 – 0.8%) or widowed (2 – 0.2%). The average years spent working at sea was 9.65 years, with one year being the shortest and 46 years the longest time served.
There were 21 different kinds of ship type identified by participants in the study. However, the majority of the seafarers who took part in the study were working aboard container vessels; (59% - 605) and the second most common ship type was bulk carriers (12.2% - 125). The average crew size aboard the vessels on which participants worked was 20.85. The smallest reported crew was four and the largest was 44. The mean dead weight tonnage (DWT) of the ships aboard which respondents served was 46,367.14 with 1,000 being the minimum and 181,000, the maximum.

The study was conducted over ten months, commencing in July 2010 and ending in April 2011. We visited UK and German ports and were based in seafarers’ centres for most of the day, 10:00 am – 9:00 pm, to distribute questionnaires to visiting seafarers. Some 63 nationalities were involved in the study with Filipinos and Indians being the most represented with 182 (17.7%) and 162 (15.8%) participants, respectively (see Table 2 for complete data).

<table>
<thead>
<tr>
<th>Table 1. Characteristics of the sample</th>
<th>Frequency (%), SD, MinMax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total respondents</td>
<td>1026</td>
</tr>
<tr>
<td>Average age</td>
<td>33.9 (SD), 16-72 MinMax</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1004 (97.9)</td>
</tr>
<tr>
<td>Female</td>
<td>22 (2.1)</td>
</tr>
<tr>
<td>Status</td>
<td></td>
</tr>
<tr>
<td>In a couple</td>
<td>603 (58.8)</td>
</tr>
<tr>
<td>Not in a couple</td>
<td>423 (41.2)</td>
</tr>
<tr>
<td>Average years at sea</td>
<td>9.65 (SD), 1-46 MinMax</td>
</tr>
<tr>
<td>Vessel types</td>
<td></td>
</tr>
<tr>
<td>Container</td>
<td>605 (59)</td>
</tr>
<tr>
<td>Bulk carrier</td>
<td>125 (12.2)</td>
</tr>
<tr>
<td>Average crew size</td>
<td>20.9 (SD), 4-44 MinMax</td>
</tr>
<tr>
<td>Average deadweight tonnage</td>
<td>46,367 (1,000 - 181,000)</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011
There were 49 shipboard jobs (posts) described by respondents. However closer scrutiny reveals that most commonly respondents were able bodied seamen (140 – 13.6%) and ordinary seamen (107 – 10.4%). Overall, ratings made up the largest group of respondents (50.4 %), followed by junior officers (261 – 25.4%), senior officers (221 – 21.5%) and petty officers (27 – 2.6%).

Table 2. Nationality groups

<table>
<thead>
<tr>
<th>Nationality</th>
<th>N</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filipino</td>
<td>182</td>
<td>17.7</td>
</tr>
<tr>
<td>Indian</td>
<td>162</td>
<td>15.8</td>
</tr>
<tr>
<td>Other</td>
<td>181</td>
<td>17.6</td>
</tr>
<tr>
<td>Northern, Western and Southern Europeans</td>
<td>127</td>
<td>12.4</td>
</tr>
<tr>
<td>Eastern Europeans, and Russians</td>
<td>253</td>
<td>24.7</td>
</tr>
<tr>
<td>Others (including Middle Easterns, Africans and Small Islanders)</td>
<td>121</td>
<td>11.8</td>
</tr>
<tr>
<td>Total</td>
<td>1026</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

Seafarers were asked to describe their health over the past 12 months. The response categories they were offered were as follows: ‘very good’, ‘good’, ‘fair’, ‘bad’ and ‘very bad’. In the analysis, these were then grouped into three categories: ‘good’ (both very good and good); ‘fair’, and ‘poor’ (both bad and very bad). As anticipated very few seafarers stated that their health had been poor over the previous twelve months. Just fourteen participants (1.4%)
reported poor health with the vast majority of respondents stating that their health had been ‘good’ (87%). One seafarer reported that he had been unable to work for 180 days due to sickness/injury in the last 12 months (due to a fall he sustained while working onboard), another one reported 120 days of being unable to work. In total there were 25 seafarers who reported more than 10 days when they were unable to work in the last twelve months. On average, seafarers had 2.79 days of sickness whilst on leave and 2.20 days whilst onboard.

Table 4. Perceived health status

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>893</td>
<td>87.5</td>
</tr>
<tr>
<td>Fair</td>
<td>114</td>
<td>11.2</td>
</tr>
<tr>
<td>Poor</td>
<td>14</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>1021</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

Perceived levels of stress

In terms of perceived stress, we asked seafarers to describe how stressful they found life on board and ashore separately. We offered them five response categories to choose from as follows: ‘not at all stressful’; ‘mildly stressful’; ‘moderately stressful’; ‘very stressful’; ‘extremely stressful’. A marked difference was identified between the stress levels of respondents whilst on leave and whilst at work. Less than half of the sample described their life at home as ‘not stressful’ (44.7%) while more than half (51.2%) described their life at home as ‘mild/moderately stressful’. Only a few reported that life at home was ‘very/extremely stressful’ (4.1%). In contrast, the vast majority of respondents described life at sea as ‘mild/moderately stressful’ (75%) or ‘very/extremely stressful’ (12.8%). Obviously, there will be cultural factors at play here in terms of both definitions of ‘stress’ and the willingness to ‘own up’ to being stressed. Compared with the Bristol and Cardiff study data, however, seafarers described less extreme stress at work than the land-based sample (12.8% vs 20%) (see Table 5) although levels of high stress (described as ‘very’ and ‘extremely’ stressful) amongst senior officers were closest to the average for the land-based sample standing at 18.3% (see Table 6).
In the study, senior officers reported the highest levels of stress compared to petty officers, junior officers and ratings. We might speculate that such stress is likely to relate to fears of criminalisation, pressures associated with regular inspection, threats of piracy, and changes in the nature of the work of senior officers which has become more paper-based and perceived to be less about ‘seamanship’ (Sampson and Wu 2003).

### Table 5. Perceived levels of stress (share to total)

<table>
<thead>
<tr>
<th></th>
<th>General stress (on leave)</th>
<th>Bristol and Cardiff Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not stressful</td>
<td>45</td>
<td>19</td>
</tr>
<tr>
<td>Mild/moderately stressful</td>
<td>51</td>
<td>75</td>
</tr>
<tr>
<td>Very/extremely stressful</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Work stress (onboard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not stressful</td>
<td>12</td>
</tr>
<tr>
<td>Mild/moderately stressful</td>
<td>75</td>
</tr>
<tr>
<td>Very/extremely stressful</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

### Table 6. Perceived levels of stress by rank (share to total)

<table>
<thead>
<tr>
<th></th>
<th>Not at all stressful</th>
<th>Mild/moderately stressful</th>
<th>Very/extremely stressful</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings</td>
<td>12.1</td>
<td>78.1</td>
<td>9.8</td>
<td>100</td>
</tr>
<tr>
<td>Petty officers</td>
<td>14.8</td>
<td>77.8</td>
<td>7.4</td>
<td>100</td>
</tr>
<tr>
<td>Junior officers</td>
<td>12.0</td>
<td>73.4</td>
<td>14.7</td>
<td>100</td>
</tr>
<tr>
<td>Senior officers</td>
<td>12.3</td>
<td>69.4</td>
<td>18.3</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

In the study, senior officers reported the highest levels of stress compared to petty officers, junior officers and ratings. We might speculate that such stress is likely to relate to fears of criminalisation, pressures associated with regular inspection, threats of piracy, and changes in the nature of the work of senior officers which has become more paper-based and perceived to be less about ‘seamanship’ (Sampson and Wu 2003).

**Alcohol consumption**

In terms of alcohol consumption, the reported levels are not high when compared with land-based consumption amongst British male workers for whom an average weekly consumption of 17.54 units has been reported (Smith et al. 2000; Smith et al. 2004a; 2004b), or indeed fishermen in Andalusia who are reported to consume an average of 16.6 units per week (Novalbos et al. 2008). Furthermore, average levels of consumption (1.61 units of alcohol per week on board, 1.92 per week in port and 4.97 units whilst on leave) were well below the medical guidelines for maximum ‘safe’ amounts.
A change in the overall culture at sea has been noted by some authors who suggest that there has been “a reduction over time in the culture of heavy alcohol consumption amongst seafarers” (Roberts 2005, p. 41). They further argue that the introduction of ‘dry [alcohol free] ships’ has played a part in this cultural ‘shift’ (Roberts 2005). Our data would suggest that this is only partially correct, however, as 8.2% of the seafarers reported drinking once a week or more whilst actually on board ‘dry ships’.

### Table 7. Alcohol consumption (in units per week)

<table>
<thead>
<tr>
<th></th>
<th>Mean units of alcohol per week</th>
<th>SD, MinMax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff-Bristol Study</td>
<td>17.54</td>
<td></td>
</tr>
<tr>
<td>SIRC Study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onboard</td>
<td>1.61</td>
<td>3.2 (SD), 0-30 MinMax</td>
</tr>
<tr>
<td>In port</td>
<td>1.91</td>
<td>3.4 (SD), 0-40 MinMax</td>
</tr>
<tr>
<td>On leave</td>
<td>4.97</td>
<td>9.7 (SD), 0-120 MinMax</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

Further to this, we found that average weekly consumption levels on board were almost five times greater aboard non-dry ships than aboard dry ships (2.60 for non-dry vessels as compared with 0.65 units per week on board dry vessels). As shown in Table 9, these differences were less notable for consumption during port stays (in port average consumption of 1.78 aboard dry ships compared with 2.07 aboard non-dry ships), and patterns of alcohol consumption whilst ‘on leave’ were reversed. Those who sailed aboard dry ships reported a higher average consumption on leave (5.48 units per week) than those aboard non-dry ships (4.41 units per week).

### Table 8. Frequency of alcohol consumption in dry and non-dry ships

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Less than once a week</th>
<th>Once a week or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry ship</td>
<td>550</td>
<td>91.8</td>
<td>8.2</td>
</tr>
<tr>
<td>Non-dry ship</td>
<td>464</td>
<td>54.5</td>
<td>45.5</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011
When we interrogated the data a little more closely, however, a slightly different picture emerged. We considered the average weekly alcohol consumption of the seafarers who stated that they drank once a week or more on both dry (alcohol free) and non-dry ships (n=41 and n=173 respectively). Aboard alcohol free (dry) ships we found that those drinking once a week or more reported an average consumption of 2.37 units per week. This contrasted with an average consumption of 3.52 units per week on non-dry ships (see Table 10). Thus when we consider the difference between the more regular drinkers aboard alcohol free and non-dry ships instead of a five-fold difference we find that, on average, seafarers aboard non-dry ships drink less than double the amount that more regular drinkers aboard alcohol free ships consume. In due course (in future publications) we will look further into these consumption levels more fully to consider their implications.

Table 9. Average alcohol consumption in units per week

<table>
<thead>
<tr>
<th></th>
<th>Onboard</th>
<th>In port</th>
<th>On leave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry ship</td>
<td>0.65</td>
<td>1.78</td>
<td>5.48</td>
</tr>
<tr>
<td>Non-dry ship</td>
<td>2.6</td>
<td>2.07</td>
<td>4.41</td>
</tr>
<tr>
<td>Total</td>
<td>1.61</td>
<td>1.92</td>
<td>4.97</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

When we interrogated the data a little more closely, however, a slightly different picture emerged. We considered the average weekly alcohol consumption of the seafarers who stated that they drank once a week or more on both dry (alcohol free) and non-dry ships (n=41 and n=173 respectively). Aboard alcohol free (dry) ships we found that those drinking once a week or more reported an average consumption of 2.37 units per week. This contrasted with an average consumption of 3.52 units per week on non-dry ships (see Table 10). Thus when we consider the difference between the more regular drinkers aboard alcohol free and non-dry ships instead of a five-fold difference we find that, on average, seafarers aboard non-dry ships drink less than double the amount that more regular drinkers aboard alcohol free ships consume. In due course (in future publications) we will look further into these consumption levels more fully to consider their implications.

Table 10. Average alcohol consumption between non-regular and regular drinkers

<table>
<thead>
<tr>
<th></th>
<th>Less than once a week</th>
<th>Once a week or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry ship</td>
<td>0.42</td>
<td>2.37</td>
</tr>
<tr>
<td>Non-dry ship</td>
<td>1.61</td>
<td>3.52</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

In relation to alcohol consumption, nationality, socio-cultural norms and religious values play a part which is not insignificant. When the results for alcohol consumption are considered in relation to nationality we find that seafarers from northern and western Europe top the ‘consumption league’ with 2.02 units per week when onboard, 2.96 units when in port and 9.68 units when on leave.
By contrast, Filipinos, the single largest block of respondents in this study, had an average consumption when on leave of just 3.16 units per week. Amongst Europeans, British seafarers have the highest mean alcohol consumption amounting to 22 units per week (higher than the most comparable land-based data we have access to) which may help to explain why the UK’s Institute of Alcohol Studies 2008 survey shows that between 2001 and 2005 seafarers had the second highest alcohol-related mortality rate in the UK (after bar staff). In relation to alcohol consumption the variations by nationality are so considerable that comparisons with land-based populations are best made within single nationality groups (British seafarers being compared with comparable land-based British workers for example). Our limited capacity for single nationality comparisons (limited only to British respondents) would appear to suggest that alcohol consumption amongst seafarers may be higher than amongst comparable land-based populations of workers. However there are insufficient data to be conclusive in relation to this point.

**Smoking**

Just over a third of the seafarers (34.5%) who took part in the study smoked. This compares with 44% of seafarers reported to be smokers in a recent French study (Fort et al. 2009) but is higher than rates reported for the UK land-based population (24%) in recent studies in Cardiff and Bristol (Smith et al. 2000; Smith et al. 2004a, 2004b).
Amongst smokers in our sample, an average of 11.43 manufactured (i.e. not hand-rolled) cigarettes were consumed per day. When manufactured and hand-rolled cigarettes were considered in combination we found an average consumption of 13.55 cigarettes per day. It was notable however that seafarers’ cigarette consumption was reported to increase whilst they were on board ship. Fifty-eight per cent of seafarers reported that they smoked more at sea than when they were on vacation.

As with alcohol consumption there are once again considerable variations across different nationality groups. Europeans consume more cigarettes than any other group of seafarers: In the study, an average consumption of 22 cigarettes per day was reported by western and eastern European seafarers. Filipinos and “other Asians” smoked an average of less than half of this amount, averaging a consumption of seven and eight cigarettes per day, respectively.

The combined reported consumption of alcohol and cigarettes could have implications for the development of some forms of cardiovascular disease amongst seafarers and pose “unequivocal risk factors for ischemic stroke” (Mukamal 2006, p. 201). It is also claimed that the frequency of hearing loss in smokers is higher than for non-smokers (Mohammadi et al.

Table 12. Percentage of smokers

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Frequency (%)</th>
<th>Cigarettes per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Smokers</td>
<td>667</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Smokers</td>
<td>352</td>
<td>35</td>
<td>13.55 (average), 1-60 Min/Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard Deviation 12.03</td>
</tr>
<tr>
<td>Total</td>
<td>1019</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

Table 13. Comparison of smoking habits

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Relative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>More cigarettes at sea</td>
<td>200</td>
<td>58.1</td>
</tr>
<tr>
<td>More cigarettes on leave</td>
<td>40</td>
<td>11.6</td>
</tr>
<tr>
<td>About the same amount for both periods</td>
<td>104</td>
<td>30.2</td>
</tr>
<tr>
<td>Total</td>
<td>344</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011
Thus the implications of both smoking and drinking behaviours can be serious and these issues require further future attention.

Symptoms

As well as finding out about alcohol and cigarette consumption we also asked seafarers whether they had been diagnosed as suffering from a number of specified chronic conditions in the last 12 months (see Table 14 for the list of chronic conditions).

Table 14. List of chronic conditions

<table>
<thead>
<tr>
<th>Chronic conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina</td>
</tr>
<tr>
<td>High cholesterol level</td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
<tr>
<td>Stroke</td>
</tr>
<tr>
<td>Heart attack</td>
</tr>
<tr>
<td>High blood pressure</td>
</tr>
<tr>
<td>Nervous trouble or depression</td>
</tr>
<tr>
<td>Asthma</td>
</tr>
<tr>
<td>Emphysema</td>
</tr>
<tr>
<td>Bronchitis</td>
</tr>
<tr>
<td>Cancer</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

Almost a quarter of respondents (22.7%) indicated that they had been diagnosed with at least one of these. High blood pressure appeared to be the most prevalent condition (9.2%) followed by high cholesterol (8.8%). In most cases, and as anticipated due to the aforementioned ‘healthy worker effect’, seafarers compared well with land-based populations of similar workers in relation to most of the specified conditions. This seems to suggest that in many cases seafarers with diagnosed chronic health problems are successfully excluded from the workforce.
We further asked seafarers to indicate, from of a list of specified health problems, which they had suffered from in the last 12 months (see Table 16 for a complete list).

Table 15. Diagnosed chronic conditions

<table>
<thead>
<tr>
<th>N</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>792</td>
</tr>
<tr>
<td>One or more</td>
<td>233</td>
</tr>
<tr>
<td>Total</td>
<td>1025</td>
</tr>
</tbody>
</table>

Most prevalent chronic conditions:
- High blood pressure: 94 (9.2%)
- High cholesterol level: 90 (8.8%)

Source: SIRC Study 2011

The majority of seafarers (66.8%) reported that they had not experienced any of these problems in the past 12 months. The remaining 340 respondents (33.3%) reported that they had suffered from at least one condition. Of these conditions, indigestion or stomach trouble was the most prevalent (10.1%), followed by persistent skin trouble (6.5%), arthritis or rheumatism (5.9%) and recurring backache (5.9%). In relation to common recurrent health problems which may or may not have been diagnosed by a physician, seafarers suffer disproportionately from indigestion and stomach ‘trouble’. That is to say that although far

* This was regardless of whether or not a medical diagnosis was made.
fewer seafarers reported many conditions than comparable UK land-based populations in general, when it came to stomach problems they compared closely with land-based workers. Thus, the reported intake of indigestion medication for seafarers at sea in our study was 5.9% while with male land-based workers in the Cardiff-Bristol study, reported intake was 6%. This is not a new phenomenon and problems with the digestive system have previously been shown to be a major cause of morbidity and mortality amongst seafarers (Roberts 2005). It is only possible to speculate about why this might be the case. However links with diet, lifestyle, stress, and the characteristics of the work might sensibly be given consideration in due course.

Table 17. Recurring illnesses (diagnosed or not)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>684</td>
<td>66.8</td>
</tr>
<tr>
<td>One or more</td>
<td>340</td>
<td>33.3</td>
</tr>
<tr>
<td>Total</td>
<td>1024</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigestion or stomach trouble</td>
<td>104</td>
<td>10.1</td>
</tr>
<tr>
<td>Persistent skin trouble</td>
<td>67</td>
<td>6.5</td>
</tr>
<tr>
<td>Arthritis or rheumatism</td>
<td>61</td>
<td>5.9</td>
</tr>
<tr>
<td>Sciatica, lumbago or recurring headache</td>
<td>61</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Source: SIRC Study 2011

Having asked seafarers about their symptoms in the previous 12 months, we then focused upon health problems they had experienced in the preceding 14 days. Seafarers indicated that in the last two weeks they had experienced a variety of ailments including: headache (16.3%); difficulty sleeping (16%); a cough, catarrh or phlegm (13.3%) and backache (12.3%). More than half of seafarers, 58.2%, reported that they had experienced at least one of these conditions in the last 14 days while the remainder, 41.8%, said they had not suffered from any of them at all. Again seafarers exhibit what is apparently robust health when compared with male land-based workers in the UK (Smith et al. 2000; Smith et al. 2004a, 2004b); notwithstanding this finding, it appeared that seafarers, like their land-based peers, were commonly making use of self-selected and administered medications of either a homeopathic nature or relating to non-traditional western medications.
Medication and Self-medication

Self-medication was prevalent amongst seafarers, with 63% (650) of respondents claiming to have taken at least one non-prescribed medicine or herbal remedy at sea in the last 12 months. The same thing could be said when they were on leave, with 58.8% (603) claiming to have taken self-medication. The most common self-medication drugs taken when at sea were vitamins or supplements (53.2%) and painkillers (26.3%).

The high intake of self-prescribed painkillers amongst seafarers could result in health complications. As Wazaify et al observe, “increasing availability of non-prescription medicines may encourage patients to believe that there is a drug treatment for every ailment. Furthermore, the use of such products may delay/mask the diagnosis of serious illness” (2005, p. 170). While the high level of vitamin consumption amongst seafarers, (53.2%, compared to the general population figure of 29%, Smith et al. 2004a, 2004b), could be read as a sign of their commitment to their wellbeing, as an attempt to manage their health as consumers (Stasio et al. 2008; Nichter and Thompson 2006), or as their way of undergoing a process of ‘responsibilization’ in terms of their health and safety (Gray 2009), it might also reflect seafarer concerns about the essentially unhealthy diet and lifestyle at sea. Thus these findings warrant further consideration.

At sea and on leave, the most frequently prescribed medications were pain killers (12.9% at sea, 9.3% on leave), followed by blood pressure tablets (5.9% at sea, 6.3% on leave),

Table 18. Recent medical conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>429 (41.8%)</td>
</tr>
<tr>
<td>One or more</td>
<td>597 (58.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>1026</td>
</tr>
</tbody>
</table>

Most prevalent recent medical conditions:

- Headache: 167 (16.3%)
- Difficulty sleeping: 164 (16%)
- A cough, catarrh or phlegm: 136 (13.3%)
- Backache or pains in the back: 126 (12.3%)
- A cold or flu: 113 (11%)

Source: SIRC Study 2011
respectively. The fact that the consumption of prescribed pain killers increases aboard vessels may relate to the physical nature of many shipboard jobs. Similarly we might speculate that the increase in the intake of blood pressure tablets ashore, on leave, might indicate that seafarers do not have access to regular blood pressure medication at sea and/or are hiding the need for medication whilst at work.

Table 19. Self-medication at sea and on leave

<table>
<thead>
<tr>
<th></th>
<th>AT SEA</th>
<th>ON LEAVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Share to total (%)</td>
</tr>
<tr>
<td>None</td>
<td>375</td>
<td>36.6</td>
</tr>
<tr>
<td>One or more</td>
<td>650</td>
<td>63.5</td>
</tr>
<tr>
<td>Total</td>
<td>1025</td>
<td></td>
</tr>
</tbody>
</table>

Common drugs at sea:
- Vitamins or supplements (53%)
- Painkillers (26%)

Source: SIRC Study 2011

Conclusion

Life and work at sea is potentially more difficult and challenging than life and work ashore. Nevertheless, when seafarers struggle with the workplace environment, either physically or emotionally, they are likely to be excluded (or they may self-exclude) from the workforce. In the course of this research, seafarers, as expected, generally reported that they were in good health, though areas of concern relate to the incidence of high blood pressure, stomach problems, and high cholesterol amongst seafarers. Stress, may be one the most challenging aspects of life and work at sea, particularly for senior officers. Such stress does not just have the potential to affect the health and wellbeing of seafarers, it also directly bears upon their productivity and hence, economic output in general. Stress levels amongst land-based workers are also considerable and in the UK, where long hours are often worked, they would seem to be even higher than for seafarers as a general occupational group. It will be necessary, in the future, to clarify the position vis a vis comparisons between worker groups of the same nationality (i.e. land-based and sea-based). However, we note that, in recent years, the overall cost of stress at work has been estimated to be in the range of 20 billion Euros in the European Union, and more than 150 billion dollars in the US, mainly for health care and treatment costs, absenteeism, and turnover (Lazuras 2009, p. 1075). This should be a
compelling economic incentive for ship operators and manning agencies to look for ways of mitigating the stress levels of seafarers.

References


Abstract

This paper outlines a study into UK Merchant Navy Officer cadetship which used questionnaire and interview data gathered from deck and engineering cadets in 2004 and 2005. The study took place in the context of a declining UK shipping fleet and seafaring workforce, and the absence of research into the views of cadets themselves. Its initial purpose was to understand cadets’ experiences of training at sea; these varied with each unique combination of voyage, ship, officers and crew. As the study progressed the impact of the Tonnage Tax policy on their experience was observed. The paper highlights key findings from the study including the ambivalence which characterised cadetship; it considers cadets’ views on the personal characteristics and attitudes which they felt aided adaptation to life at sea: and, policy related external factors that made that adaptation more difficult.

Introduction

This paper outlines research on the experience of UK Merchant Navy Officer Cadets; their views on how they came to take up training; their experiences of life at sea and the ship as a training environment; and their hopes and fears for a future at sea. In presenting this work I outline the origins and conduct of the study and highlight the key findings. For this audience, who may be directly involved in the selection and training of officer cadets, or who have an acute interest in securing highly competent and well motivated Officers, I have focussed on the extent to which ‘successful’ cadetship can be attributed to the disposition, the character of the individual cadet, and the extent to which external factors that are beyond the control of the individual cadet may lead to cadet ‘attrition’. The key message from this paper is that effort is best directed not at finding ‘the perfect cadet’, but on addressing external factors that lead to attrition.

The Origins of the Study

When this study began in late 2001, the concerns of both Government and the Industry over the decline of the UK merchant shipping industry in terms of the ownership and registration of shipping tonnage, and of the shipping workforce, were already well documented (Ledger
and Roe, 1992; DETR, 1998; Brownrigg et al, 2001). Concern over the British seafarer workforce could be classified as: a decline in numbers of active seafarers (DETR, 1998); the increasing age of those seafarers (NUMAST, 2004); a decline in the numbers of Junior Officers recruited into the service; and, reductions in the numbers of Officer cadets training in the UK; in 1975 this number was 2,315, reaching a low in 1987 of 162, although recovering in the 1990s to between 400 and 500 (NUMAST, 2004).

Looking specifically at this last issue, the numbers of Officer cadets training in the UK, it became clear that there was no current research on the views of cadets themselves as to how they saw their cadetships and their futures as Merchant Navy Officers. Hill’s excellent study commissioned by the National Maritime Board into the factors affecting joining, serving and leaving the Merchant Navy had involved trainees, but was already thirty years old (Hill, 1972); gathering the views of contemporary cadets on their training and prospects therefore became the starting point for this study.

The Conduct of the Study

Access to cadets themselves was through three companies, approached on the advice of Tony Lane at that time the Director of SIRC, and anonymised in the research as Ace Marine, Star Shipping and Ocean XL. Preserving the confidentiality of the companies and of the cadets who took part in the study was extremely important: a number of cadets interviewed, particularly those who were critical of their training experiences, expressed concern that their views could be traced back to them, and they needed considerable reassurance that this could not happen. Equally, cadets were keen that the issues they raised were highlighted to the wider shipping industry, and this Symposium paper is one way of fulfilling their wishes.

The co-operation from the companies was more than could have been hoped for, and through them questionnaires were sent out to all the cadets both deck and engineering who were in training with the three companies concerned; this totalled 400. 120 questionnaires were returned and from those, 36 cadet interviews were conducted. The interviews were carried out in three colleges identified in the research only as A, B, and C, and again sincere thanks are due to the administrative and academic staff who organised rooms and contacted cadets on my behalf. Without their help the research would not have been feasible.
The questionnaire and the interviews generated a wealth of data on how Officer cadets found themselves on their training programmes; their views on shipboard life; and how they saw their futures at sea. In the interviews, each one lasting between 60 and 90 minutes, most cadets spoke articulately and in detail about their experiences; this openness was to a degree unexpected, particularly as the majority of cadets involved in the study were young men who are not characterised as the most forthcoming of interviewees.

**Key Findings of the Study**

*Calling and Tradition*

The two recurrent explanations offered by cadets of what drew them to a career at sea were firstly, their positive experiences of the sea as a natural environment – sea-based leisure activities such as surfing or yachting, or simply growing up by the sea; and secondly, having a tradition of the sea and of seafaring in the family. The dominance of these two themes will come as no surprise to this audience and is consistent with Hill’s study already mentioned (Hill, 1972), and in surveys carried out by Nautilus - UK since this study began (NUMAST, 2004). What is perhaps more surprising is that family tradition remains a strong determinant when information on a career at sea is so much more widely available than was once the case.

*The Attraction of Difference*

The study found that for most cadets entry into training was a positive process in which they saw the Merchant Navy as having specific attractions for them; this finding was in marked contrast to the studies of the 1970s (Hill,1972; Hopwood, 1973). The opportunity to travel and see the world was the career attraction selected most frequently in the questionnaire responses by both deck and engineering cadets, together with the attraction of good pay. For the young people involved in this study, a seafaring career offered the promise of adventure, the attraction of something exciting and different, but within a traditional and well recognised occupation. Rather in the way cadets applied their enjoyment of sea-related sports to seafaring, so they associated the adventure found in leisure travelling with seafaring. Although it was cadets’ expectation that they would experience the excitement of leisure travel as seafarers, it became clear as they talked about their experiences of planned training
at sea, that this was not always the case, partly a result of changes in the practices of seafaring. As Sampson and Wu (2003) noted, a seafarer today may in his working life see less of the world not only than his nineteenth century counterpart, but also his counterpart of the 1960s and 1970s, where longer periods of shore leave allowed seafarers to see and experience different countries and cultures.

The Attraction of Money

Although the prospect of a good salary was a career attraction, when pay was discussed in the interview conversations it was primarily in relation to the uncertainties of securing employment post-certification, and also in connection with what cadets described as ‘the money-trap’. The fact that deck cadets in particular did not see their training as giving them transferable skills did not add to the confidence of cadets in their overall job prospects. The concerns expressed by cadets in relation to: securing a job once they had ‘got their ticket’; to skills transferability; and to the money trap, were suggestive of uncertainty and mixed emotions best described as ambivalence; ambivalence is returned to as a key aspect of the cadet experience.

The Extremes: David and Robert

Cadets talked about their experiences with the full gamut of emotions including humour, excitement, sadness and, anger. It might have been expected that the cadets willing to participate in the study might have strong views about cadetship, either positive or negative; however the study revealed all shades of cadet experience from the rewarding to the deeply distressing. For illustrative purposes I describe a cadet at each extreme of the cadet experience.

The study showed that there were cadets who were enticed by the life at sea, whose overall experience of training was rewarding and who looked forward with enthusiasm and excitement to a future at sea: David (pseudonym) is an example of a cadet whose enthusiasm for a career at sea was infectious – as he said, “It’s got all the benefits for me!”.

David saw before him a career of difference in which he could pursue a love of the sea, and an enjoyment of the ocean environment. He saw it as giving him access to an occupation with a longstanding and distinctive tradition and to also continue his own family tradition of
seafaring. David’s planned training at sea had given him the opportunity of shore leave in other countries, and he had enjoyed the experience of a multiethnic workplace. He was in his own words ‘pretty chuffed’ about the levels of responsibility he had already been given, and valued the promise of responsible and worthwhile work. In the interviews with David he felt that life at sea offered the potential for good pay and career progression.

There were others however who were so disenchanted that they left training altogether, with the consequent feelings of failure and disappointment, and there were cadets whose accounts of planned training at sea were disturbing by any standards. Robert (pseudonym) was a cadet who displayed such profound disillusion that he abandoned training altogether. Once at sea he found the pressures of the physical confinement and the restricted diet, the total character of shipboard life in which working and non-working life became inextricably interlinked, and, the distance from family and friends, all to be oppressive. He found these features to be magnified by what he perceived as hostile and unsupportive attitudes from those involved in his training at sea, and initiation processes which he interpreted as ones of unnecessary humiliation.

Ambivalence

Joseph Conrad the novelist, most famed for his short story ‘Heart of Darkness’ and himself a Master Mariner wrote:

“...there is nothing more enticing, disenchanting, and enslaving than the life at sea”.

(Conrad, 1900/1974:14)

This notion of the paradoxical nature of seafaring, at once enticing and disenchanting was found to be a key element of the cadet experience. Even David, the most positive of cadets, displayed ambivalence in his thoughts about the future: would he relish a seafaring life in years to come when he had a family and had perhaps become desensitized to the excitement of the ocean? Even Robert, whose experience of shipboard life, was so negative that he decided to leave training, expressed regret about his decision: his final comment on leaving training was: “I always hoped that I’d do a job that I’ll have all my heart in . . .”; for him, this was not to be seafaring, and there was ambivalence in his regret that seafaring would never be for him the meaningful occupation that he had looked for.
All the cadets in this study expressed ambivalence in varying degrees to shipboard life and to a future at sea; ambivalence was revealed through the mixed emotions, the tensions and the uncertainties they experienced as individuals. The study suggested that the cadet experience of transition into adulthood and into working life would seem to be more extreme than that of their peers in other forms of higher education; this increased challenge was seen as a consequence of the inescapable nature of the separation from home; of the limited nature of communications whilst away at sea; of the lack of peer contact; and, of the unique and committing nature of day to day life at sea.

Managing Cadetship

Much of the study focused on the ways in which cadets learned to manage the challenges of cadetship and the findings revealed a range of approaches that were undoubtedly shaped by their individual disposition, their personality characteristics. However, there were external factors that also played their part in the ambivalence expressed by cadets. For those involved with the selection and training of Officer cadets this finding is important as it suggests that no matter how much an individual cadet may be suited to life at sea, there are external factors that can lead to attrition. Whilst some of the external factors are integral to the very nature of seafaring and have to be accommodated by the individual, some are within the control of companies themselves. In the remainder of this paper, I will focus on ‘personalities and policies’ as the title of the paper suggests, and consider what cadets saw as the characteristics that suited an individual to life at sea, and how they saw the negative external factors that had a bearing on the cadet experience, and which were within company control.

Looking for Mr (or Miss) Perfect: The Ideal Officer Cadet

Entering the world of work is for most young people an experience that takes them from the familiar to the unfamiliar (Evans and McCloskey, 2001); this is particularly pronounced where the job is not visible or easily accessed by those outside the occupation, as is the case with seafaring. Cadets soon found that life at sea was altogether different from anything they had previously experienced, as the deck cadet in the following interview extract discovered:
Interviewee:
“Mainly they just don’t tell you what you’re getting yourself in to . . . and then when you go to sea … you’ve never been to sea before, you don’t know what it’s like, you don’t know what you’re getting yourself into, what people are going to be like. All the boys from my area . . . they’ve all been about boats and worked on boats before. But then going away on a ship, it’s different. It’s just a different way of life. Sometimes it’s a big shock … it was so, so, so different… “Oh my God, what’s happened?” It’s quite challenging when you first start . . .”

Stephen - Deck Cadet

Assembling prior information about the job can only prepare an individual to a limited extent: one cadet commented that although he began his training with expectations based on information acquired from his family he never, by his own admission, “really thought it through”, and even if he had, it was only when he “stepped on that ship” that the implications of being at sea became meaningful for him:

Interviewee:
“I imagined – I don’t know really because I never really, to be honest with you, never really thought it through…I never thought about how I would feel about going away for 4 to 5 months at a time. It never entered my head until I stepped on that ship… I never thought anything really through, to be honest with you. I think that’s why it was so difficult at the start.”

Stuart - Deck Cadet

All the cadets interviewed in this study showed insight into the complexity of shipboard relationships, the variety of ways in which this complex web of relationships showed itself, and how it could be handled. For some, adaptation to life at sea appeared to be effortless as the following interview extracts suggest:

Interviewee:
“I mean I’m a very relaxed person anyway [LAUGHS], so I just kinda slide in and have a few jokes, sit down, have a chat, have a beer, you know? It was good…you’ve gotta get on with other people and so, it was alright. You’ve gotta work with these people, ‘cos there’s such a small number of people… that’s just how I am. It just it goes straight over the top of my head to be honest [LAUGHS]. Nothing really fazes me… ‘cos when you’re on a ship, living in a confined space, you’re eating with the same people every day, working, well every day, working with them every day, socialising with them, you know? You’ve gotta work kind of at a short-term relationship…

David - Deck Cadet
Interviewee:
“You’ve definitely gotta be able to just take everything. It’s gotta be water off a duck’s back. I mean, you share it with the same people for five and a half months, you know? You’re living with your family for five and a half months and can you honestly say you haven’t had an argument for five and a half months? . . . even with your mates or anything like that. [On ship] you can’t just turn around and say, “I’m not talking to you now” because it’s a professional thing as well.”

Josh - Deck Cadet

One seventeen year-old engineering cadet, describing how he conducted himself aboard ship, cheerfully dismissed my suggestion that his attitude displayed considerable maturity:

Interviewee:
“I think you’ve gotta be able to work out that if something goes wrong, there’s no point in you getting all wound up about it, you’ve just gotta get on with it and like put your head down and do it and then when it’s over, have a laugh about it. But like I don’t see any point in, if something doesn’t go the way you want, sort of kicking and screaming and throwing a hissy fit about something. I don’t think there’s any need for that, especially when you’ve gotta sort of work in close confines with the person, every day seeing ‘em.”

(Interviewer: “That’s a lot for a seventeen year-old to kind of adjust to, do you think?”)

Interviewee:
“Nah, it’s alright, it’s normal. You just get on with it, it’s not, it’s nothing too strenuous [LAUGHS]. I dunno, if you don’t like it, quit. If you don’t think you’re cut out for it, quit [LAUGHS].”

Angus- Engineer Cadet, and interviewer

For other cadets, adaptation appeared to require more effortful adjustment. One female deck cadet explained the effort required in containing her natural exuberance. Singing and sporting a pink polo shirt were clearly not accepted behaviour by the Captain of her first training vessel:

Interviewee:
“Within forty eight hours he’d (the Captain) told me off for “joviality”, just cos I’d been smiling and going [ACTION], “Good morning,” or something, and he was just like, “There’s nothing for you to be happy about, what are you happy about?”. He just went mental at me. He’d heard me singing on deck, he went mental at me. So then he told me I was the worst form of sea life. He told me that I was female therefore I had more to
prove. I was wearing track suit bottoms and trainers and a, sort of, polo shirt, which is generally the norm for what you’d wear on a supply vessel. The problem was the polo shirt was pink and he didn’t like it. So all these things before we’d left Aberdeen. So we’d just, we’d let go of the ropes and I’d gone down to my cabin and phoned my Mum in floods of tears, “Mum, this is gonna be a nightmare,” And my Mum was just like, “No, you’ve got to be strong, get over it.” And I did. After that it was a challenge. I took it as a challenge to keep him happy, “Yes sir, no sir, three bags full sir”.

Charlotte - Deck Cadet

For this cadet, the traditional expectations of the Captain had to be managed as part of her initiation into life at sea and she found that she had to contain her natural high spirits.

However there were others for whom the accommodation to shipboard life was clearly very difficult:

Interviewee:
“…you’re stuck with people that, you know, you don’t necessarily get on well with and, like you’re, you’re like a caged, a caged rat, you know, stuck on a steel tub going from one horrible port to another [LAUGHS]. And it’s just, it really is not life, it, really, it’s just . . . ”

Sam - Deck Cadet

This sense of confinement and oppression for some cadets became overwhelming: ‘Robert’ referred to earlier, talked of his desperation in the following way:

Interviewee:
“Have you seen Master and Commander? I’d recommend you to watch it. It’s, it’s a recent film which has come out and I saw it and actually I have complete parallels with one of the guys who, actually, he committed suicide, ‘cos he jumps overboard with a cannonball - and its set in a different time period but I actually, I could actually see parallels with his mindset but if, I dunno, if you’re stronger or weaker if you actually have the, the nerve to, to go from that height? But and I, I felt that, nothing, for me personally, I, I don’t have that inclination, but I imagine that for someone who gets so upset it’d be quite, quite easy to just jump off the back of the ship. Generally I would, I would imagine there are cases of it because there are certain environments that you can’t, can’t escape, really, there’s no, you know, you are, you’re there for that period and, to endure it. And for me, I mean I, I feel, I, I’m fairly tough to, to accept it and my feeling was, OK, endure it, you’ve only got - I mean I had the days marked off, for however many I had to go and I’d cross them off and look forward to that, every day [LAUGHS]. But the one thing for me was mainly reading and just trying to do, trying to do the job as best as I could, really.”

Robert - Deck Cadet
Despite the way in which ‘Robert’ distances himself from the character in the film who commits suicide, and emphasises the fact that he himself is ‘fairly tough’ and can accept and endure his sea trip, I understood him to be saying as directly as he could, that he had at times felt suicidal.

There is an implication in many of these comments above that innate personality characteristics determine the ease with which cadets adapt to the intensity of shipboard life; quite simply, that some individuals are suited to it, and some are not. One cadet who resigned from training during the first year, in unhappy circumstances, raised directly the question of whether personality is the key determinant to accepting shipboard life very directly:

Interviewee:
“That’s, that’s a big, a big question that, maybe my, my personality wasn’t suited to the job, sort of thing.”

Robert - Deck Cadet

Cadets had their own views on what they saw as a successful approach to negotiating shipboard relations and the demands of being both a trainee and a seafarer: keeping out of the way; biting your tongue; not making waves; and, trying to keep the peace, were all phrases used by cadets in the interviews.

Interviewee:
“Yeah, kind of, you know, you just accept it and get on with it. There’s not much really, that you can really do about it, you just accept it. You’re basically the lowest. You should work your way up. Accept it, accept what you get, you know. You’re gonna get trodden on, just accept it and move on. There’s not really much you can do about it.”

Stuart - Deck Cadet

Interviewee:
“I mean it’s just part and parcel of the job. I mean if there’s anything about you that can be laughed at or made fun of, it’s done. But, but you don’t get away with anything. If you do something stupid, then it’s passed round the whole ship and they’re laughing at you… It’s all done in good fun, good humour . . . erm, and with regards to anything and everything … everything’s just up for ridicule.”

Ian - Deck Cadet

Accepting the tough initiation into the traditional occupational culture of seafaring was seen by some cadets as evidence of maturity, of successfully completing a rite of passage, and of their ability to adapt to being part of the wider social group: As Hill in his study reported,
acceptance of one’s position on board, and commitment to the occupational culture was seen by the seafarer: “… as though he has passed through an initiation ceremony and has successfully crossed the threshold into manhood.” (Hill, 1972:58).

Interestingly, the questionnaire data showed a different approach with the cadets who felt that ‘keeping one’s head down’ was the way to get the best out of life at sea outnumbered twofold by those who felt that it best to be assertive. Of those who felt assertiveness to be the best tactic, the majority (70%) considered themselves to be assertive rather than under-confident. ‘Standing up for yourself’ was a recurrent phrase:

Interviewee:
“You’ve got to be quite strong mentally, ‘cos otherwise, you’re away from home and that, and you have to be able to stand on your own two feet … you’ve got to be able to put your opinion across without offending … you’ve got to be very assertive ‘cos otherwise you just get walked all over . . . ‘cos if you give an inch, they’ll take a mile and walk all over you and before you know it, they’ll be dumping all sorts of work and stuff on you. You’ve got, you’ve got to stand up for yourself. Well that’s how I get by anyway and I think people have got more respect for you if you stand up for yourself, ‘cos you know where you stand with people.”

Brett - Deck Cadet

Planned training at sea provided the opportunity for cadets to learn to negotiate the complex web of shipboard relationships not only as newcomers to seafaring but also as future officers. Much of the effort is placed on ‘self-management’ in which cadets, often as the only trainee on board, have to find their own ways of ‘getting by’, and inevitably the natural disposition and personal resources of the cadets themselves played a significant part in this.

However attributing successful cadetship solely to individual attitudes such as ‘nothing fazes me’ or ‘its water off a duck’s back’, to characteristics such as assertiveness, to a personal calling or of a strong family tradition, could lead to the conclusion that failure to complete training is the responsibility of the individual, a consequence of an ‘unsuitable personality’. To take this view would be to underestimate the external factors that could lead a cadet who was well suited to a career at sea to abandon training. These factors related to environments that were not conducive to learning; the research showed that there were cadets who experienced what they saw as unsupportive and unsuitable training placements at sea; these were seen as being related to the training element of the Tonnage Tax, the Minimum Training
Obligation (MTO). The MTO was the object of direct criticism, with cadets suggesting that companies had no real intention of employing them once qualified, seeking only to benefit financially from the MTO.

Given that ships, as with most workplaces, do not have training as their prime purpose, it is unsurprising that cadets encountered very variable levels of support and interest in their learning needs from qualified seafarers; attitudes ranged from the enthusiastic and genuinely helpful through the indifferent to the openly hostile. There was evidence that some seafarers, particularly those less qualified, resented cadets as a threat to their own jobs; this resentment, stemming no doubt from an unpredictable job market, was seen in accounts given by a number of cadets. Cadets also described environments where alcohol fuelled tensions between those on board; some found this particularly disturbing and difficult to handle.

There is a temptation to attribute the variation in support, as with the response to cadetship, simply to personality differences - undoubtedly there will be individuals who relish their teaching role more than others. However, there are underlying factors which have little to do with individual predilections. MNTB Guidance (2006) emphasises the importance of officers and crew having a proper understanding of the nature of cadet training and the roles which they are expected to fulfil. This has implications for their own training and continuing professional development in order to support cadets with up to date advice and guidance. This research did not involve officers but their perspective on the support given to them to deliver their training responsibilities would have complemented the data from this study. In the interview extract below a deck cadet indicates the lack of involvement/interest in the completion of his Portfolio:

**Interviewee:**

“The Captain on the first ship did say at the start, “Right, I want you to know, you’re to complete the Portfolio.” In the requirements it says that he should really be looking at every couple of weeks or something but he only signed it right at the end, when we’d finished, you know, when we were signing off. And that was it, so I mean to be quite honest, if it wasn’t for the fact that we knew that we had to, you know, get the section one completed and we actually went ahead and did it, I don’t think, you know, we’d have gotten any of it done, really. You know? There was certainly no push to, you know, to get it finished which again I think was due to the lack of understanding of, you know, what was required.”

Richard - Deck Cadet
Related to the understanding needed by shipboard officers to support the training needs of cadets were issues of language and communication: For those officers with limited proficiency in the English language, the training of English speaking cadets could be seen as an added burden in already pressured jobs, a possible consequence of companies’ enthusiasm for taking on cadets through the Tonnage Tax scheme. The Merchant Navy Training Board (MNTB) offers a weighted list of the factors that need to be taken into account in assessing the suitability of ships for onboard training. Weighted factors attempt to introduce a degree of objectivity into the process of deciding what is a suitable ship for on board training: one factor relates to the working language of the ship (MNTB, 2006:17); the more the use of English is limited as the working language of the ship, suggest the MNTB, the closer the scrutiny of the vessel concerned should be as a suitable training environment. In some cases the lack of understanding of their training needs was attributed by cadets directly to language difficulties; the comment below is taken from a account of sea time that was generally disturbing:

Interviewee:
“I did all my work, which was for the NVQ section on Officer of the Watch but erm because of the language barrier I, I couldn’t understand a word they were saying.”
Sam - Deck Cadet

In the interview extract below the cadet refers to language difficulties in which the ‘very limited knowledge of English’ which the cadet ascribed to the Chief Officer was seen as potentially compromising his training:

Interviewee:
“We have this Portfolio that needed completed and some of the things, we literally didn’t have a clue what it was asking us. And the biggest problem, as well, was, certainly on the first ship, he was an older Russian Chief Officer, who had very limited knowledge of English and we showed him the Portfolio and he really did not understand what exactly was written. And in some cases, you know, he was signing the, the Portfolio on what we had told him and it would really nasty or, you know er, trying to get ahead. We could of said it was anything, you know? It coulda been ‘clean your cabin,’ or something like that, when it was meant to be ‘anchoring’, or something. But you know, they, they really didn’t have any idea what the English was for it, you know.”
Richard - Deck Cadet
Sampson and Zhao (2003) observed a fear amongst seafarers that a lack of fluency in English may give the impression to their superiors that they are less than competent in other aspects of their job. Their observation takes on a different complexion for UK cadets for whom fluency in English is not the issue, but rather the lack of fluency in the senior officers who ultimately have power over the successful completion of their Portfolio. For the cadets who found themselves on ships where very little English was spoken there is little doubt that this impaired the quality of their learning experience, and may have contributed to their abandonment of training and/or their lack of confidence in their own competence. The comments of the cadet reported below expand on the language issue and also raise, in his own words, the need for ‘equilibrium’ between the responsibilities of cadets to get on with the work, and the responsibilities of the supporting organisations to ensure that placements are suitable; as a cadet representative of NUMAST, this cadet had a particular interest in the extent of trade union support for cadets:

Interviewee:
“I’ll pick up on things I hear of from other cadets and I, I’ll take it back to just sort of NUMAST and then take it back to the class and we have a discussion.”

(Interviewer: “And what, what, what sort of things would that be, around that pay issue?”)

Interviewee:
“Yeah about the pay issue, about the standard of ships and stuff like that. Some of the cadets go on really bad standard ships and some of them, one of my mates, went on a ship where they were all black African. There was no white British people at all. Not a racist thing. It was just the fact that that none of them spoke English and even the Captain was a black African and he’s a, a white British cadet on this ship and [LAUGHS] and he had to get [LAUGHS], he came back after Phase Two at sea and he had no Portfolio finished, cos they didn’t understand the Portfolio scheme and you couldn’t get any Portfolio finished, cos they couldn’t read the English.”

I kind of felt that that was one of the big issues that we took up with them - that it’s a bit ridiculous this, having to be a necessity to fill in your Portfolio, but then the company’s sending you on a ship where you can’t get anything done. So you have to sort of have a, an equilibrium between the company being sensible and sending you on a, a, on a normal ship and you being sensible and getting on with your work. You can’t be getting on with your work if they [LAUGHS], if the ship doesn’t know what it’s supposed to be doing. So just, it’s just really weird things that people I don’t think have ever really taken the time to think about. Just kind of say, “Well, there’s a ship, send a cadet on it.” and not really thinking so much of it.”

Dan - Deck Cadet and interviewer
During the successive phases of planned training at sea, cadets are expected to ‘achieve and develop professional competence over time’ and to demonstrate this through the completion of the Training Portfolio. The study found that whilst cadets emphasised the importance of the Portfolio and the need to complete it as documentary evidence of their learning, there was a stronger focus from those interviewed, on the actuality of being able to perform the task. Cadets recognised that competent seamanship was not synonymous with simply getting the tasks in the Portfolio ‘ticked off’. There was concern expressed by some cadets that when tested as responsible officers, their skills would be shown to be deficient; they were very aware that the consequences of poor seamanship cannot be concealed. Cadets’ concerns over their competence may have been as much about their confidence as it was about a working knowledge of the technical tasks; however confidence is a necessary component of competence, and for some cadets the training process did not appear to have given them the confidence required.

But will there be a job at the end of this?

The focus in this paper has been on how the training environment of the ship can impact on attrition in a way that is beyond the control of the individual. However, the research also revealed the effects of another external factor- seafaring as a global workforce- that restricted job opportunities for cadets as Junior Officers and which should not go unmentioned in this paper.

Anxiety about securing employment post-qualification was clearly articulated by cadets who felt that they had been let down on two counts: firstly, that they had been led to believe that there was a good job market for qualified UK Officers – and they no longer saw this as being the case; secondly, they believed that the Minimum Training Obligation (MTO) component of the Tonnage Tax had increased the numbers of cadets funded by companies who had no intention of keeping them on as qualified officers, and this was a source of some resentment. ‘You’ve not got a definite job, you’ve not got a definite future’, said one final year cadet who was about to qualify as a deck officer. Historically, life in the Merchant Navy would have never offered certainty of employment (Hope, 2001), but it was clear from interviews with cadets that most had expected a ‘definite future’ when they started their cadet training but
many had since come to fear that they might not find a job – and not one at a salary they felt worthwhile.

Criticisms of the Tonnage Tax from the cadets in this study related to employment prospects and the belief that cadets were taken on with no real intention by companies of offering them a job after qualifying. The comment below is from a cadet who resigned from training:

Interviewee:
“The Tonnage Tax as well, I mean, the Government created training opportunities, like they usually do, but no real jobs. I mean there’s no, no necessity that they’ve got to give us jobs at the end of this. I mean if they had some sort of clause that would force them to.”

Sam - Deck Cadet

A fellow cadet had continued his cadetship despite experience of difficult placements at sea but was also concerned about poor employment prospects which he attributed to the Tonnage Tax:

Interviewee:
“This is the big problem, this Tonnage Tax, it’s creating a lot of Third Officers with tickets but no experience, you know? Certainly I don’t know of any one British Officer at the minute that they employ, you know? ... it just seems that they are grabbing the benefits of Tonnage Tax and then throwing everybody out, and that I think that really should be something to be addressed.”

Neil – Deck Cadet

There were a number of cadets in this study who displayed cynicism towards the MTO component of the Tonnage Tax, suggesting that cadets had suffered under the initiative whilst companies had benefited:

Interviewee:
“They’ll tell me at the end of the day whether my company wants to keep me on, or whether they can offer me work, or whether they can just let me go. It’s quite uncertain. It’s the same with a lot of the boys in the class. They’re employed by companies that are now foreign crewed, they’re the only Brits on the ship and at the end of the day the companies they work for won’t be taking on Brit officers at the end of the day. They get Tonnage Tax relief for having cadets, and they just want that, and then once their cadetships finish, that Tonnage Tax relief goes and away they go.”

John - Deck Cadet
The training element of the Tonnage Tax is not without its problems, and concerns that it has not achieved what was intended have been recognised (Gekara, 2008). The anxieties expressed by the cadets in this study over their employment prospects would seem to have had substance, and to have added to the external challenges faced during their training.

In Conclusion

For those involved in the training of cadets, there is an important message from this research: No matter how resilient the individual, how well they learn to adapt to shipboard life and the demands of what I describe in the study as a ‘total occupation’, the workplace can fail even the most enthusiastic of cadets. A poor training environment can mean ineffective learning with consequences not just for the individual but for the industry as a whole. Lack of employment opportunities post-qualification adds a further challenge for aspiring young Officers.

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