The Impact of the ISM Code on the Management of Occupational Health and Safety in the Maritime Industry

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Dedication

to my parents

Abstract

This thesis investigates the impact of the International Safety Management (ISM) Code on the management of occupational health and safety in the global maritime industry. The Code – which introduced regulated self-regulation to the industry in 1998 – is seen as a major instrument to safeguard seafarers from workplace hazards and a mechanism to counter the consequence of economic globalisation on the regulation in the maritime industry. However, its effectiveness has been widely debated.

A case study approach is used in this study to examine the operation of the Code in two shipping organisations involving ethnographic fieldwork onboard ships and at company offices using semi-structured interview, observation and documentary analysis as the research techniques. The study specifically looked into the factors that influenced the perceptions of the managers and seafarers on the operation of three central elements of the ISM Code: risk assessment, incident reporting and audit and review.

My findings showed significant differences in the experiences of operation of the Code of the managers and seafarers in the organisations studied and revealed that although the two organisations implemented the ISM Code in theory there was a considerable gap between its purpose and what it achieved in practice. Significantly it indicated that seafarers' fear of job security, low-trust work environment and lack of organisational support were some of the main impeding factors for seafarers' participation in the management of occupational health and safety.

Further analysis revealed that the organisational context and the employment relations affecting seafarers, as well as their social relations onboard ships and between the managers and seafarers in the companies studied were not conducive to a participatory style of management of occupational health and safety. The thesis argues that to be effective self-regulation of occupational health and safety management – such as envisaged by the ISM Code – requires a participatory approach. However, the thesis demonstrates that the preconditions that have been shown to be necessary to achieve this in land-based workplaces are much reduced or absent from the maritime situation which undermines the potential for the effective operation of the ISM Code.

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Glossary

AB	Able-bodied Seaman
BIMCO	Baltic and International Maritime Council
BP	British Petroleum plc
BSA	British Sociological Association
CoA	Contract of Affreightment
CPP	Clean Petroleum Product
CSWP	Code of Safe Working Practices
DNV	Det Norske Veritas
DPA	Designated Person Ashore
DWT	Deadweight Tonnage
EEC	European Economic Community
EU	European Union
FOC	Flags of Convenience
GRT	Gross Registered Tonnage
HMSO	Her Majesty's Stationery Office
HSE	Health and Safety Executive
IACS	International Association of Classification Societies
ICS	International Chamber of Shipping
ILO	International Labour Organisation
IMCO	Inter-Governmental Maritime Consultative Organization
IMO	International Maritime Organisation
INTERTANKO	International Association of Independent Tanker Owners
ISF	International Shipping Federation
ISM Code	International Safety Management Code
ISO	International Organisation for Standardization
ISPS Code	International Ship and Port Facility Security Code
ITF	International Transport Workers Federation
LTI	Loss Time Injury
MAIB	Maritime Accident Investigation Branch
MARPOL	International Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency
MNC	Multi-National Corporation

MoU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration
NKK	Nippon Kaiji Kyokai
NTSB	National Transportation Safety Board
NUMAST	National Union of Marine, Aviation and Shipping Transport Officers (known as Nautilus, UK since 2006)
OCIMF	Oil Company International Maritime Forum
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational Health and Safety
OPA	Oil Pollution Act
OPEC	Organisation of Petroleum Exporting Countries
OS	Ordinary Seaman
P&I Club	Protection and Indemnity Club
PPE	Personal Protective Equipment
PSC	Port State Control
SIRC	Seafarers International Research Centre
SIRE	Ship Inspection Report Program
SME	Small and Medium Enterprises
SMS	Safety Management System
SOLAS	International Convention for the safety of life at sea
SREC	School of Social Sciences Research Ethics Committee
SRSC	Safety Representatives and Safety Committees
STCW	Standards of Training Certification and Watchkeeping
TMN	Traditional Maritime Nations
TMSA	Tanker Management and Self Assessment
UNCTAD	United Nations Conference on Trade and Development
USCG	United States Coastguard

Introduction

The aim of this study is to investigate the practice of the management of occupational health and safety (OHS) in the maritime industry. The maritime industry fulfils a critical role in the world economy as the primary carrier of international trade and driver of global supply chains. It transports over 90% of the world trade in volume and generates significant revenue for States. Moreover it employs over 1.2 million seafarers globally and contributes significantly to the development of subsidiary businesses and employment (IMO, 2008).

The significance of this study derives from a number of research findings suggesting that seafaring is ranked among the most hazardous occupations (see for example Roberts and Marlow, 2005). Although ships are widely acknowledged as inherently difficult and dangerous workplaces, studies, such as by DeSombre (2006), argue that a significant proportion of the work related injuries and ill health on ships are due to lack of regulatory control and to ineffective management of OHS in the maritime industry.

Regulating the maritime industry is a challenging task. Due to the nature of the business, ships very often do not remain embedded in one State and spend most of the time at sea or in far-away ports, remote from their managers and regulatory authorities. Conducting day-to-day managerial tasks or regulatory surveillance thus poses major challenges as does the implementation of uniform regulatory standards across this global industry.

In addition, a large body of academic literature (such as Braithwaite and Drahos, 2000; Quinlan and Mayhew, 2000; Johnstone *et al.*, 2005) argues that the difficulty of regulating industries in general and of managing OHS in particular is further exacerbated by the damaging impacts of economic globalisation. Research specific to the maritime industry similarly indicates the adverse effects of globalisation on OHS in the industry. It points to the maritime industry as an extreme example of free-market capitalism in which capital and labour cross national boundaries with very little restrictions – which indicates that the management of OHS in the maritime industry under these conditions faces major additional impediments (Alderton and Winchester, 2002; Lillie, 2006).

In the regulatory context, every ship is considered an extension of the territory of the State in which it is registered.[1] By incorporating a ship into its register the Flag State assumes authority to exercise jurisdiction over the ship and also undertakes responsibility for the implementation of relevant legislation. In addition it exercises control in administrative, technical and social matters on board each ship entered in its register.

Until around the late 1960s, a significant majority of the ship-owners registered their ships in their home countries against a fee. The registry of ships was thus largely determined by the nationality of the ship-owners. The tradition was also to employ local seafarers, such that the ship-owner, his or her ship and the seafarers sailing on it all had the same national identity. As much of the maritime business was operated and owned by ship-owners from the advanced economies, such as the UK, Japan and Norway, such tradition was embedded in these countries. These States, thus, are widely known as the Traditional Maritime Nations (TMN) (Alderton and Winchester, 2002).

TMN generally imposed high standards for admitting ships in their registries and maintained stringent regulatory practices. However, from the mid 1960s, as a consequence of deregulation and increased free-market capitalism, more and more ship-owners chose to register their ships in countries that offered lucrative registration fees, minimal conditions for admission and comparatively relaxed regulatory standards. These new maritime nations, commonly known as the Flags of Convenience (FOC), had little or no genuine link with the ship-owners (Ozcayir, 2001). The major FOC comprised of Liberia, Panama, Bahamas, Cyprus, Malta, and more recently included nations such as Solomon Island, Jamaica, Barbados, and Belize (Lloyds List, 2005a).

The impetus to register ships under FOC was also located in ship-owners' interest in reducing the operational costs of ships. One particular area where ship-owners cut cost was by hiring cheaper labour. As the FOC did not impose any restriction on the nationality of seafarers, the ship-owners increasingly began to employ low-wage seafarers from new labour-supply nations, such as from the East European, East and South East Asian countries. This way they consolidated their economic advantage by engaging in increased cross-border activity and exploitation of various resources. As a consequence of flagging

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[1] In the shipping industry it is common to refer the State in which a ship is registered as the Flag State, which emanates from the fact that each ship is required to fly the maritime flag of that State.

out and employing labour from different parts of the world, the influence of local trade unions was eroded. Their scope of engaging in collective bargaining and representing seafarers on labour condition issues was significantly reduced. The declining influence of States and trade union organisations thus posed a new threat to what was already a challenging task to regulate the OHS in the maritime industry (Selkou and Roe, 2004; Lillie, 2004; Alderton and Winchester, 2002).

It is against this background that the 'International Safety Management (ISM) Code' was introduced into the maritime industry as a regulatory requirement. This piece of globally applicable legislation was specifically designed to promote a form of regulated self-regulation in the maritime industry worldwide. It made ship managers assume the responsibility for ensuring that OHS in their individual organisations was effectively managed. The ISM Code provided a broad framework of general provisions on the basis of which ship-owners were required to establish written policies and procedures and documented safety management systems for implementation in their organisations.

It has been over a decade since the ISM Code was implemented. During this period, however, the Code has been the subject of considerable debate. The maritime press and practitioners in the industry have regularly exposed significant weaknesses of the Code. They have argued that the Code, which was implemented with the intention to find a solution to the worsening state of OHS in the maritime industry, has largely been ineffective (see for example Lloyds List, 2008a). A major concern has been that many ISM Code certified ships continue to operate perilously due to poor management of onboard OHS. They have highlighted ineffective implementation of the Code and called into question its underlying assumption that self-regulation is an appropriate and effective way of managing OHS in the maritime industry.

Although the effectiveness of the ISM Code has been the centre of much discussion in the maritime community, there have been very few academic studies conducted in this field. One such study (Anderson, 2002) used a questionnaire-based survey technique to solicit views, comments and opinions from seafarers and other key industry officials about how they perceived the usefulness of the ISM Code and its implementation. The study was widely welcomed by the maritime community as a major attempt to throw light on the practical aspects of implementation and on compliance issues. However, broadly due to its

methodological limitations the study failed to expose the underlying concerns affecting the implementation of the Code in the maritime industry.

Three years later the apex body of the industry, the International Maritime Organisation (IMO), decided to pursue another study to assess the effectiveness of the Code's implementation. For this purpose it formed an independent group of experts from key stakeholders in the industry which used a similar questionnaire-based survey technique on a global scale. It too failed, however, to reach any firm conclusion with regard to the effectiveness of the ISM Code in enhancing safety in the maritime industry or reveal the issues that influence the implementation of the Code. Significantly, the group's report suggested, as a major recommendation, that there was a need for in-depth, qualitative research into the ISM-related performance of ships and company offices (IMO, 2006).

Against this background, this study seeks to answer the following research question: *What is the impact of the ISM Code on the management of OHS in the maritime industry?* In answering the question it focuses on the effectiveness of the implementation of the Code as operationalised in practice. My principal aim is to deepen understandings of the nature of the management of OHS in the maritime industry and fill in the void of lack of academic study conducted in this field. The study primarily seeks to locate the underlying social relationships and socioeconomic concerns that influence the implementation of the Code in practice. In order to answer the research question effectively, the thesis delves into relevant literature, follows a qualitative methodology and presents and discusses extensive findings from empirical research before drawing conclusions and making recommendations. The layout of the thesis is described in detail below.

The thesis is organised into eight main chapters. Chapters 1 and 2 present the review of the literature. Chapter 1 considers the appropriate literature providing an overview of the various types of OHS problem encountered by seafarers. Highlighting how seafaring is a significantly vulnerable profession, it goes on to discuss how globalisation further exacerbates the challenges concerning the management of OHS especially as it significantly weakens the regulatory regimes pertaining to the maritime industry. The final section of the chapter presents the measures taken by the industry in response to globalisation with particular reference to the development and introduction of the ISM Code.

Chapter 2 continues the discussion on self-regulation, making extensive reference to the wider literature, which is largely based on studies of shore-based industries. In order to highlight the range of issues affecting self-regulation, it critically assesses the roles of the three key players in self regulation: employers, employees and regulators. Drawing on some key studies, it discusses the main socio-economic factors that play major roles in the implementation of self-regulation. The chapter then looks into the more practical elements of the implementation of self-regulation, drawing on the literature that identifies and discusses the main elements of commonly used safety management systems. Last, it presents an overview of the abovementioned studies of Anderson (2002) and IMO (2006) on the implementation of the ISM Code.

Chapter 3 explains and justifies the methodology of the study including the selection of the two case studies. It presents an outline of the different methods used in the fieldwork – in shore-based ship management units and on board ships (oil tankers). The chapter provides a reflexive account of the fieldwork experience and highlights the ethical elements of the research.

Chapter 4 introduces the readers to the two case studies. First it provides an overview of the tanker sector of the maritime industry. It then discusses the relevant features of the case studies including their businesses, company operating procedures, ship managers' and seafarers' responsibilities, and standards of OHS.

Chapters 5, 6 and 7 present an analysis of the empirical data collected during the fieldwork, which used interviewing, documentary analysis and observation techniques. By analysing the data, the three chapters identify several factors affecting the practices of the implementation of the ISM Code in the two case studies. While Chapter 5 presents the practice of risk assessment, Chapter 6 discusses the practice of incident and near-miss reporting and Chapter 7 highlights the practices of audit and review of the safety management systems in the two case studies. The arguments on all three chapters draw on written data on the companies' policies, procedures and practices of the implementation of the ISM Code, and practices on the implementation of the Code from the perspectives of both – the shore-based managers and seafarers.

Chapter 8 synthesises the main findings that emerged from the three preceding chapters. It engages in a discussion that identifies the main sociological underpinnings and brings out the underlying socioeconomic factors that influence the implementation of the ISM Code in the two case studies. It also examines how some of the specific features of the maritime industry further influence the implementation of the Code.

Last, the concluding chapter highlights the main findings of the study before elaborating on how certain external factors, such as the roles of the management systems and of regulators, also influence practices with regard to the development and implementation of the ISM Code. It then presents a set of recommendations to consider and makes suggestion for further research.

Chapter-1: Occupational Health and Safety in the Maritime Industry

Introduction

This chapter explores international research findings on seafarers' Occupational Health and Safety (OHS). Among other academic work, it draws on Bloor *et al.*'s (2000) discussion which reviews the extant literature on a wide range of issues affecting the global maritime labour. The current knowledge base on seafarers' occupational health and safety is fragmented and fails to portray the global picture of OHS in the maritime industry; nonetheless, the available studies categorically reveal high rates of occupational fatalities, injuries and ill health in the maritime industry and point to the urgent need for further investigation in this area.

The first part of the chapter draws on a body of literature on maritime health and safety issues that comes largely from studies conducted in the North West European and Scandinavian countries. The second part of this chapter explores how economic globalisation posed further challenges in safeguarding OHS of seafarers. It discusses how increased mobility of capital and labour across national boundaries and an overall deregulation brought in deterioration in seafarers' working conditions and potentially weakened effective management of OHS. In the final section of this chapter I discuss the different measures taken by the maritime industry in response to the damaging impact of economic globalisation, and illustrate how the maritime industry adopted regulated self-regulation for improving the standards of OHS in the industry.

1.1 An overview of seafarers' OHS: skewed focus on maritime casualty

In this discussion there is a distinction made between two fundamentally different causes for seafarers' fatalities. One is maritime casualty and the other is occupational fatality. Maritime casualty is identified as a major disaster affecting an entire ship. As a consequence in most cases, several seafarers – often most of them onboard the ship – lose their lives. Common causes of such disasters are fire, or collision and foundering owing to poor weather or rough seas. Occupational fatality, on the other hand, corresponds closely with what is commonly identified in the land-based industries. In this case, an individual

seafarer or a group of seafarers involved in specific tasks lose their lives as a consequence of work-related mishaps, which typically include slips, trips and falls.

International data on OHS of seafarers is consistently and historically grim. A report from 1873 based on statistical report, for instance, showed that approximately 17 out of 1000 seafarers employed on British ships lost their lives either due to maritime casualties or occupational fatalities. The mortality rate in the maritime industry at that time was over five times higher than what was recorded in the British Railways (Scrutton, 1886).

Similarly, data from after the turn of the century (between 1908-09 and 1912-13) showed that while British coal-mining and railways accounted for 1.56 and 0.59 fatalities respectively for every 1000 persons employed in those industries, the corresponding fatality ratio for seafarers on the UK registered ships stood out at 4.05 (Verdier, 1922).

Research carried out at different times in the 20th century continued to point out that in comparison to shore-based professions, seafaring remained a high-risk occupation. Data from a study undertaken on Swedish seafarers in the period between 1945 and 1954, for instance, showed that the fatality rate on board merchant ships was seven times higher than that of the general workforce in land-based industries (Otterland, 1960).

More recent studies show a continuation of the same trend. Hansen (1996), for example, reported a similarly depressing picture. The author found that the rate of fatalities including drowning suffered by Danish seafarers was 11.5 times more than fatalities suffered by the male workers in the shore-based industries of the country.

While most of the studies on OHS in the maritime industry are from Britain and Nordic countries, there is some evidence that conditions in other parts of the world are even worse. Nielsen (1999), for example, demonstrated that between 1986 and 1995 the mortality rate for seafarers working on ships registered in Hong Kong was one of the highest in the world. Comparing this data with those from other maritime nations, the author showed that the mortality rate for seafarers on Hong Kong registered ships was around 2.39 per 1000 seafarers, which was seven times higher than the corresponding British figure.

Finally, a more recent large scale study conducted by Roberts and Marlow (2005) on traumatic work-related mortalities in the UK maritime industry once again revealed that despite the improvements in ship building technology, and the use of sophisticated equipment enhancing safety on board ships, seafaring, compared to a number of other professions, continues to remain the most dangerous. This retrospective study, conducted on 835 work-related fatalities between 1976 and 2002, showed that the rate of fatalities for seafarers was considerably higher than those for the general UK workforce. Between 1976 and 2002 (see table below) seafarers employed on board British registered ships experienced 13 to 28 times more work-related fatalities than the general British workforce.

Year	Seafaring population at risk	Seafarers' death from accidents at work	Rate of death per 1000 seafarers	Comparative fatality rate at work: British seafarer against general British workforce
1976-1980	441200	289	0.66	25.5
1981-1985	288000	124	0.43	20.1
1986-1990	135500	75	0.55	28.9
1991-1995	118419	19	0.16	12.8
1996-2002	153308	23	0.15	16.0
1976-2002	1136427	530	0.47	27.8

Table 1: Work-related fatalities in British Merchant shipping, 1976-2002 and its comparison to the general British workforce
Source: Roberts and Marlow (2005).

While limited data on seafarers' occupational fatalities are still available, information on seafarers' non-fatal occupational injuries, however, is harder to find. Besides the acute paucity of research, the data available from national sources in most cases lack accompanying information, such as causes of injury or circumstances leading to injury. Moreover, data collected from individual nations often follow different measurement standards which make research on seafarers' non-fatal injury on an international scale challenging.

However, one recent cross-sectional survey conducted by Jensen, *et al*. (2004; 2005), indicates a high rate of non-fatal injuries in this global industry. From a large international study using a questionnaire survey of over 6000 seafarers, the authors estimated that between nine and 20% of seafarers sustained at least one non-fatal injury at work during

their past employments. It showed that seafarers most commonly sustained injuries as a consequence of workplace slips, trips and falls.

Another study conducted on Danish registered ships pointed out that notwithstanding the rate of underreporting of non-fatal injuries, the number of reported cases of seafarers' injuries at work was 1.7 times more than that for workers from shore-based industries. This study was based on scrutinising a total of 1993 occupational accident figures extracted from the Danish Maritime Authority and insurance data between 1993 and 1997. It also showed that seafarers were 1.5 times more likely to suffer accidents resulting in '5% or more physical disability' than their shore-based counterparts (Hansen *et al.*, 2002).

Although the available data is far from comprehensive, a careful look at the fatality statistics points to a particular trend in the maritime industry. During the course of the 20th century the proportion of seafarers' fatalities resulting from maritime casualties decreased considerably, however on board work-related fatalities have continued to remain a major concern. The UK figures, for example, showed that at the dawn of the century, seafarers' fatalities due to maritime causalities were roughly between 1.8 and 4.1 times more than their work-related fatalities. Whereas, studies from the latter part of the same century showed that the number of fatalities from maritime casualties and occupational accidents at the global level was roughly the same (see table below). In fact recent studies show that ships registered in Organisation for Economic Co-operation and Development (OECD) nations, such as the UK, Germany, France, Norway, Denmark and Sweden experience more fatalities due to occupational accidents than through maritime casualties (Nielsen, 1999; Nielsen and Roberts, 1999, and Roberts and Marlow, 2005).

By looking at the reversal of the trend it can be argued that while technological advancement in the maritime industry has improved seafarers' safety over time in terms of reducing maritime casualties, work-related fatalities on board ships are still a major concern. This argument reinforces the purpose of this thesis which focuses on seafarers' OHS concerns related to seafarers' work and its management on board.

Year	Country	Maritime Disaster (MD)	Occupational Fatality (OF)	Ratio of MD and OF
1903-1904	UK	121 fatalities	69 fatalities	1.8
1906-1907	UK	233 fatalities	77 fatalities	3.0
1909-1910	UK	286 fatalities	70 fatalities	4.1
1976-2002	UK	176 fatalities	225 fatalities	0.8
1990-1994	World	3.60/10,000 seafarers	3.20/10,000 seafarers	1.1
1990-1994	Germany	0.22/10,000 seafarers	3.60/10,000 seafarers	0.1
1990-1994	France	0.33/10,000 seafarers	1.66/10,000 seafarers	0.2
1990-1994	Norway	4.51/10,000 seafarers	5.69/10,000 seafarers	0.8
1990-1994	Denmark	2.67/10,000 seafarers	4.67/10,000 seafarers	0.6
1990-1994	Sweden	0.00/10,000 seafarers	0.95/10,000 seafarers	0.0

Table 2: Ratio of maritime disaster and occupational fatality on ships registered in selected countries. Data from early and latter part of 20th century
(Note: The figures do not include fatalities caused by illnesses)
Sources: Verdier (1922), Nielsen (1999), Nielsen and Roberts (1999) and Roberts and Marlow (2005).

In the maritime industry it is widely acknowledged that there is considerable attention paid towards maritime disasters, especially the high profile disasters involving large numbers of casualties or maritime oil pollution in coastal areas (see for example Cahill, 1990). As in the case with similar high-reliability industries public outcry and media attention have contributed to this skewed focus (Petts *et al.*, 2000), leaving work related onboard incidents including fatalities, to appear comparatively insignificant. In the maritime industry in particular the trend of development of regulation clearly follows such practice. The introduction of SOLAS[2] and MARPOL[3], for example, evolved only in the wake of major maritime disasters. Work-related health and safety concerns however continue to fail to bring out similar fervour with the industry stakeholders and regulators.

The discussion so far has presented a picture of the poor state of OHS in the maritime industry and shown how the industry has largely ignored concerns with work-related occupational safety. It also has pointed out the way the literature has been biased towards seafarers' sudden accidental death as very few studies have been conducted on other concerns with seafarers' occupational safety, such as non-fatal injuries.

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[2] SOLAS: Safety of Life at Sea Convention specifies international minimum standards for the construction, equipment and operation of ships with particular reference to their safety. The first version was adopted in 1914, in response to the *Titanic* disaster.

[3] MARPOL: The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The origin of this convention can be traced back to the pollution incident caused by the tanker *Torrey Canyon* which spilled 120,000 tons of crude oil into the sea.

Moving on, studies on seafarers' occupational health offer data that is not only sparse but is also confined to very recent research originating almost entirely from the Nordic States. Unlike shore-based traditional industries where a significant proportion of the employees are employed on full time basis, the employment pattern in the maritime industry is distinctly different. The reason for this is twofold. Firstly, a sizeable section of employment in the maritime industry resembles precarious employment (see Couper *et al.*, 1999), which according to Quinlan (1999) offers low certainty of future employability. Thus employment in the industry carries with it occupational health concerns associated with such form of employment (discussed in section 2.2.3).

Secondly, in this profession it is hard to distinguish the boundary between life at work and life outside work as seafarers live and work in the same environment (Sampson and Thomas, 2003a). As a result the literature review for this thesis on seafarers' occupational health looks at both the traditional concerns of seafarers' occupational exposure due to chemicals and noise as well as studies conducted on seafarers' chronic diseases, such as hypertension, and on studies that investigate seafarers' work-related stress and work-life balance.

1.1.1 Traditional occupational health concern

Recent studies have revealed the presence of high levels of carcinogens in seafarers' workplaces. They show that seafarers, in comparison to the general population, have increased chances of suffering from high levels of exposure-related cancers. In one study Moen *et al.* (1995) revealed high concentrations of benzene in the working environment on board product tankers[4]. By monitoring air samples during cargo loading and unloading operations from the deck of eight tankers in Norwegian ports and analysing questionnaires returned by the seafarers exposed to such conditions, the authors found that the seafarers were exposed to high levels of carcinogens. They concluded that the seafarers were thus at an increased risk of getting various forms of cancers, such as cancers of the lung and urogenital.

In another study Brandt *et al.* (1994) used data of the economically active male Danish population for the period between 1970 and 1985 for analysing the mortality pattern in the

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[4] Product tankers: Oil tankers carrying refined petroleum products, such as Kerosene and Gasoline.

seafaring professionals. It showed that as a consequence of working with chemicals seafarers were significantly more susceptible to cancer than the general workforce. The authors found that engine room officers were 1.9 times and engine room ratings[5] were 2.5 times more likely to get cancer of the respiratory system than the general working population of that country. The authors concluded that the occupational environment was one of the main contributing factors for the raised level of cancer in the profession.

In the same country Kaerlav *et al.* (2005) studied cancer morbidity among all Danish seafarers between 1986 and 1999. The study involved 33,340 men and 11,291 women and used standardised incident ratio of the national rate. It showed that male seafarers were 1.26 times more at risk of getting exposure-related cancers than the national male population. While the corresponding figures for the female seafarers was 1.07 times.

In a large scale longitudinal study researchers working with data from over 40,000 Finnish seafarers also found that seafarers were at a high risk of suffering from occupational cancers (Pukkala and Saarni, 1996; Saarni *et al.*, 2002). By examining data from a group of seafarers over a period of 20 years since their first employment, the researchers estimated that male seafarers were 1.8 times more likely to get skin-cancer and 2.9 times more likely to get mesothelioma[6] than the general national male population. Furthermore, by following data over a 10-year period since a group of male seafarers were first employed as deck ratings, the researchers found that the particular group of male deck ratings was twice as likely to have cancer of the pancreas and 1.6 times more likely to have cancer of the prostrate than the overall Finnish male population. Besides these, the study also revealed that seafarers on tankers were at significantly high risk of suffering from renal cancer, leukaemia, and possibly lymphoma – all of which were related to excessive exposure to chemicals. It also showed that seafarers working in the engine room were at a particularly high risk of suffering from mesothelioma due to their exposure to asbestos.

Arguably the most convincing evidence on the dismal state of seafarers' occupational health comes from the research conducted by Andersen *et al.* (1999). The authors

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[5] Engine room officer and rating work with the ship's machineries. They spend a significant amount of their working time in the ship's engine room, which is a large compartment where the majority of ships' machineries are located.

[6] Mesothelioma: It is a rare form of cancer in which malignant (cancerous) cells are found in the mesothelium, a protective sac that covers most of the body's internal organs. Most people who develop it have worked on jobs where they inhaled asbestos particles (Source: US National Institute of Health).

investigated 20 years' of data from one million diagnosed cancer cases among the different occupational groups across the four Nordic countries (Denmark, Finland, Norway, and Sweden). The study using standardised incident ratios revealed that seafarers alongside workers producing beverages and tobacco were the most vulnerable to a range of cancers among all working groups.

1.1.2 Seafarers' Occupational diseases

Research also indicates that work-related cancer is not the only concern with seafarers' health. It shows that seafarers have high rates of a number of other chronic diseases such as ischemic heart disease, hepatitis and diabetes and suffer from high rates of infectious diseases such as malaria and HIV-related diseases. Moreover, studies have also indicated that seafarers are also susceptible to musculoskeletal problems due to their working conditions.

A recent study by Kaerlev *et al.* (2007), for example, found out that on Danish ships acute and chronic ischemic heart disease rates increased among seafarers employed for longer periods compared to those employed for shorter periods. The authors concluded that working conditions aboard ships were a contributing factor for heart disease. They also pointed out that besides heart diseases male seafarers in comparison to the working population ashore also faced a number of other serious diseases, which mainly included diseases of the respiratory system, diabetes and obesity problems. The female seafarers also suffered from high occurrences of diseases of the circulatory system and diseases of the vein.

In another large scale study involving 7401 male and 926 female Danish seafarers, Hansen *et al*. (2005) compared the state of health of seafarers and the general working population by investigating data from hospitalisations. The authors found that the proportion of seafarers (both male and female) hospitalised was significantly higher than that of the general workforce. While seafarers' occupational injury was the main cause, hospitalisations due to lifestyle-related diseases, such as endocrine and nutritional related diseases, including diabetes (278% of General Workforce (GWf)), diseases of the respiratory system (115% of GWf) and diseases of the digestive system (112% of GWf), were significantly pronounced. The authors also argued that the seafarers' high

hospitalisation rates were evident despite the healthy worker effect[7] and also despite the possibility that a proportion of the seafarers studied may have been hospitalised in foreign countries and thus did not form part of the data set.

A number of studies also point to a high occurrence of serious infectious diseases among seafarers. Researchers have highlighted that a combination of factors such as the international nature of the profession, long periods away from family, along with the lack of appropriate medical guidance contribute to a high burden of infectious diseases such as Hepatitis (Wickramatillake, 1998; Hansen *et al*., 1996); malaria (Tomaszunas, 1998), and sexually transmitted diseases including HIV and AIDS (Vuksanovic and Low, 1991; ILO, 2005).

A relatively small number of studies have also inquired into the impacts of the physical layout and the challenging working environment of ships on the musculoskeletal system of seafarers. Torner *et al*. (1994), for example, carried out an experiment by simulating various kinds of motion that are generally experienced at sea. They calculated the impacts of the vertical and horizontal motions as well as moments at seven major joint systems of the human body. It showed that the motions of the ships produce significant stress on the lower back of the human body even when a person is merely standing erect. Moreover, the musculoskeletal stress gets further exacerbated when a person either holds or lifts a load under such moving work environment. The authors highlighted that lifting or carrying heavy workloads at sea thus poses significant risk to musculoskeletal system of seafarers.

In another study Pearce *et al*. (1996) also highlighted that seafarers suffer heavily from degenerative changes to the knees. The authors, drawing on a sample of 1250 patients who were referred to the Dreadnought Unit, St Thomas' Hospital in London during the period 1989-1990, found that around 24% of the patients were either active or retired seafarers. Their main problems were joint line tenderness and 'varus angulation' (commonly known as bow-leg) at the knee joint. By drawing on various other studies (Kellgren and Lawrence, 1952; Anderson, 1984; Partridge and Duthie, 1968) Pearce *et al*. pointed out that such medical conditions were also suffered by physically demanding professionals such as coal miners and dock workers and argued that physical layout and working conditions of ships provided similarly hostile environment. They highlighted that the predominantly vertically

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[7] Healthy Worker Effect: Health checks conducted as part of pre-employment requirement in which employers are required to demonstrate a minimum standard of health.

arranged work place on ships in which seafarers and especially the engineers are required to climb several hundred steps per day and are required regularly lift weights in confined spaces, which may involve kneeling or twisting in a crouched position were some of the main reasons why seafarers suffered heavily from knee related problems.

Similarly, another UK based study on seafarers' OHS and socioeconomic conditions highlighted that a noticeable proportion of seafarers was compelled to take early retirement due to health conditions. The study showed that in 2005, for example, out of the approximately 29,050 UK registered seafarers below the age of sixty-two, 175 failed to pass the compulsory annual medical test conducted by Maritime Coastguard Agency approved doctors. While the main cause (24%) from all the cases in that particular year was due to ailments related to the cardio-vascular system, the second most prevalent cause was musculoskeletal disorders which prevented 23% of the seafarers to return to work.

1.1.3 Occupational diseases due to lifestyle and work-life balance

Finally, a group of recent studies point out how seafarers suffer from health-related concerns as a consequence of their lifestyle and work-life balance. Researchers, such as Parker *et al*. (1997) and Thomas (2003) showed that long working hours, isolated and monotonous lifestyle on ships, and long-term separation from home and family are the greatest source of stress in the lives of seafarers.

Also, related to this topic, Hemmingsson *et al*. (1997) pointed out that the working conditions in the seafaring profession contribute to seafarers' drinking habits and significantly increase their chances of psychiatric disorders. With regard to mental health problems, a number of researchers have also identified seafarers with a high rate of suicides.

Jaremin *et al*. (1996), for example, revealed that Polish seafarers were three times more likely to commit suicide than the shore-based working population in Poland and in general were more likely to suffer from mental and emotional disorders.

Also, Roberts and Marlow (2005) in their study of fatalities in British merchant ships argued that about half of the 'open-verdicts' on missing seafarers, i.e. unsolved cases, were likely to be cases of suicides, which, if true, amounted to 14% of all seafaring work-related

fatalities. This, the authors highlighted, was much higher than various other working groups, such as the general US workforce where studies show (see Conroy, 1989) that only 3% die from work-related suicides.

One of the large scale studies on occupational health of seafarers was conducted by Parker *et al*. (1997). The authors took part in a project named: FASTOH (fatigue stress and occupational health of seafarers), which was a large scale Australian study with responses from nearly 1800 seafarers sailing on Australian coasts. In this study the authors focussed on seafarers' health and lifestyle concerns and their work-related stress factors. The study pointed out that seafarers experience a higher level of stress than normative groups on all measures of sources of work pressure. In particular, the researchers indicated that environmental hardship, such as heat, high humidity and noise levels played negative impacts on the seafarers' health. Similarly, poor quality of sleep was identified as another major source of health concern, as, in the study, approximately half the seafarers reported sleeping for six hours or less a day. Long working hours and short duration of sleep which was further disturbed by noise and vibration from various engines and machinery as well as excessive rolling of the ship during bad weather were yet other major reasons for seafarers' sleep deprivation. The researchers also identified that fast port turnaround of ships made the seafarers tasks even more demanding, leading to a condition of progressive chronic fatigue.

Pointing to the importance of medical facilities, authors, such as Scott *et al*. (1997), Hansen and Pedersen (2001) and Jaremin *et al*. (1996) have highlighted how the lack of medical attention at hand makes seafarers extremely vulnerable. These researchers point out how seafarers do not have easy access to qualified medical assistance or medical facilities to recover from injury or ill health at sea which becomes a particularly challenging problem when seafarers fall ill while remote from land. In such cases, the injured or the sick could receive diagnosis from qualified doctors using only long-distance radio-medical advice or rely exclusively on the limited medicine stock on board and the basic medical skills of their seafaring colleagues (Lateef and Anantharaman, 2002; and Rizzo *et al.*, 1997).

While the review of the literature showed that the standards of shipboard occupational safety as well as health are both major concerns it is important to mention here that in the maritime industry issues related to occupational health are scarcely addressed. As pointed

out in the discussion in section 1.1 the industry pays considerable attention to issues in connection with maritime disasters, such as ship collision and grounding, while giving relatively low importance to work-related incidents on ships. Furthermore the issues on seafarers' work-related illnesses get even more cursory attention and are considered peripheral compared to issues affecting maritime safety. As a result the industry practitioners and key stakeholders pay a significant focus discussing and debating how to make ships safer while largely ignoring issues affecting seafarer' work-rated illnesses (Lloyds List, 2003a). Thus there is a dearth of material on seafarers' occupation health and as a consequence the focus of this empirical study as presented in the subsequent chapters is also skewed towards issues related to occupational safety, its regulation and management[8].

1.2 Impact of economic globalisation on OHS in the maritime industry

Having identified a range of concerns with OHS of seafarers this section presents findings on how economic globalisation over the last 30 years further exacerbated the already precarious OHS conditions in the maritime profession. Authors, such as Lillie (2006) and DeSombers (2006) are among those who discussed how the influence of economic globalisation on OHS was particularly severe in the maritime industry. Due to the high mobility of the capital asset, i.e. the ships and the labour, ship-owners have managed to achieve significant benefits by relocating their assets to and sourcing labour from different parts of the world to attain economic advantage. These issues in terms of how they potentially affect seafarers' OHS are discussed below.

1.2.1 Increase of FOC resulting in decreased OHS surveillance

As pointed out in the introduction, a large section of the ownership of the shipping capital has mainly been from the OECD countries, such as the UK, Japan and Germany. As of the beginning of 2009, 64% (measured in terms of Dead Weight (DWT))[9] of the global cargo carrying capacity was owned by ship-owners in the OECD nations (see diagram below).

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[8] For the purpose of this study, however, the term occupational health and safety (OHS) is used in the rest of the thesis.
[9] Dead Weight Tonnage: The measurement used for determining the cargo carrying capacity of a ship.

Global Distribution of Country of Ship-owner Domicile

Unknown 6%

Others 29%

Open registry nations 1%

OECD Nations 64%
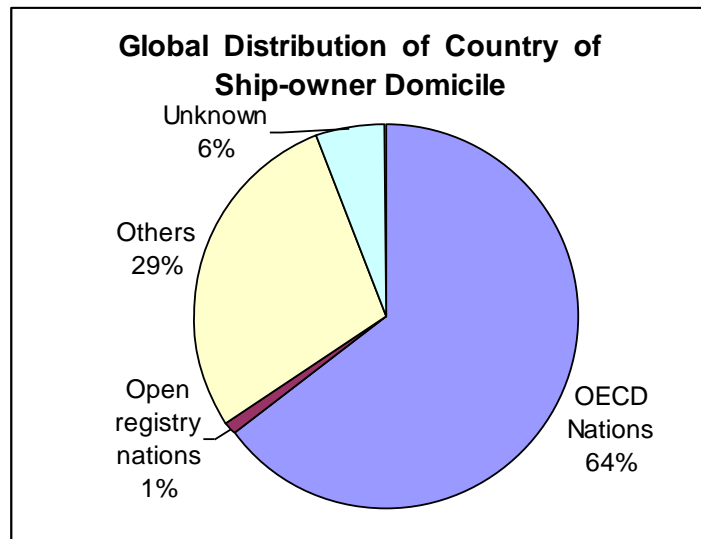
Figure 1: Global ship-ownership distribution of the maritime industry
Source: ISL (2009).

However, the global ship-registration map paints a very different picture. It shows that a vast majority of these ships are registered in foreign countries, typically in FOC, such as Panama, Liberia, Marshal Islands and Bahamas. At the beginning of 2009, the percentage of ships registered under foreign flags stood at 71% measured in terms of DWT (see diagram below).

Global Ship Registry Distribution

OECD Nations 22%

Others 36%

Open registers 42%
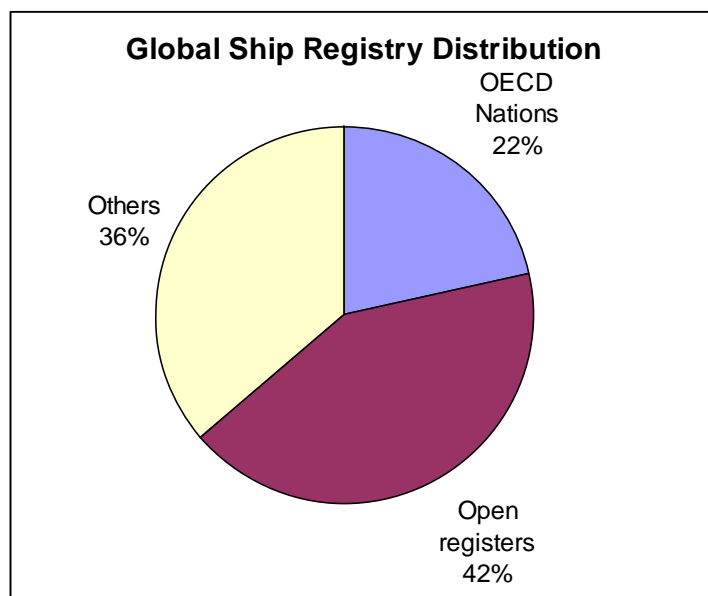
Figure 2: Global distribution of the registry of ship in the maritime industry
Source: ISL (2009).

The extent of the shift in the registry can also be seen in the table below. It shows the trend in the relationship between the country of domicile of the ship-owner and the extent of

foreign registration of the ships of some selected nations. Recent data (UNCTAD, 2006) indicates that in the case of ship-owners domiciled in Germany, for example, who own nearly 8% (which is a sizeable percentage) of world deadweight tonnage (DWT) over 80% of them chose to register their ships in foreign countries.

Country of ship-owner's domicile	Percentage share of total world ship tonnage (DWT)	Percentage of ships under foreign Flag
Greece	18.02	70.95
Japan	14.52	91.07
Germany	7.89	81.66
USA	5.18	78.32
Norway	5.01	69.91
United Kingdom	2.35	57.92

Table 3: Registration under foreign flags by ship-owners from selected countries, 2006
Source: UNCTAD (2006).

In the literature on maritime regulation and economics it is widely acknowledged that the transfer of assets to a FOC provides a twofold benefit for ship-owners. Firstly, it offers a competitive cost advantage (registration fees, tonnage tax[10] etc) to register ships with these countries. Secondly, the regulatory framework of the FOC allows ship-owners to adhere to a set of relaxed regulatory requirements. Transferring of ships to FOC thus offers considerable cost saving (DeSombre, 2006).

The extent to which ship-owners have taken advantage of these benefits can be seen in the chart below. Ships registered in Panama, for example, have risen exponentially from approximately 58.3 million DWT (i.e. 9.1% of world tonnage share) in 1984 to approximately 270.9 million DWT (i.e. 23.5% of world tonnage share) in 2009. On the other hand, the ships registered in Japan, which is an example of TMN, shows a significant fall in the registered fleet. It dropped from 59.4 million DWT (i.e. 9.3% of world tonnage share) in 1984 – which was nearly the same tonnage held by Panama at that time – to approximately 14.5 million DWT (i.e. 1.3% of world tonnage share) in 2009 (ISL, 1985; 1995; 2000; 2005a and 2009).

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[10] Registration Fees and Tonnage Tax are the main expenses for ship-owners towards registering their ships with any State which among other factors depend on the size of the ship.

Change in Global Ship Registry
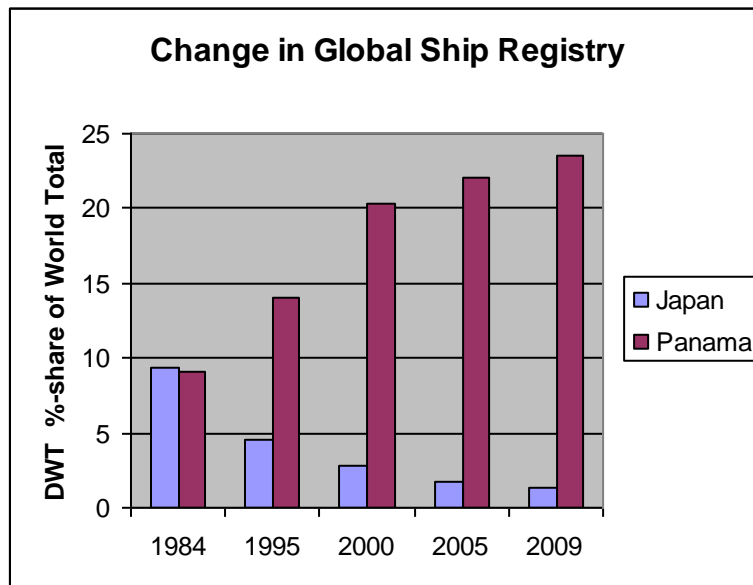
Figure 3: Change in Ship Registry, examples of Japan and Panama, 1984-2009.
Source: ISL (1985; 1995; 2000; 2005a and 2009).

Although the ships under FOC continued to operate under the same set of international regulations, such as SOLAS, with this shift there were questions raised on their overall administrative competence and regulatory surveillance capacity. It was suggested that the well-developed and well-implemented regulatory practice of TMN was barely matched by the regulatory standards of FOC which had little or no experience in regulating shipboard OHS standards. The growth of FOC thus posed serious questions on the standard of implementation of OHS regulations in the maritime industry (Boisson, 1999).

Moreover with the increasing opportunity to register ships under a host of different States, ship-owners could choose the *suitable* register as part of their business strategy and also retain their right to *hop* from one register to another with considerable ease. States that showed keenness to acquire more ships from foreign owners often failed to look beyond immediate commercial gain from ship registration and tonnage fees. They generally stayed clear of imposing regulatory pressures on ship-owners because they were fearful of losing ships to other Flags. Due to such competitiveness, the FOC appeared to bring in the concept of providing a *service of registration* which greatly diminished the State's original role of regulating OHS (Alderton *et al.*, 2004: 53).

1.2.2 Changes to seafarers' crewing structure and its effect on OHS

The other and equally pervasive change that took place in the maritime industry was the shift in the employment pattern. Alderton and Winchester (2002), for example, pointed out

how relaxed regulatory requirements of FOC facilitated a significant increase in the number of seafarers from new labour-supply nations. It had a significant implication on the standard of their training and consequently on the level of OHS in the industry. The number of seafarers employed from the TMN, such as UK, Germany, Denmark and France reduced considerably, while seafarers from new labour-supply nations, such as, Philippines, Indonesia, and India and East European countries increased. For example, in 1992 the number of seafarers from the UK was barely a quarter of what it used to be in 1968 despite an increase in the global maritime activities during the same period.
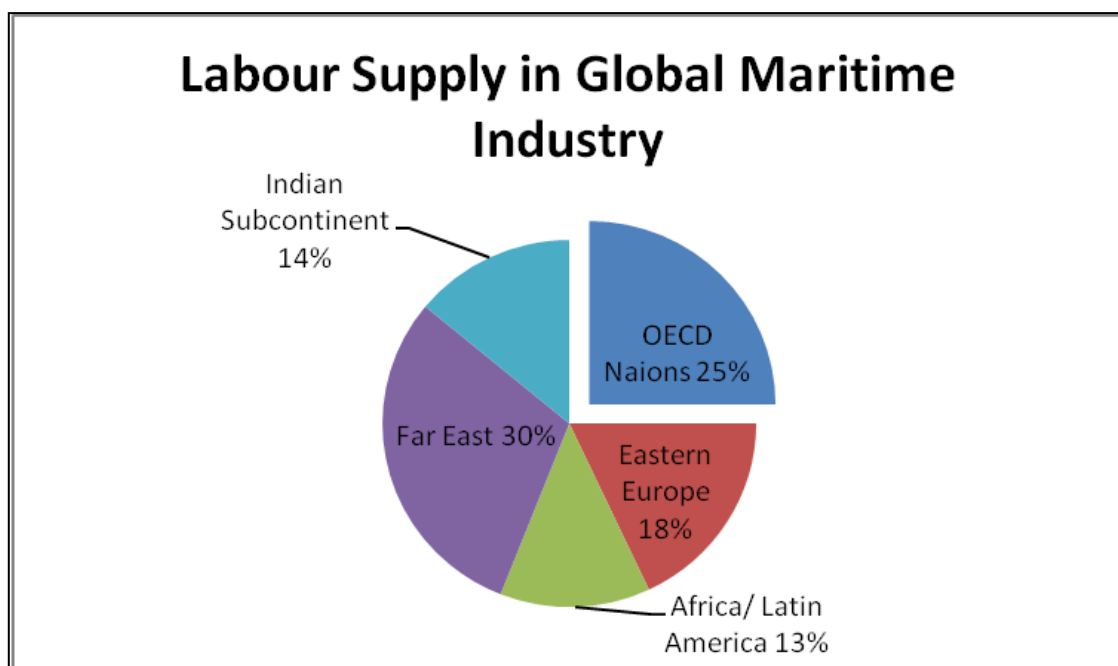
Figure 4: Global distribution of source of seafarers, 2005.
Source: BIMCO/ISF (2005).

The increase of Filipino seafarers in the European-owned fleet only completes the picture. In 1987 alone the employment of Filipino seafarers increased nearly six folds (Alderton *et al*., 2004). Taking advantage of the globalised environment, the ship-owners thus employed cheaper labour from developing countries (see global distribution of seafaring labour figure above). This argument is supported by the fact that in 1994, for instance, the wages of employing Japanese seafarers was five times more than that of Filipino seafarers, and similarly, the wages of employing British seafarers was six times more than that of their East European counterparts (Lloyds List, 1994a; 1994b).

As a result of the influx of seafarers from the newer labour-supply nations the standard of OHS in the industry was threatened. It would be unfounded, however, to make a claim that seafarers from TMN in general are more professional to the ones from the new labour-supply nations until the intricacies attached to the profession are pointed out. Development of seafaring skills, often regarded as *good seamanship*, has been a painstaking task. It involves formal training through land-based vocational courses and examinations as well as developing skills through practical training. The seafarers were required to understudy their seniors while on board for several years. Based on such century old practice, the TMN developed a systematic maritime education and training mechanism. Whereas, the new labour-supply nations did not enjoy any such advantage and as a result the seafaring skills of these seafarers were met with scepticism. More importantly, as one of the main aspects of good seamanship is giving due regard to OHS, the standard of OHS on the ships in which seafarers were employed from the new labour-supply nations was deemed highly questionable (Couper *et al.*, 1999; HMSO, 1994).

Secondly, the lack of regulatory requirements and implementation capacities of the FOC gave opportunity to less scrupulous ship-owners to further reduce their running costs by downsizing of the numbers of onboard seafarers. Reduction of the number of seafarers is not new. Roughly, between 1950 and 1970 the number was reduced by approximately 50% for a typical 12,000 DWT cargo ship. This trend continued and between 1970 and 2000 the number of seafarers on a similar type and size of ship dropped by approximately another 60% (Couper *et al.*, 1999).

However, there was an important difference in the motives behind these two reductions. While the drop in number between 1950s and 1970s was largely associated with the technological innovation, such as automation and mechanisation of the engine room that replaced human workforce. The more recent reduction on the other hand is attributed to the ship-owners' purposeful downsizing through multitasking the seafarers and increasing their working hours. This downsizing was primarily a cost-cutting drive (Alderton *et al.*, 2004; Beth *et al.*, 1984). It is most apparent in the reduction in numbers, and in many cases in the complete removal of trainees, cadets and junior staff who used to hold supporting positions and learn through practical exposures from their seniors. In fact during this period many of the catering and housekeeping staff, who were considered peripheral to the core seafarers, were altogether removed from employment (Bloor *et al.,* 2000; HMSO, 1994).

This downsizing had a potentially damaging effect on OHS of seafarers as it resulted in considerable work intensification. Government marine accident investigation bodies have consistently pointed to the dangers to OHS due to reduction of onboard manpower. These reports indicate that reduced manpower inevitably leads to longer working hours, particularly for watch-keepers, and when coupled with short turnaround of ships, it results in seafarers' fatigue (MAIB, 2004, 2005; AMSA, 2007).

Studies on 'fatigue' in the maritime industry also indicate its close association with marine accidents and seafarers' injuries. They show that fatigue not only leads to immediate unfavourable conditions, such as impaired performance, but also decreases seafarers' wellbeing and increases their risk of mental health problems (Smith *et al.*, 2006). Moreover, such downsizing has also shrunk the opportunity for social interaction on board, making seafarers comparatively more isolated from their fellow workers. Ironically, this downsizing took place at a time when ships in general got bigger, travelled faster between ports and experienced quicker turnaround times in ports – all of which arguably made a considerable negative impact on seafarers' OHS (Numast, 2006).

Finally, as seafarers from the TMN lost their employment, the practice of permanent employment of seafarers also decreased. Compared to the previous setup more and more seafarers were being employed from new labour-supply nations on short-term contractual employment. In this system seafarers were typically employed for a single tour of duty which lasted a maximum of a year. The employers thus had no obligation towards the seafarers' future employability. From the seafarers' perspective such short-term contractual employment potentially made them insecure about their next employment. Consequently the relationship between ship-owners and seafarers increasingly became 'contractual' negatively affecting the general labour conditions of seafarers (Alderton *et al.*, 2004).

Concluding remarks

The above discussion identifies a series of developments in the maritime industry as a consequence of economic globalisation that potentially had negative influence on the OHS of seafarers. It was initiated primarily by the flagging out of ships from TMN to FOC. For the ship-owners, the incentives to register their ships under FOC were the relaxed regulatory requirements and an overall financial benefit package. With regard to the

seafarers in particular, it promoted employment of labour from new labour supply nations and negatively affected the labour standards through practices such as downsizing. All these indicate that globalisation resulted in an environment that challenged the conditions considered important for safeguarding OHS in the maritime industry. For a wider appreciation of the problem the literature on State deregulation and reduced OHS surveillance will be revisited in the next chapter.

Also, the maritime industry particularly in the 1970s witnessed a major shift in its ship-owning and ship-managing structure. Partially as a consequence of deregulation and partially due to the changes in the supply and demand situation in the world shipping tonnage, there was an increase in new-entrant ship-owners such as financial institutions and banks. While traditional ship-owners, who were usually long-established ship-operators based in TMN usually operating their ships with their own ship-management team, the new type of ship-owners on the other hand did not have the much needed proficiency in ship management. It lacked technical and operational skills and also in the expertise in manning their ships with suitable seafarers. As a solution to this concern 'third-party ship-management companies', which are private companies taking on the responsibility of asset management and looking after the day-to-day operational needs of the ships, grew in popularity (Alderton *et al.*, 2004; ILO, 2001a). However, there were critical views of their professional abilities. Though the literature also acknowledged that a section of the third-party ship managers were well reputed and highly skilled professionals, in general, they were grouped together with the activities of FOC, poorly managed ships and poor standards of OHS (Spruyt, 1994; Haralambides, 1998). This arrangement further distanced the association between the actual ship-owners and seafarers sailing on their ships.

The following simplified schematic diagram summarises the different adverse impacts of economic globalisation on the conditions necessary for effective management of OHS. It also points to the regulatory measures taken by the maritime industry in response – which will be the theme discussed in the following section.
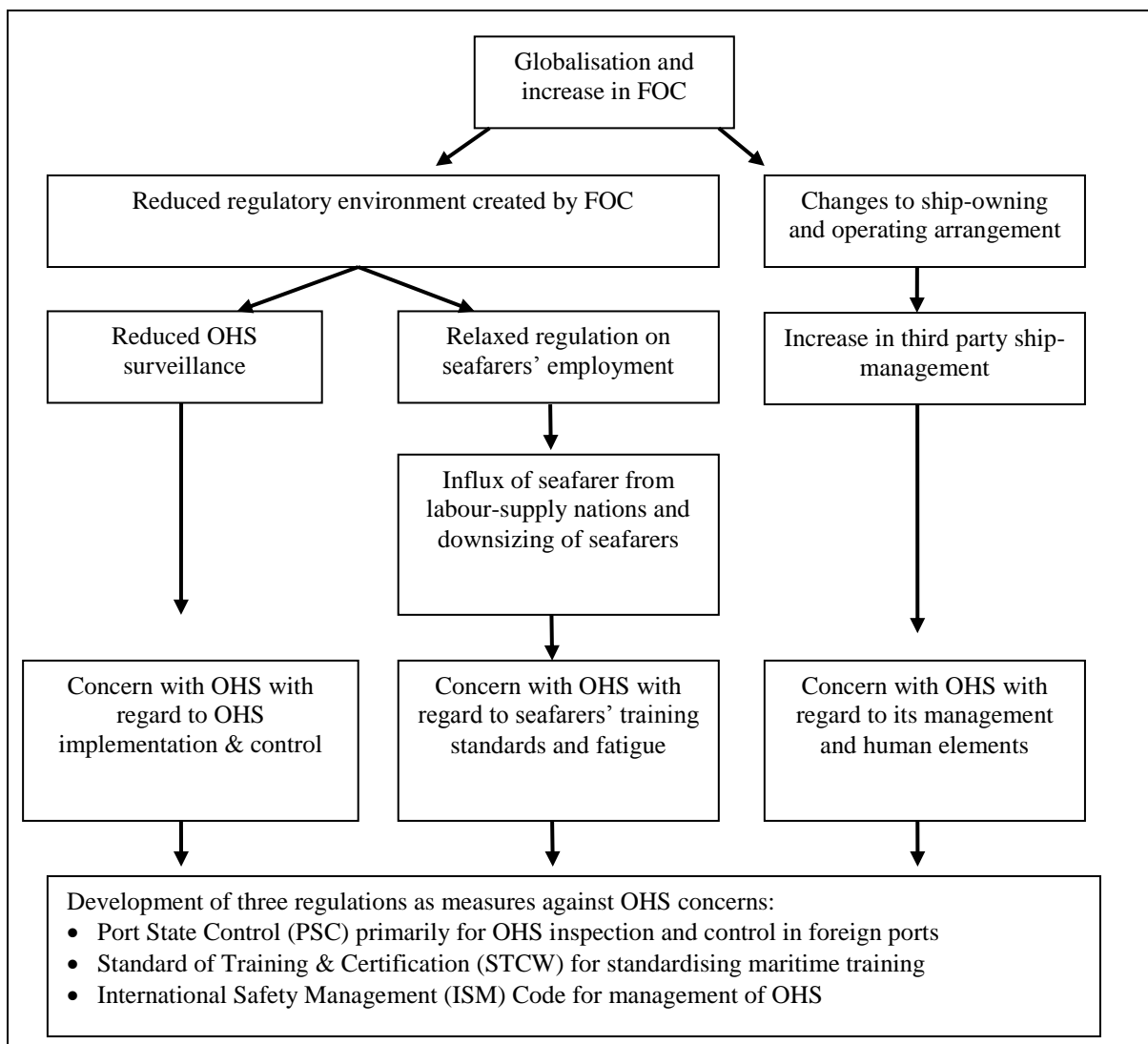
Figure 5: Simplified schematic representation of the effects of globalisation in the maritime industry and the industry's subsequent response

1.3 Measures taken by industry in response

While these developments were being seen as serious challenges to safeguarding OHS in the maritime industry a number of high profile maritime disasters with heavy losses of life and extensive environmental pollution also took place. Many of these (as shown in the table below) which occurred close to the shores of TMN mostly involving ships registered with FOC drew considerable attention from the industry regulators and the public alike.

Ship Name	Registry	Year	Location
1. Foundering			
Herald of Free Enterprise	UK	1987	English Channel
Scandinavian Star	Bahamas	1990	Scandinavian waters
Estonia	Cyprus	1994	Baltic Sea

2. Oil Pollution			
Torrey Canyon	Liberia	1967	UK
Amoco Cadiz	Liberia	1978	France
Exxon Valdez	USA	1989	Alaska
Braer	Liberia	1993	UK
Sea Empress	Liberia	1996	UK

Table 4: Detail of selected ship-disasters since late 1960s
Sources: ITOPF (2008) and IMO (2008).

Investigative reports of most of these maritime disasters indicated concerns similar to those discussed in the previous section. For example, in the case of the *Herald of Free Enterprise*, poor support from shore management was identified as one of the prime causes (HMSO, 1987), while the analysis of the *Exxon Valdez* indicated crew fatigue (NTSB, 1990) and in the case of the *Braer*, the report indicated a need for improvement in seafarers' training standards (MAIB, 1993). All these high profile incidents acted as *conclusive evidence* of the consequences of the shift in the maritime industry and prompted regulators to expedite addressing the industry's OHS and pollution concerns. In the following section the discussion looks into the ways the industry attempted to address it by bringing in a set of new regulations.

1.3.1 Industry's response to the concerns with seafarers' OHS

Regulations in the maritime industry are developed at the global level and involve individual States and industry stakeholders together engaging in multilateral deliberations in a worldwide forum at the International Maritime Organisation (IMO). Its aim is to adopt internationally agreed regulations for subsequent implementation and enforcement under national legislation. The States and different stakeholders submit proposals for global regulation and then seek to reach consensus by debating these proposals among themselves, all the while aware of their respective, often differing, vested interests. Once a regulatory consensus is reached, the responsibility for implementing and enforcing the agreed global rules and standards is transferred to the individual States (Boisson, 1999; Li and Wonham, 2001).

One piece of regulation that the industry came up with as a measure to rescue the industry from failing OHS standards was the Port State Control (PSC) inspection and control mechanism. In 1982 it was introduced to the industry primarily to bring a solution to the limited surveillance capacities of the FOC. Through this regulation the PSC administrators

of maritime nations, such as the United States Coast Guard in the USA, acquired the rights to inspect ships which were registered with other States when such ships visited their ports. For example, the national administration of State A was allowed to inspect ships registered with States B, C or D whenever they called its ports. Based on the result of the inspection, the PSC of State A also held the statutory right to detain ships (if need be) till their defects were rectified.

The PSC produces statistical data on operational deficiencies. Although the inspection does not specifically enumerate OHS checks, it carries out general inspection on operational and safety practices. The PSC inspections thus generate data showing the number of deficiencies and whether these are serious enough to warrant the ship's detention on grounds that allowing the ship to sail would endanger safety and could result in an accident. The results of the inspection are made available on the public websites. The industry, for regulatory compliance as well as commercial purposes, considers PSC-generated data as a valuable indicator for measuring the OHS performance of individual ships as well as their owner and/or manager (Ozcayir, 2001).

The industry also responded to the 'inconsistencies' in the seafarers' maritime education and training standards by introducing a convention named: the International Convention on Standards of Training, Certification and Watch-keeping for Seafarers (STCW). It set the minimum level of seafarers' training standards irrespective of the country of origin of the seafarers or the location of the training establishment. The regulation specifically aimed at developing maritime training standards in the new labour-supply nations. It came into force in 1984 and was amended in 1997 which among other changes included the 'rest period' requirements for watch-keeping personnel as a measure against fatigue. It also authorised the PSC inspectors to check the compliance of STCW requirements of ships (IMO, 2008; USCG, 2007).

During the same time, based around the concept of 'human factor', the interest on ways to improve the effectiveness of ship management practice was also gaining strength. Increasingly, maritime accident investigation reports and discussions at the IMO began to debate on the quality of the management of ships as a measure to improve OHS in the industry. These discussions hinted at introducing a new international regulation standard for a shift towards more systematic OHS management. Such development was also in line

with the land-based industries in the industrially developed nations where around the same time changes to land-based regulations were prompting a more process based approach to OHS management (Frick and Wren, 2000).

1.3.2 Development towards self-regulation

The debate on improving OHS management leading to self-regulating OHS in the maritime sector could be traced back to the early 1980s. In November 1981, the ICS[11], OCIMF[12] and INTERTANKO[13], all located in London, carried out investigations on a number of incidents on tankers involving fire and explosion and produced a report termed 'Tanker Casualty Investigation' (IMCO, 1982). The report pointed out that the incidents resulted due to lack of proficiency of the ship-managers who failed to advise the ships' captain on the necessary safety precautions. The report further pointed out that although the appropriate regulations in the organisations were in place they were not being implemented properly. It recommended a move towards greater self-regulation as it urged ship managers to play a greater role in making their ships safer – which was similar to what was mentioned in some parts of the UK Robens report published a decade earlier (HMSO, 1972: 8-10).

In the following year, the ICS and ISF[14] jointly produced a voluntary guideline: Code of Good Management Practice in Safe Ship Operation, to further promote the importance of management of OHS. This Code aimed at addressing good management practices on all

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[11] ICS (International Chamber of Shipping): ICS membership comprises national ship-owners' associations representing over half of the world's merchant fleet from different trades in the industry including ship-owners and third party ship managers. It is heavily involved in areas such as technical, legal and operational matters affecting merchant ships and has consultative status with various intergovernmental bodies including the IMO.

[12] OCIMF (Oil Company International Maritime Forum) was formed at a meeting in London on 8th April 1970 and was initially the oil industry's response to increasing public awareness of marine pollution particularly by oil, after the "Torrey Canyon" incident. Current membership of OCIMF comprises of 61 companies worldwide.

[13] INTERTANKO (International Association of Independent Tanker Owners) has been the voice of the independent tanker owners since 1970. It provides a forum where the tanker industry meets, as well as being a valuable source of information, opinions and guidance for its members and associate members. Presently, it has over 75% of independent fleet over 10,000 DWT as its member.

[14] ISF (International Shipping Federation) is an employers' organisation dedicated to maritime manpower issues, providing advice and guidance to members. It represents the employers' voice on industrial relations issues, proactively explaining and justifying employers' activities to the media in areas such as international wage rates, training developments or recruitment trends. ISF has consultative status with the ILO and the IMO.

types of ships in the maritime industry and is arguably the first voluntary guideline on OHS management in the global maritime industry. It highlighted that as a result of decreasing OHS surveillance capacity of the States, especially FOC, the burden of safeguarding seafarers' OHS was being passed on to the ship's captain. The main objective of this Code was thus to point out that the ship's captain was not capable of carrying out this responsibility unless they received active involvement of the managers. It pointed out that while a ship's captain is clearly responsible for the direct operation of the ship, the overall responsibility (for OHS) should lie with the managers of the company (IMO, 1982).

The ICS/ISF Code undoubtedly bore similarities with the International Safety Management (ISM) Code, which became a mandatory piece of regulation in the industry nearly 16 years later. Similarities between the two Codes can be found in various places, such as in identifying a person at the shore-based management responsible for the safe operation and environmental protection[15], in making procedures for emergency preparedness and conducting drills, and in the shore management identifying additional training needs for seafarers (IMO, 1982; 2002a).

The focus on OHS management was also initiated from some of the governmental agencies. In 1986, the UK Department of Transport, for instance, brought out a *Merchant Shipping Guidance Notice M.1188* named: Good Ship Management, for ships under the UK registry. It pointed out that good management practice from both ship and shore side could improve OHS. It also advised the company managers to ensure that they maintained a close co-operation with their ships and have an effective 'two-way' communication (HMSO, 1987).

From the accounts of these developments it shows that the industry gradually moved to a process based and self-regulatory approach requiring the managements to play the leading role in managing OHS in their own organisations.

While these developments were taking place, in March 1987 a UK registered passenger ferry the *Herald of Free Enterprise* capsized in the English Channel with the loss of 188 lives. The UK investigation report located serious lapses on the part of the shore-based

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[15] The ISM Code identified the 'responsible person' as the Designated Person Ashore (DPA). He/she is regarded as the direct link between the ship and the highest level of the company management. The responsibilities of the DPA include monitoring the safety and pollution prevention aspects of the operation of each ship and ensuring that adequate resources and shore based support are applied as required.

managers of the organisation. It was a damning report which stated that the 'Board of Directors did not appreciate their responsibility for the safe management of their ships' and highlighted repeated failures on their part in providing adequate support to the captains for safe operation of the fleet. Besides technical advices, the report indicated a serious need for a committed approach from the management for safeguarding safety at sea. It is widely acknowledged in the industry that this incident influenced a move from voluntary compliance with OHS management standards of self-regulation to a mandatory form (HMSO, 1987: 14).

Following the loss of *Herald of Free Enterprise*, the delegates at the IMO continued to debate till the final version of the ISM Code was reached. The delegates actively involved in the deliberation, however, came from a selected set of countries. Out of the 19 delegates, with the exception of Liberia, all came from the OECD group of countries. A great majority of them actually came from the North West Europe and Scandinavia alone. Besides, this group also included representatives from the ICS, ISF and INTERTANKO, all of whom were based in the UK (IMO, 1988g). Notably the countries which had large tonnage under their flags, such as Panama or Bahamas, or the major labour-supply nations, such as Philippines and nations from East Europe were not engaged in actively debating their perspectives in developing the ISM Code.

For between three to four years since the *Herald of Free Enterprise* incident the chronology of intense debate at the IMO involved international lobbying and arguments and counter-arguments between and among these nations (IMO, 1987, 1988a-f, 1989a-b). In February 1988, to facilitate the debate, the IMO got the first draft version of the Code which was prepared by a private consultant company located in London (IMO, 1988b).

The first and subsequent draft versions not only included most of the elements from the voluntary guidelines prepared by ICS/ISF and the UK Merchant Shipping Guidance notes M.1188, but also certain elements which closely resembled features of Quality Management Systems. These incorporated features, such as, the need for companies to conduct safety audits and review the company's operating procedures (IMO, 1988b; 1988g). The archived reports at the IMO library did not document as to what influenced the private consultant company or the delegates to include the elements of quality management

systems in the ISM Code, but increasing popularity of quality management systems in businesses in general may have been the reason for their inclusion (see section 2.3).

1.3.3 Introduction of the ISM Code

After years of debate at the IMO, the final version of the ISM Code was introduced in two phases between 1998 and 2002. It was applicable to all ship-owners operating all sizes of passenger ships and cargo ships of 500GRT and above. In its preamble the Code highlighted that the purpose behind its development was to make managers better respond to the need of those on board ships (IMO, 2002a: 5).

The Code by itself did not add any new technical or operational features but required the shipping companies in the maritime industry to abide by the existing rules and regulations as well as guidelines recommended by various industry stakeholders. It further pointed out that the three most important 'objectives' of the regulation are to:

1. Provide for safe practices in ship operation and a safe working environment;
2. Establish safeguards against all identified risks; and
3. Continuously improve the safety management skills of all employees.

Derived from the purpose and objectives, the ISM Code provided only a broad infrastructure of functional requirements in a 15-page booklet[16]. The individual ship-owners were expected to develop their own policies and procedures based on the functional requirement to suit their operating style and trading pattern of the ships in their fleets. These organisation-specific policies and procedures were commonly known as Safety Management System or SMS (IMO, 2002a).

These 'functional requirements' of the ISM Code required the ship managers to include the following elements in their SMSs:

1. Safety and Environmental Policies;
2. Procedures to ensure safe operation of ships and protection of the environment;
3. Defined level of authority and lines of communication;
4. Procedures for reporting accidents and non-conformities;
5. Procedures to prepare for and respond to emergency situations; and
6. Procedures for internal audit and management reviews.

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[16] A copy of the ISM Code is in Appendix-A.

Besides the managers, the ISM Code also obliged the Flag States to play an important role in overseeing the implementation of regulated self-regulation. It required the States to inspect and certify each shore-based ship-management unit and each ship belonging to the unit before the two, as a team, could start trading. As per the regulation, the State was required to check whether:

- The company's SMS conformed to the functional requirements, and
- The three main objectives of the ISM Code were being met.

The certificate issued to the shore-based management units was known as the *Document of Compliance* while the certificate issued to each ship was known as the *Safety Management Certificate.* The States could issue them for a maximum of five years and were required to conduct intermediate inspections through what is widely known in the industry as external audits[17] (IMO, 2002a).

Thus, the introduction of the ISM Code was a significant shift from the previous command and control model of regulatory approach which was followed in the maritime industry. Although the Flag States continued to remain legally responsible for OHS of seafarers on their ships, through the introduction of the Code it increased the focus on organisations to manage OHS (and prevent pollution from ships). The managers were now required to develop their own SMSs based on the requirements of the ISM Code and manage OHS in their own organisations.

Summary

This chapter provided an account of the OHS concerns of the global maritime industry. Although research in this sector is scanty, the description showed that OHS in the maritime industry is a matter of significant concern. The available literature consistently indicated that in comparison to shore-based industries, the OHS outcome in the maritime industry is considerably worse. The discussion also indicated that the proportion of maritime casualty figures (large scale maritime casualties often involving the whole ship) has improved over the last one hundred years while occupational fatalities at sea still remained a major concern. The review of the literature also portrayed a sombre picture of seafarers'

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[17] Internal Audit is a term used in the maritime industry as the audit conducted by organisations in their own companies, while external audit is regarded as the audit conducted by the Flag States.

occupational health. It showed that in comparison to land-based industries, seafarers were more vulnerable to suffer from ailment related to their occupations. Seafarers' health not only suffered as a consequence of traditional work-related exposures, it was also prone to being affected by life threatening illnesses as well as stress related to their work.

The discussion also illustrated how globalisation weakened the industry's regulatory environment. Since the 1970s an increasing number of ship-owners transferred the registry of their ships to FOC. It resulted in a noticeable vacuum in the implementation and surveillance of OHS standards in the maritime industry. Also, as a consequence of the lack of regulatory control in the industry, seafarers' employment standards and their general labour conditions deteriorated – which further contributed to the concerns on OHS in the industry. In the final section the discussion pointed out how the maritime industry brought in new regulations in response to the challenges thrown at it. In particular it discussed the development of the ISM Code.

For a better appreciation of what influences the implementation of the ISM Code in the maritime industry, the following chapter visits the wider literature drawn on studies conducted in the shore based industries.

Chapter-2: Management of OHS in the maritime industry

Introduction: Paradigm shift in safeguarding OHS

The discussion in Chapter-1 showed how the maritime industry gradually moved towards regulation of Occupational Health and Safety (OHS) management through the introduction of the ISM Code. This development in the maritime industry, however, was not an isolated occurrence. Since the 1970s industries in the economically advanced nations generally underwent a similar change in the approach to OHS regulation. From earlier 'command-and-control' method of regulation, the introduction of regulated self-regulation saw employers of individual organisations assume a greater burden of responsibility for managing OHS (Gunningham and Johnstone, 1999).

The implementation of regulated self-regulation has been critically evaluated in a number of studies which discuss how this shift introduced significant changes in the ways workers are safeguarded from hazards at workplaces. In the following sections the discussion draws on a large body of literature which identifies these changes and points out the main features of the development and operation of regulated self-regulation. The review of the literature is almost entirely based on studies conducted on shore-based industries because of the limited number of studies found in the maritime industry that meet academic rigour. Throughout the review, however, the discussion is located in the context of the implementation of the International Safety Management (ISM) Code. In order to appreciate the practice of the ISM Code, the discussion also draws on anecdotal evidence and commentaries from practitioners in the maritime industry and the maritime press.

The first section of this chapter reviews the literature from the perspective of the roles played by the three key players in regulated self-regulation. It draws on international evidence on how employers, employees and regulators play important roles for its effective implementation. In particular it discusses some of the critical literatures that investigate the strengths and weaknesses of the roles played by each of the three players.

The second section looks into the literature that brings out the underlying social factors affecting the management of OHS. It points out how risk is perceived differently by different groups of people and the importance of employees' participation in risk assessment. It also discusses how social relationships, such as trust and communication

between employers and workers are important elements for the effective management of OHS. The final subsection draws on the literature which points out how economic globalisation leads to workers' job insecurity which, for instance, acts as a major hindrance to effective communication within an organisation.

The discussion then draws on the literature that shows how the implementation of regulated self-regulation introduced various forms of Safety Management Systems (SMSs). It discusses the development of SMSs and looks into how SMSs influence the management of OHS. Following that, it highlights three central elements of SMSs: risk assessment, incident reporting, audit and review and discusses the essential features of these elements and presents the available data on their practices in the maritime industry.

The fourth and final section of this chapter reviews two particular studies (Anderson, 2002[18]; IMO, 2006) which investigated the implementation of the ISM Code. The discussion highlights their main findings and critically analyses the methodologies followed in the two studies.

2.1 Key players: the employers, employees and regulators

Regulated self-regulation, in general, obliges employers to establish a systematic process to manage OHS in their workplaces and requires them to take necessary measures for protecting workers' health and safety. They are in effect required to assume greater responsibility in managing workers' OHS. Besides the role of the employers, it also places significant importance on employees' participation in the management of OHS. Studies show effective participation of employees is critical to the effective implementation of self-regulatory management arrangements (see for example Dawson *et al.*, 1988). Studies also point out that despite the move towards self-regulation within organisations the regulatory bodies play a vital role with regard to providing supporting infrastructures for their self-regulation and also in monitoring its outcome – which is why scholars have called this development 'regulating self-regulation' (see for example Rogowski and Wilthagen, 1984).

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[18] While Anderson (2002) conducted the study for his doctoral dissertation, his findings are reported in this thesis from another publication: Anderson *et al.*, 2003.

2.1.1 The role of employers

A number of studies on the management of OHS identified that its effectiveness largely depended on the role played by the employers. Nytro *et al*. (1998), for example, studying Norwegian industries, revealed that commitment from organisations' top management was the main prerequisite for the effectiveness of regulated self-regulation. The authors pointed out that success of self-regulatory approaches depended significantly on the involvement of the employers' and resources made available by them for the purpose of safeguarding OHS.

Similarly, LaMontagne *et al.* (2004) in their study of 15 manufacturing sites in the United States looked into determining whether a management-focused intervention resulted in greater improvement in OHS programmes compared to minimal intervention controls. The authors found that the most significant underlying factor for effective implementation of SMSs was dependent on sustained management focused intervention.

Discussing the importance of employers' commitment, Frick and Wren (2000) in the review of the literature on effective implementation of SMSs, pointed to the importance of systematically managing OHS. Central to the notion of systematically managing OHS is the requirement for employers to ensure that workplace hazards were being identified and risk was being effectively assessed. The authors argued that commitment from organisations' senior managers thus holds the key to effective implementation of SMSs.

With regard to employers' approaches to OHS management, Bohle and Quinlan (2000), for example, reviewing the literature on the management of OHS illustrated some of the common approaches. These included allocation of funds for effective implementation of SMSs, conducting risk assessment and operationalising workplace health and safety committee with the view that managers and workers discuss OHS concerns which contributes to the OHS decision-making (discussed in more detail later in this chapter). The authors also pointed out that rigorous feedback mechanisms on the operation of organisations' SMSs, such as OHS surveys and audits, were also critical for the effective management of OHS. In the following subsections the discussion looks into some of the critical literatures that identify the main factors affecting employers' commitment in the management of OHS.

Employers' ability and willingness

One of the most widely used references in the debate on effective OHS management is the European Union Framework Directive[19] (see for example Vogel, 1994; Walters and Jensen, 2000). In wake of the shift to regulated self-regulation, the European Union Framework Directive introduced measures to encourage improvements in the safety and health of workers at work places across the European Economic Community (EEC). It provided a set of guidelines which were mostly addressed to the employers within the EEC nations to ensure effective safeguarding of workers' OHS. The directive placed general obligation on employers to safeguard their employees by avoiding workplace risks or evaluating the risks which cannot be avoided and combating them at source (EEC, 1989).

Despite the widely acknowledged role of employers in safeguarding workers' OHS, studies have pointed out that in practice much depends on individual employer's ability and willingness to manage OHS in their organisations. An Australian study on small and medium enterprises (SME) conducted by Mayhew (1997), for instance, showed that the most consistent concern with the SME employers was their lack of knowledge and expertise in managing OHS. Walters's (2001) work on SME in several European countries also reinforced these findings. In both works the authors found out that the poor standards of OHS in SME were largely due to the managers' limited competency, their inexperience and lack of training, and not so much due to the consequence of the nature of hazards at work.

Gunningham's (1998a) work on the importance of different regulatory approaches for different types of employers identified such groups of employers as 'the incompetent'. The author pointed out that while a significant section of the incompetents were the employers of SME, they also operated larger organisations. Such employers in general possessed limited understanding of the legislations on OHS, failed to turn to proper OHS advice and were primarily focused on economic survival.

The study (Gunningham, 1998a) also identified that besides the lack of ability, a section of the employers also lacked 'willingness' to manage OHS in their organisations effectively. According to the author, these employers consider safeguarding OHS primarily as cost

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19 The European Council Directive on self-regulation of OHS is referred to as 89/391/EEC dated 12 June 1989.

factors and ignore the benefit of effective implementation of the management of OHS in their organisations. Their focus on short-term economic gain prevents them from identifying the connection between investing in safety and success of their businesses. Such employers, thus, for example, tend to invest no more than the minimum, provide no additional training to their workers and remain driven largely by regulator's punitive measures.

The argument on cost benefit analysis of OHS investment has been highlighted by a number of authors. One popular slogan – safety pays – used by various entities including State agencies, such as Health and Safety Executive in the UK (HSE, 1997), urges employers to invest in safety for the purpose of promoting business productivity, profit and reputation. It argues that lack of workplace safety may lead to employees' injury or cause damage to property. Such incidents not only reduce the potential for bringing in revenues but also increase the cost of running businesses due to for instance increased insurance premiums and delays in production.

While it appears as a rigorous justification to promote investment in safeguarding OHS, studies show that this argument is not convincing enough for a significant section of the employers. Authors such as Nichols and Armstrong (1973), Geis (1973) and Codrington and Henley (1981) and more recently Cutler and James (1996), Frick (1997) and Walters (2002) have pointed out that the benefits from investing in OHS do not transpire in a short period of time. Such investments are typically aimed at investing in the organisations' infrastructure, bringing in resource-intensive technology or providing education and training to the workers. The benefits of all such investments therefore are generally reaped in the long-term. Thus employers who cannot see beyond short-term profit making find it hard to take this route. The authors pointed out that such an approach is also influenced by the employer's reliance on investors and shareholders in the company to whom short-term profit-making through the company's businesses remains one of their main objectives. It, as Gunningham (1999: 202, 210) identified as 'employers' bounded rationality', restricts them to calculating a crude cost benefit analysis based on immediate outcome. In other words, it prevents the employers from appreciating the bigger picture. Authors such as Grayson and Goddard (1975) reinforced this argument. They pointed out that it becomes even harder to convince the unwilling employers to invest in OHS because while the employers themselves bear the cost of investing in safeguarding OHS, the loss, resulting

from industrial injuries, are generally shared by a number of players, such as the insurance companies, the victim's families and the State.

Commentators in the maritime press have also expressed similar concerns. They have indicated that despite the implementation of the ISM Code, one major concern in this global industry is the lack of employer's commitment towards investing in safeguarding workers' OHS. One article, for example, pointed out that besides the leading 20% of the ship-owners the remaining 80% largely regarded the ISM Code merely as a license to conduct their businesses. These employers failed to look beyond the short-term economic gains and thus did not see the purpose of investing in OHS any more than the absolute minimum (Lloyds List, 2003b).

Employers' obligation to provide a safe working environment

A number of studies also critically assessed employers' role by scrutinising the practice of risk assessment. The regulations governing the management of OHS, such as, Norway's Internal Control regulation and the European Economic Community Directive 89/391, categorically stress the importance of employers in safeguarding the working environment. Article-6 of the EU Directive, for example, requires employers to follow the general principle of prevention by avoiding risk, evaluating risk and combating risk at source before giving collective protective measures to workers and evaluating risk for the health and safety of workers (EEC, 1989). This approach to regulating self-regulation is widely known as the safe-place approach. Despite the explicit legal requirements of following a safe-place approach, studies show a wide variation in the ways employers implement it in practice (see for example Karageorgiou *et al.*'s (2000) study in four EU States).

A large number of studies have also shown the benefits of following a safe-place approach. Gallagher's (2000) empirical work on 20 Australian companies, for example, revealed that employers who focused on providing safe working environments showed better standards of OHS. It highlighted how the employers' approach to risk assessment made a considerable difference in the outcome of OHS. Comparing her sample of 20 companies to the industry-wide audit outcome (SafeMAP[20]), the author found that employers who prioritised providing safe and healthy working environments experienced above average

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[20] SafeMAP: Safety Management Achievement Program is an audit tool for independently reviewing OHS in industries in Australia.

OHS performance. In contrast, employers who largely followed a top-down style of management prioritising on fixing the employees' behaviour, i.e. followed a safe-person approach, performed comparatively poorly.

The weaknesses of implementing requirements on health and safety management predominantly from the safe-person standpoint have been critically assessed by a number of authors. Bohle and Quinlan (2000: 506), for example, argued that in organisations in which employers remain preoccupied with modifying employees' behaviour or controlling parameters related to the human qualities for improving workplace OHS meet with 'a dead-end alley'. They pointed out that in such circumstances the most common approach taken by employers is to train their employees, motivate them and generally take a narrow focus on improving employees' rule-following behaviour, and cautioned that employers who subscribe to such systems find it difficult to raise their standards of OHS.

Several other studies have also reiterated these findings. They have revealed how employers taking this approach place significant emphasis on employees' behaviour and attitude (Fahlbruch and Wilpert, 1999), take disproportionate interest in employees' training and strict supervision (Wokutch and VanSandt, 2000), and focus heavily on employees' medical screening (Bohle and Quinlan, 2000).

Such 'fix-the-worker' approach integrates well with the wider notion that highlights how the role of human element is an important building block in organisational operations. Many studies show that, although, there is a degree of validity on how human input plays a pivotal role in safeguarding workplaces, employers who are biased towards making it their major focus undermine the significance of regulated self-regulation. Authors, such as Denton (1982), Hofmann and Stertzer (1996), Dotson (1996), Krause (1997), Farrington-Darby *et al.* (2005) argued that such an approach is considerably myopic as it generally overlooks the employers' primary obligation to provide a safe working environment. Arguing more critically, authors, such as Hale and Hale (1970) and, more recently, Nichols (1997), pointed out that such an approach takes the attention away from the workplace hazards and places the emphasis on identifying the weaknesses in the individual workers. As a consequence, it individualises the workforce and simply reinforces the employers' control over their workers.

Studies have also shown that using a safe-person approach encourages employers to locate faults with the individual workers. It helps in benchmarking the 'accident safe workers' as the desired type. Research by authors, such as Culvenor (1996), pointed out that managers with such a frame of mind tend to focus on the last link in the causal chain of incidents – which, in most cases, are the workers on the production line or the operators of factory machineries. In cases of incident investigations, locating shortcomings of the individuals thus becomes the focal point undermining other underlying causes of incidents. Moreover, studies have also shown that as employers operate free of injuries and incidents for a great majority of the operating period, the employers tend to develop confidence in the success of their operating systems. Thus, when an accident does occur, the *careless and the accident prone* workers are generally identified as the cause (Kinnersley, 1973; Mathews, 1986).

The one particular model that has arguably taken this idea to the extreme is the *DuPont* approach, which almost entirely focuses on employees taking on 'good safety habits' and believes that workers' behaviour should be measured and transformed for improving OHS (DuPont, 2007). However, such model is widely criticised in a large body of academic literature which points to the weaknesses and myopic nature of this approach. Wokutch and VanSandt (2000), for example, highlighted how the *DuPont* approach merely provides the managers with additional managerial tools to target only what is visible on the surface – ignoring the importance of providing a safe workplace or paying no attention to the underlying social and economic factors such as employment practices, downsizing and production pressures that affect the day-to-day life of the workers.

In the maritime industry the role of the employers in safeguarding OHS requires a careful examination. The ISM Code, which regulates self-regulation in the industry, lays down a series of responsibilities for the employers, such as establishing company's safety policy (ISM Code section: 2.1), ensuring that all employees are duly qualified (ISM Code section: 6.2) and providing measures to deal with in emergency situations (ISM Code section 8.3). While the ISM Code identifies these operational responsibilities of the managers (employers), it does not mention the employers' obligation towards conducting risk assessment nor does it mention how and who should conduct it. The Code only places the obligation on the managers to safeguard seafarers from hazards – implying that they should safeguard seafarers from hazards that have already been identified. Equally the Code,

especially in section 6, gives considerable attention to the abilities of seafarers to adhere to the companies' procedure. Among other features, the Code mentions the need for seafarers' training, motivation and medical fitness but makes no attempt to highlight how seafarers should participate in managing OHS in their workplaces. By studying the ISM Code in the light of the above discussion, it may be argued that the focus of the Code is considerably skewed towards the 'safe-person approach'.

Articles from the maritime press also indicate that in practice too ship-managers largely do not concentrate on risk-based management and place considerable focus on *rectifying* seafarers' behaviour. They highlight how ship-managers predominantly tend to victimise individual seafarers by blaming them for most mishaps that take place on ships. The ship-managers frequently point to seafarers' negligence as the most common cause. By taking examples of the practice of incident reporting mechanism of the operation of SMSs, a number of press articles have shown that managers place a disproportionate level of focus on blaming individual seafarers which discourages them from reporting incidents to their managers (see for example, Lloyds List, 2004a, 2007a).

Employers' commitment: the importance of audit

Moving on, the importance of the use of audit systems by employers to assess the effectiveness of health and safety management systems is also widely acknowledged in the literature. The International Labour Organisation (ILO) guidelines on occupational safety and health management (ILO, 2001b), for example, urge employers to make use of the audit system to assess the effectiveness of the company's SMSs. It points out that by using the audit system effectively, employers should check for the adequacy of the management arrangements in relation to the risks encountered in their organisations.

A number of studies have also critically investigated the ways employers used audit mechanisms to assess the effectiveness of SMSs. Hopkins' (2000) case study on the explosion at the Esso Oil plant at *Longford* in Australia – where two workers lost their lives and many more were injured – serves as an example. The author showed that even though the employer had a SMS in place and conducted audits at regular intervals, Esso failed to identify any weakness in the system. In fact, an audit conducted a few months prior to the accident could not detect the symptoms which subsequently contributed to the cause of the explosion. The author pointed out that the audit system used at the Esso plant failed to

reveal the adequacy and the factors affecting the implementation of the organisation's risk assessment procedures. It merely inquired the presence of organisation's SMS and the functioning of management mechanisms. It conveyed only positive messages to the top management of the organisation and failed to communicate its actual effectiveness.

Power (1997) and Parker (2003) in their studies also provided similar arguments. Although their research were based on audits conducted by external entities (regulatory bodies or quality auditing organisations, such as the DNV[21]) they identified the limitations in the use of audit in OHS management generally. The well known critical work of Power (1997) brought to light the current societies' disproportionate dependence on auditing. The author pointed out that the commonly used audit systems through their certification mechanism only measure employees' adherence to SMSs. The author showed that auditors rarely look into the validity of the different elements of SMSs used in the organisations. Instead, they merely ensure that the existing SMSs are in place and workers are adhering to the details of the systems. Such mechanism, the authors cautioned, provided a legitimate tool for reinforcing managerial control over employees.

The views from the maritime industry provide a similar picture on the practice of audit. They cast doubt on the adequacy of the requirements laid out in the Code and also on whether the ship-managers fully realise the potential of the audit mechanism. They highlight, for example, how companies use audits solely as fault-finding exercise. One article (Lloyds List, 2003b), for example, pointed out that auditors use checklists mechanically as their audits reveal very little with regard to how well the SMS is actually implemented. The report argued that such auditing practice was crude as it merely satisfied the procedural formality of the audit and thus turned it into a symbolic exercise.

Frick *et al.* (2000) after reviewing the debate on the practice of OHS management developed three possible hypotheses with regard to the outcome of regulated self-regulation: *success hypothesis*, *paper-tiger hypothesis* and *sham hypothesis*. The authors pointed out that the difference in the outcome depended primarily on the employers' commitment to the implementation of systematic approaches to OHS management. They argued that in organisations where top managements are committed to safeguarding OHS by focusing on detecting, abating and preventing workplace hazards, and engage workers

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[21] DNV: Det Norske Veritas is a Norwegian based accreditation and certification body for various industrial sectors.

in the decision making process in the management of OHS are likely to meet with the success hypothesis.

Whereas, in Frick *et al*.'s (2000) analysis, organisations where employers use such approaches as a bureaucratic mechanism for enforcing a top-down management achieve little in safeguarding workers' OHS and meet with the 'paper-tiger' hypothesis. In such cases, employers pay considerable focus on producing convincing documentation to *demonstrate* that their organisations are complying with the requirements for OHS management but fail to implement the prerequisites for effective implementation. The authors pointed out that very often in such cases the focus gets skewed towards fixing the workers' behaviour and making the individual workers *more suitable* for the purpose of the job.

Frick *et al*. (2000) also pointed to a third group of employers whose way of managing OHS transpired as a 'sham'. The authors argued that such employers not only follow tokenistic paper compliance but do so merely to obtain license to operate and hide behind the facade of paperwork. These employers pay little attention to providing safe working environments and generally misuse the freedom of self-regulation for the purpose of enhancing their business objectives.

Thus, while there is a scarcity of academic research on the practice of operating OHS management systems in the maritime industry, evidence generally indicates weaknesses in commitment from employers. They suggest that employers do not prioritise providing safe and healthy working environments for the seafarers. Instead, they place considerable focus on managing seafarers' behaviour and related attributes. However what emerged from the discussion in this section on studies based on shore-based industries clearly pointed out that commitment from employers was a prerequisite for the effective management of OHS. Therefore the employers' role in the implementation of the ISM Code in the maritime industry appears as an area of concern. In the current study therefore it would be among the main objectives to ascertain the role played by the managers in the maritime industry in implementing the ISM Code and the factors that influence their approach and level of commitment.

2.1.2 The role of employees

A wide body of literature points out that besides the role of the employers, employees' participation is essential in the effective implementation of regulated self-regulation. Drawing on the Robens report that ushered in regulated self-regulation in the UK and influenced its development in several other nations, Dawson *et al.* (1988), for example, argued that the new model presupposes employees' contribution in the decision making process on the management of OHS. Based on empirical work on four different industries, the authors argued that employees' participation was the essential 'corollary' that supported the employers' obligation to self-regulation.

The need for effective employee participation is also explicitly mentioned in several guidelines and statutes. The EU Framework Directive 89/391 (article: 11), for example, requires employers to consult with workers and/or their representatives on OHS matters. It states that 'employers shall consult with workers and/or their representatives and allow them to take part in discussions on all questions relating to safety and health at work'. It 'presupposes consultation of workers, the right of workers and/or their representatives to make proposals, and balanced participation in accordance with national laws and/or practices' (EEC, 1989).

Research points to multiple benefits of employee participation in the implementation of systematic OHS management. Authors such as Walters and Frick (2000) have argued that employee participation can potentially contribute at two levels. Firstly, employees can play a major role in spotting hazards at workplaces and sharing their practical knowledge on ways to control them. Secondly, employees' participation can generally promote the tenets of workplace democracy. It gives them the opportunity to contribute to the organisations' decision-making process on OHS which also gives them an ownership of the decisions taken in managing it.

Several empirical studies reveal significant benefits of employee participation at these two levels. Shannon *et al.* (1996, 1997) and Shannon (1998), for example, in their research in Canadian workplaces demonstrated that employee participation in OHS decision making led to better standards of OHS. Their research pointed to the consistency between implementation of safety committee meetings, empowerment of the workforce and lower injury and claims rates. In the same way researchers analysing the British Workplace

Industrial Relation Survey report of 1990 found that workplaces where managers safeguarded OHS without employee consultation had comparatively higher rates of injury (Reilly *et al.*, 1995; Nichols *et al.*, 1995). These studies were supported by a number of other authors (see for example Dedobbeleer *et al.,* 1990; Tucker, 1992; Walters and Gourlay, 1990; Shaw and Turner, 2003) whose work also revealed that workers' participation was a prerequisite for effective implementation of regulated self-regulation. Authors, such as Baugher (2003), who carried out research on 26 shop-floor workers at a car manufacturing plant in the USA, similarly found that the benefit of workers' participation was realised when workers were involved in the organisations' decision making process and not when they were simply indoctrinated in the competitive corporate aim.

Similarly, other scholars, such as Biggins *et al*. (1991) and Warren-Longford *et al*. (1993) have shown that a representative form of worker participation in Australian industries helped in the day-to-day safety matters on the shop floor. The trade unions supported by fulltime health and safety officers helped employees in discussing issues on OHS with the organisations' managers. Also, Fuller and Suruda (2000) studying hydrogen sulphide fatalities in several workplaces in the USA found that between 1984 and 1994 around 83% of the fatalities took place in workplaces where worker participation was largely ineffective due to the lack of trade unions. More recently, Walters and Nichols (2007) drawing on ten case studies from the UK construction and chemical industries have demonstrated statistically significant improvement in injury rates was achieved with trade union involvement in workplace arrangements for consultation on OHS management.

Role of Trade Unions

The significance of trade unions in effective employee participation is widely acknowledged in the industrial relations literature. Bohle and Quinlan (2000), for example, reviewing a wide body of literature on the management of OHS pointed to the importance of a set of preconditions necessary to get workers to communicate and contribute in the management of OHS. Drawing on studies from different parts of the world, the authors identified that the bottom line for effective worker participation was an organised workforce who should be able to present their views to the managers in a representative manner. Such representative form of participation facilitates effective risk communication, dialogue between workers and managers, and resolves disagreement between them. The

authors also showed that (2000: 438-442) historically trade unions played a crucial role in improving labour conditions. They identified seven main methods by which trade unions assisted employees in safeguarding OHS. These included bargaining with employers on providing a safer and healthier working environment, bringing in changes to the legislation on OHS, providing information and logistical assistance to workers on OHS and training and educating workers and especially for the worker-representatives for the issues affecting OHS.

Expanding on the wide scope of trade unions' influence on the management of OHS, Walters (1996), in his study where he used several empirical examples from UK, argued that a strong presence of trade unions was a prerequisite in facilitating effective representative participation. It also showed that the employers need to facilitate the functioning of the workers' representatives such that workers could make effective contribution in the management of OHS and communication of risk. The study showed that even with the presence of the unions in workers' participation, employers' commitment was essential because without such commitment workers' participation was likely to remain a struggle and largely unrealised. Underlying all these, however, was the need for a strong legislative provision for promoting and ensuring the effectiveness of representative worker participation. The study pointed out that legislative steer sets out the specific requirements of recognising the roles of worker or union representation and provides the necessary monitoring provision for its effectiveness.

Discussing the benefits of trade unions, Walters (2006) pointed to the three different levels at which trade unions play a vital role in facilitating workers' participation. In his study on worker representation in the UK industries, the author's work drew on a large body of UK as well as international evidence (such as Bryce and Manga's (1985) work in the Canadian industries). He pointed out how in most industrial sectors trade unions play a significant role in addressing the issues of improving general labour conditions and OHS standards by participating in the development of the regulatory infrastructure. The author highlighted the way in which trade unions help in lobbying and representing workers' interests in the negotiation of OHS and the overall labour conditions within national and international legislative bodies, such as at the International Labour Organisation.

Walters (2006) also pointed out that at a second level the role of trade unions can also be understood better as a promoter of collectivism among the workforce. Trade unions help present the workers' views to the management and thus play a vital role by engaging in collective bargaining with the employers in which issues such as general labour conditions including minimum wages, maximum working hours, staffing level and job security are addressed better. Improvement to OHS forms a part of the overall labour conditions but may also be the focus of collective bargaining. In making this argument, the author also referred to historical evidence of industrial relations with regard to how trade unions played significant roles in redressing the imbalance between capital and labour.

At a third level, Walters (2006) also showed how trade unions play an important role in negotiating working conditions through local intervention at the shop-floor. He pointed out how the presence of trade unions supports workers in learning about hazards, in communicating risk and in contributing to the management of OHS more generally. Such issues were well documented in several other studies. Nichols *et al.* (2007), for example, re-analysed the data set from the 1995 UK Workplace Industrial Relations Survey (WIRS) and found that organisations in which trade unions played an important role at the shop floor level in providing support to workers' representation performed better on OHS than those organisations where there was either no worker representation or worker representation was without the support from the union. The matter was also evident from research conducted in other parts of the world. In Canada, for example, Lewchuk *et al.* (1996) studied the impacts of the introduction of new legislation and the joint health and safety committees. There the authors found that the establishments with joint health and safety committees with the support from trade unions at the shop-floor level suffered less number of cases of lost-time injuries than in those establishments where there was either no such committee or where such committees were largely ineffective. The study showed that with effective union participation there is increased likelihood for workers to communicate risk and present their views and concerns to the managers, and have an effective support for negotiating and meeting their demands.

However, the trade union organisation in the maritime industry is different to land-based models because of the nature of its workplace among other features. Therefore conclusions drawn from land-based studies are not so easily applied in the maritime context.

The different types of employee participation

Studies on self-regulation also point to the intricacies associated with the ways the term employee participation is used in the literature and practice. Tucker's (1992) work on the practice of OHS regulation in Sweden, for example, pointed out that, in the traditional sense, employee-participation is representative in nature following a bottom-up procedure. This typically includes a well-organised workforce choosing their representatives for presenting their OHS concerns to their employers. Representative participation of employees has an industrial relations origin emanating from practices such as collective bargaining agreements, elected trade union representatives and corresponding legislative requirements supporting the operation of these mechanisms. In effect, this form of participation is designed to give employees an autonomous influence on their employers for the purpose of their labour conditions and OHS. The need for autonomous influence originates out of the conflict of interest theory which highlights that employers aiming for economic success might do so at the expense of employees' OHS (Nichols, 1980; Kochan, 1988).

In fact, research from the perspective of industrial relations shows that employees' representative participation not only requires an organised workforce but also presupposes an active support from the employers (pointed out in the previous section). Several empirical studies show that workers' participation yields positive results in safeguarding OHS in organisations where employers incorporate employees' views in the OHS decision making process. Mechanisms to incorporate such views typically include joint health and safety committees which provide the opportunity for workers to discuss their concerns and views, and provide suggestions to their employers. Walters *et al.*'s (2005: 114-117) comparative analysis of five chemical and another five construction companies pointed out that organisations in which senior managers showed commitment in involving workers in the representation and consultation on labour conditions and OHS showed better standards of OHS. Such arrangements encouraged trade unions and health and safety representatives to function effectively which promoted a suitable atmosphere for employees to build representative form of employee participation in organisations.

However, 'employee participation' also has other meanings. Walters and Frick (2000: 54-57) in the review of the literature on OHS management systems, discussed how the same term can also have different origins and motives. The authors pointed out that a 'managerial view' of the term can be used simply to attune the workforce to their

objectives. This form of participation – identified as direct participation – is largely driven by the employers and bears little resemblance to the bottom up approach discussed above.

Critical discussions on the practice of direct participation shows the persuasive powers of the employers which parallels more closely with quality management system type of business objectives (Marchington, 1995). Studies show that a section of employers tend to bring in such form of employee participation by using business jargons such as 'workplace autonomy', 'team working' and 'employee empowerment' (see Summers, 2004; Sinclair, 1992: 621-622; Walton, 1985). However, by critically evaluating the impacts of direct participation, a number of authors have pointed out that in effect direct participation coerces employees to put in more intense work often requiring them to work longer hours and assume greater responsibility at work (sometimes) against incentives such as increase in pay or promotion (Marchington *et al.*, 1994). In other words, this form of participation promotes the business aim of increased production and profit. Counter to the popular claim, direct participation does not increase workplace autonomy – it only makes employers' control over the employees more effective (Barker, 1993).

With regard to the direct form of worker participation and decision making, Cunningham *et al*. (1996) and Hyman (2006) also revealed that whatever little employee empowerment takes place as a result of this form of participation, it occurs at the lower level producing no impact on organisational decision making.

In fact, McNabb and Whitfield (1999: 128-134) in their study highlighted that representative participation and the direct form of participation were implemented in fundamentally different types of organisations. They showed that direct participation was common in high employer-controlled establishments which were espoused by comparatively smaller and newer types of organisations. While, representative participations were largely associated with bigger and more stable firms which showed signs of employee involvement in OHS decision making process.

With regard to the practice of employee participation in the maritime industry, however, the available data and views in the industry paint a sombre picture. Academic research conducted in the maritime industry pointed to the lack of trade union support in the implementation of OHS. Kahveci and Nichols (2006), in their study on working conditions

on car carriers[22], highlighted the fact that, although the International Transport Workers' Federation (ITF) provided union support to the seafarers at the global level, the role of trade unions at the organisational or shipboard levels was considerably weak. By interviewing seafarers on car carriers the authors found that the seafarers despite being members of trade union organisation in their home countries did not benefit from them in safeguarding OHS. They played no role either at the employer level or at the shipboard level. In particular the authors pointed out that there was no practice on bargaining with employers on providing a safer and healthier working environment. Ethnographic study by Sampson and Thomas (2003b) similarly noted an absence of trade unions' influence onboard ships. The authors in fact revealed that in practice the seafarers were systematically discouraged from being associated with any form of union activity.

Moreover, the views from the practitioners in the maritime industry indicate that the practice in the industry is largely focused on the need for seafarers' motivation and in their training and education. Hawkins (2001: 99) for example, discussing different ways of improving the safety standard in the maritime industry in the Asia Pacific region, highlighted why greater focus should be paid on seafarers' training. The author, for instance, argued that 'good performance is a function of good training and good working conditions' and that 'training provides the requisite knowledge and skills'. Such advises are common in the practitioners' literature in the maritime industry. While these views are arguably important, they, however, ignore the importance of seafarers' participation or the importance of trade union support or the significance of representative form of employee participation in the maritime industry.

Furthermore, contrary to what the studies in the land-based industries and other guidelines show (such as the European Union Framework Directive or the occupational health and safety guideline developed by the ILO), the ISM Code does not give any importance to seafarers in assessing risk. By going through the text of the Code it appears that it limits the role of seafarers to adhering to the procedural requirement set by the employers and merely requires them to comply with them. Also, the Code does not state the need for involving seafarers in the organisations' OHS decision making process. It, for instance, makes no reference to the importance of involving seafarers in the risk assessment process, nor does it make any reference to features such as safety representative or safety committees.

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[22] Car Carrier: These are ships which transport vehicles typically four wheel passenger cars from one port to another.

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The lack of seafarers' input in the organisations' risk assessment is also reflected by the popularity of the use of readymade off-the-shelf SMSs in the maritime industry. On several occasions the industry press has pointed out that it is common to find ship-owners buying readily available generic SMSs for immediate implementation. Such SMSs are generally produced by commercial entities which produce standard ship-operating policies and procedures along with non-specific checklists and forms that fit a wide variety of maritime organisations and trades. They do not take into account the specific requirements of the organisations or the ships or acknowledge the importance of the seafarers' views in the decision making process of the management of OHS (Lloyds List, 1998a, 2002a, 2004b).

Thus, from these accounts it appears that in the maritime industry there is a disproportionate level of interest in developing seafarers' competence, training and motivation. In contrast to what is widely acknowledged in the research literature as one of the prerequisites, the maritime industry places very little focus on the benefits of representative form of seafarers' participation. Moreover, there is also evidence that the industry suffers from lack of trade union support at the workplace level and at the level of bargaining with employers. As a result, seafarers also lack the infrastructure that supports workers' representative form of participation. These descriptions on the whole indicate that seafarers have limited opportunity to participate in the management of OHS – which suggests that it is an area of particular concern. One of the major emphases in this research, therefore, will be to identify the practice of seafarers' participation in the operation of the ISM Code and investigate the influences that determine their participation.

2.1.3 The role of regulators: regulating self-regulation

Research on regulation also points out that despite the move away from State controlled prescriptive approaches to safeguarding OHS, the States continue to play an important role in the effective implementation of process based approaches to self-regulation. In this discussion the regulators' role is pointed out as both to carry out effective surveillance of the outcome of such implementation and also to provide the regulatory support to the implementation process of systematic OHS management.

With regard to the surveillance of OHS standards, studies have identified the importance of the role played by the States to oversee the implementation process of the management of

OHS. Gunningham (1999), for example, in his discussion on management systems and OHS regulations, highlighted that complete reliance for the management of OHS on employers is not appropriate for any type of organisation. The author noted that it is ideally suited for firms who are capable to provide the necessary support for employees' OHS and also feel morally responsible to do so. However, employers who are unwilling to or incapable of protecting their workers from workplace hazards in particular require State surveillance.

Expanding on the role of State surveillance, Ayres and Braithwaite (1992) advocated that States should settle for the right mixture between self-regulation and governmental regulation, and that the government inspectors should have a range of sanctions at their disposal and should be prepared to use them in a 'responsive' way. They pointed out that government inspectors needed to deal with each organisation on its own merit. The inspectors should be prepared to use the appropriate sanction ranging from appealing to the social responsibility of employers to suspending trade license (see figure below). This way, self-regulation as well as State-regulation could exist side by side.
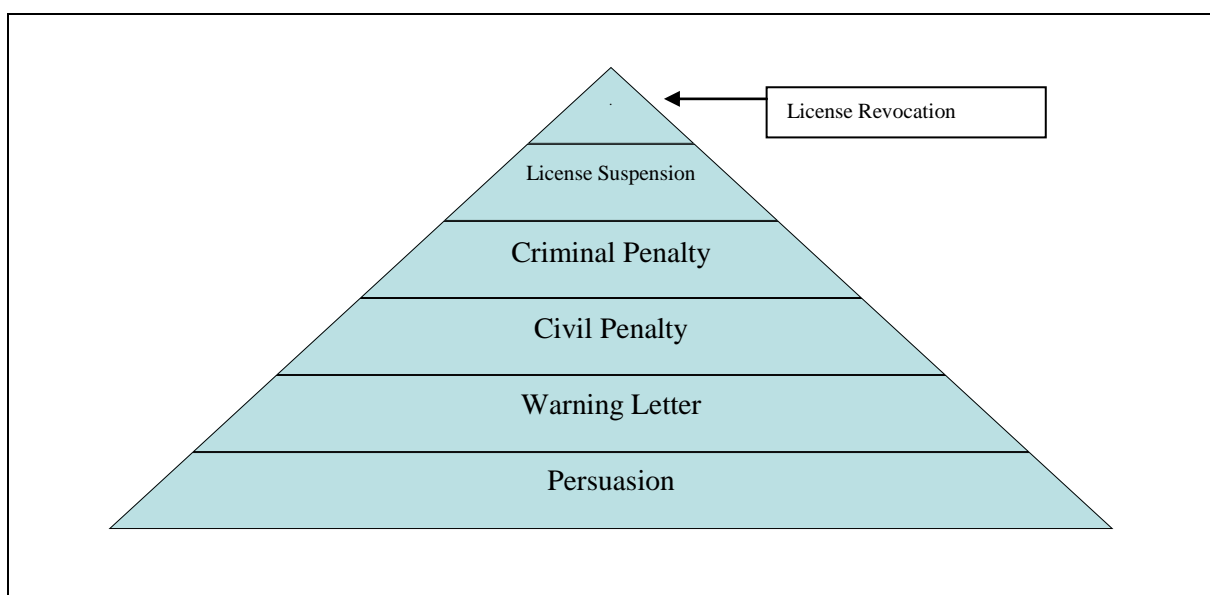
Figure 6: Pyramid strategy of responsive regulation
Source: Ayres and Braithwaite (1992).

The state of regulatory influence in the maritime industry has already been discussed in the previous chapter (section 1.2). It highlighted how FOC, which gained prominence as a consequence of increased activities of free market capitalism, had relatively weak regulatory infrastructures. The discussion also showed how increased flagging out resulted

in a competitive environment among the regulators which further weakened the role of States. As a consequence of these developments the regulatory implementation and surveillance mechanisms in the maritime industry were significantly undermined.

The discussion also highlighted how in an effort to revive the regulatory surveillance mechanism the maritime industry brought in the Port State Control (PSC) inspection and control regulation in which States were given the right to inspect foreign ships calling their ports (see section 1.3.1). However, authors such as DeSombre (2006), Boisson (1999) and Ozcayir (2001) studying the effectiveness of the PSC inspection argued that PSC inspection was a special case of 'State' surveillance but did not have the same potential as compared to what the Flag States was meant to deliver. They argued that PSC inspection was more akin to policing at sea and not an alternative to State regulatory surveillance (Knapp, 2004).

Critically looking at the role of PSC inspections, Ozcayir (2001), for example, pointed out that PSC did not inspect all ships every time they called their ports. Countries or a specific group of countries, such as countries within the Paris Memorandum of Understanding (MoU)[23], use their own protocol to target ships for inspection where approximately 25% of the ships calling the ports get inspected (Lloyds List, 1994c; Paris MoU, 2008). Also, though PSC inspections are acknowledged as valuable contributors to OHS surveillance, they are also widely criticised as a reflection of inspectors' subjectiveness (Bloor *et al.*, 2004). The criticisms point out that the outcomes depend on the inspectors' interpretation and professional judgement on what constitutes a deficiency and which deficiencies are serious enough to warrant ships' detentions (Ozcayir, 2001; Lloyds List, 1996; Nieuwpoort and Meijnders, 1998).

The underlying factor for the effectiveness of the PSC inspection mechanism, however, is located in its public nature. As pointed out in section 1.3.1 the results of PSC inspections are made available on a public website named 'www.euqasis.org' (Equasis, 2007) and also on websites of some of the individual countries or organisations of groups of countries conducting the inspection, such as the 'Paris MoU' (2008). With the intention to make the OHS standards of the ships (and its management companies) accessible to the public, these

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[23] Paris MoU: The Paris MOU consists of 27 participating maritime Administrations and covers the waters of the European coastal States and the North Atlantic basin from North America to Europe, including UK, France, Germany and Canada.

websites provide details of the results of PSC inspection. The information on these websites includes the identities of the ship, the shore-based management unit of the ship and the ship-owner. This free to access 'naming and shaming' mechanism is widely acknowledged in the maritime industry as one of the strengths of the operation of PSC Inspections (Lloyds List, 2001; 2003c).

The second role of the State is to implement statutory provisions that support the implementation of the management of safety. In the previous section the discussion already identified how States play an important role, for example, in worker participation. Several authors such as Genn (1993), Wilthagen (1994), Hutter (1997) and Nichols (1997) have also identified how regulatory provisions which give powers to trade unions is important for workers' participation. The authors in their respective studies argued that it is those organisations in which employers who do not appreciate the views of their employees in the decision-making process of the management of OHS need the necessary regulatory drive most.

Regulating through Safety Case approach

A particular form of regulatory involvement in the regulation of self-regulation can be found in what is commonly known as the Safety Case Approach. In this, employers are first required to submit their proposed SMSs to the State regulators for approval. Only after the regulators are satisfied with the employers' arrangements for safeguarding workers from hazards do they provide the necessary accreditation. Gunningham (2007) called this strategy a *meta-regulation* and pointed out that although it brings the regulators back in the frame it leaves the managements to draw up their own self-regulating procedures. Subsequently, the regulators are then required to check that the organisations are following their own SMSs and also whether the ultimate objectives of self-regulation are being met.

Parker (2002) and Wilkinson (2002) are among those who are supportive of this mechanism. In their studies, the authors critically evaluated the impact of Safety Case Approach and argued that such mechanisms support employers to self-evaluate the effectiveness of SMSs. It has the potential to improve employers' understanding of workplace hazards. Moreover, it also enhances the knowledge of the technical and managerial controls required to self-regulate while providing the opportunity for a better oversight by the State regulator.

The maritime industry also operates a particular version of the Safety Case Approach. As pointed out in section 1.3.3, the ISM Code requires the ship-managers to prepare and present the organisations' SMSs to the State regulators for initial verification. Only on passing the State audit and acquiring the requisite certificate can the shore-management and the ship start trading as a team. This mechanism also requires States to regularly verify the effectiveness of the implementation through regular State audits – commonly known in the industry as external audits.

Views from the industry commentators, however, remind the readers of the general weakness in the State regulation in the maritime industry. They show that lack of effectiveness in the State regulatory system is also reflected in the way States audit and certify organisations' SMSs. The maritime press articles have repeatedly pointed out that although the ISM Code certification mechanism was meant to drive out the unsafe ship-operators from business, most of such ship-owners are still present in the business. They showed that during the initial phasing in of the ISM Code and also at the times of subsequent verifications, the States continued to certify ships and management units despite 'obvious weaknesses' in the operating practices of a noticeable section of the maritime industry (Lloyds List, 1998b; 2000; 2003b).

Regulatory pluralism

In certain industrial sectors players other than the States have also contributed in regulatory functions. They usually include different industry stakeholders, such as the head of supply chains. Studies, such as by Teubner (1994), Furger, (1997) and Gunningham (1998a, 1998b, 1999) pointed to the benefits of industry-stakeholders playing crucial complimentary roles in regulating the standards of OHS. Gunningham (1999), for instance, showed how third-party oversight contributed in regulating through industry-based programmes, such as the 'Responsible Care' found in the chemical industries. Using this particular programme as an example, the author argued that the head of the supply-chain can complement the State regulations by voluntarily engaging in managing OHS. They do so typically by demanding high safety standards from others lower down in the supply chain and rewarding them through economic incentives in return.

Regulatory pluralism is well established in the maritime industry. The industry practitioners and maritime press in general acknowledge that a number of entities also make positive contributions in regulating the industry. Arguably, the three most prominent players who complement State regulation are: International Association of Classification Societies (IACS), Protection and Indemnity (P&I) Club and commercial hirers of ships, such as the Oil Major in the oil tanker sector.

IACS consists of a group of 12 major Classification Societies[24] who set their own high regulatory standards on surveying and certifying on behalf of the Flag States (DeSombre, 2006). They carry out the ground work on the structural and mechanical elements of applicable regulations of the State. However, they also have their own stringent mechanisms for the inspection process. They collectively handle 94% of the world tonnage. It is widely acknowledged that the regulatory mechanism of the IACS makes a significant contribution in harmonising a high standard of structural requirements in the maritime industry (Payer, 1998: 91-102; IACS, 2007).

Second, the insurance companies, known in the maritime industry as the P&I Clubs, conduct their own rigorous 'condition surveys' (Riley, 1998: 107-114) primarily on shipboard structural and mechanical features. P&I Clubs cover for damages arising out of pollution, loss of cargo and death or injury to seafarers. P&I Club insurance is an integral part of the industry with around 95% of ships on international trade insured by them. Their standard required for admission of ships is considered rigorous and thus provides another layer of independent regulatory control on OHS in the maritime industry (DeSombre, 2006; Bennett, 2000; 2001; Boisson, 1999; Couper *et al.*, 1999).

Third, certain sectors in the industry – such as the oil and chemical sectors – are also inspected and controlled by the supply chains. In the case of the oil sector, for instance, the Oil Companies International Maritime Forum (OCIMF), which is a voluntary association of oil companies (such as British Petroleum plc), routinely conducts inspection of tankers through Ship Inspection Report Program (SIRE). In the recent past they have extended their inspection system in verifying the managerial capacity of the management units through a programme called: Tanker Management and Self Assessment (TMSA). The

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[24] Classification Society: Independent organisations who conduct surveys, inspections and provide certifications on behalf of the flag state to comply with various international regulations. Lloyds Register of Shipping is one such organisation.

rigour of the inspection (of both the ships and the management units) and its benefits in terms of safeguarding OHS is widely acknowledged in the industry to the extent that due to the active involvement of the Oil Majors the oil sector is often regarded as the one of the safest in the maritime industry (Oldham, 1998; Lloyds List, 1997; 2004c; 2005b; 2007b). The role of the major oil companies deserves a special mention in the thesis and is discussed in the subsection below.

Oil Majors

The role of the Oil Majors is widely regarded as one of the most influential in the maritime industry (see for example Oldham, 1998). One noticeable characteristic in the global seaborne oil trade is that a significant part of the business is operated by a small number of major multinational corporate (MNC) bodies widely known as the Oil Majors. These include British Petroleum plc (BP), Royal Dutch Shell plc (Shell) and ExxonMobil Corporation (ExxonMobil). They have wide-ranging interests in the business of crude oil and petroleum sectors. The upstream segment of the business includes crude oil exploration, production, transportation and refining, while their downstream segment of the business includes transportation, distribution as well as marketing of the oil products. Their business is also long standing and spans across continents.

BP, for example, has been in the oil business since the early part of the twentieth century and in 2006 had an annual turnover of US$ 262 billion. It currently has active explorations in 26 countries and has proven reserves of 18.3 billion barrels of oil and gas. It partly or wholly owns 19 refineries around the world and has a major interest in the business in Europe and USA. It produces a total of 2.8 million barrels of refined products per day out of which 1.5 million are produced in the USA and another 0.9 million in Europe. Their presence in the oil transportation is also evident. In 2006, BP transported around 5% of crude and oil products using company's fleet and hired another 465 ships on spot charter[25] for transporting approximately another 5% of the global oil trade. In the same year their products were also retailed in over 28,500 service stations around the world (BP, 2007).

In 1998, for instance, except for the state run oil companies of Saudi Arabia, Mexico, Venezuela and China, these large MNCs were ranked among the top oil companies in the

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[25] Spot Charter: Also known as Voyage Charter where the charter hires a ship for one or more voyages.

world. BP alone, for example, produced 963 million barrels followed by ExxonMobil and Shell (see table below).

Rank	Company	Worldwide oil production in million barrels per year
1	Saudi Arabia Oil Company	3028
2	Petroleos Mexicanos	1278
3	Petroleos de Venezuela	1258
4	China National Petroleum	1168
5	**BP plc**	963
6	**ExxonMobil Corporation**	894
7	**Royal Dutch Shell plc**	859
8	Nigerian national Oil Company	772
9	Iraq National Oil Company	770
10	Kuwait Petroleum	757
11	**Chevron Corporation**	756

Table 5: The largest oil companies in the world, 1998.
Source: Gabel and Bruner (2003).

These oil companies are not only giants in their own field of oil industry but also rank among the top MNCs in the world. In the year 2000, three of these oil giants were ranked as 1st (ExxonMobil Corporation), 6th (Royal Dutch Shell plc) and 7th (BP plc) among the world's largest MNCs based on their corporate revenues.

Rank among World MNCs	Multi National Company	Corporate Revenue in million USD
1	ExxonMobil	210,392
6	Royal Dutch Shell	149,146
7	BP	148,062

Table 6: Oil Majors in relation to worldwide MNCs, 2000.
Source: Gabel and Bruner (2003).

The corporate revenues of these companies have also increased over the last 20 years which has risen exponentially since 2000. Shell, for example, more than doubled its profit from US$12,313 million in 2003 to US$26,261 million in 2006.

Oil Major Companies	2000	2003	2006
ExxonMobil	17,720	21,510	n/a
Royal Dutch Shell	n/a	12,313	26,261
ChevronTexaco	7727	7230	n/a
BP	n/a	n/a	22,278

Table 7: Available data of net income of Oil Majors (in million US$) 2000-2006.
Source: Compiled from the websites of these Oil Majors.

The Oil Majors also maintain the top positions in the tanker chartering market. In 2006, *Shell* ranked first among all the tanker chartering companies. For transporting crude oil and oil products *Shell* hired 755 ship voyages on spot market (single voyage contract as opposed to long term time charter) which amounted to 7.6% of the world total. The second and the third spots were also claimed by the Oil Majors. While *ExxonMobil* hired 514 ships, *BP* hired 465 ships – which were 5.2% and 4.7% of the world's total spot market chartering respectively (Lloyds List, 2007c).

The Oil Majors' interest in both upward (crude oil) and downward (oil product) directions of the refining process helps them in extending their authority in the tanker sector of the maritime industry (Hamilton, 1986). For instance, in various places in the world Oil Majors own and operate crude oil and oil product loading and unloading oil terminals and thus have a significant influence in the oil transfer activities. On other occasions one or more Oil Majors may directly hire ships transporting the cargo. On yet other times Oil Majors may only buy the oil cargo from or sell it to the State owned or other private oil trading companies. There may be other times when a single Oil Major may be controlling the entire transporting activity.

Thus, the oil business is largely a vertically integrated supply chain controlled by the Oil Majors. However, the transportation element of the business involves hiring ships of third parties. As a result, the Oil Majors place a significant importance to ensure that the supply chain is not affected due to the presence of the external players in the business. The Oil Majors' concern is reflected in the way in which they conduct inspections of tankers and their management units. As the controller of the supply chain, the Oil Majors use their economic leverage to regulate the trading activities including the standards of OHS in the oil tanker sector of the maritime industry.

Moreover their reputation and corporate image are largely conditional on the safe transportation of their oil which relies heavily on the safe operation of tankers. In recent years with the increasing public awareness on protecting the environment, regulating the standard of safety on tankers, thus, is of significant importance to the Oil Majors. Fire, oil pollution or any other form of shipping disaster has the potential to bring particular Oil Major Companies (associated with the tanker) to disrepute which could lead to massive

loss of revenue. This goes some way to explaining why Oil Majors take a keen interest in regulating the oil sector of the maritime industry.

The review of the literature conducted in this chapter thus points out how effective management of OHS assumes the presence of a set of prerequisites. These studies show that commitment from the employers and participation from the employees are the two prerequisites for effective management of OHS. The last section added a new element to this discussion. It highlighted that the regulators, too, have a major role to play in the implementation and surveillance of processed based approaches to self-regulation. Summing up the importance of all of these three players Nichols and Tucker (2000: 291-292) thus called management of OHS a 'three-legged strategy'.

In the case of the maritime industry, however, available information indicates that there are significant inadequacies in the way the three players contribute in the operation of the management of OHS. Information largely based on anecdotal evidence suggests that commitment from the managers and participation from seafarers are largely inadequate. It illustrated, for example, how a large section of employers fail to look beyond short-term profit making, and how lack of trade union support is one of the main impediments to seafarers' participation in the management of OHS. With regard to the role of the regulators, the discussion in the previous chapter (section 1.2) already highlighted their major weaknesses. It showed how flagging out resulted in a general decline of the regulatory standards which as the discussion showed is also an important element of the implementation of OHS regulation and its surveillance.

The evidence on the practice in the maritime industry nevertheless was largely based on anecdotal information which needs academic verification – which further reiterates the importance of carrying out this research. However, in order to better understand the factors that influence the roles played by the managers and seafarers it is important that a wider body of literature is discussed. In the following section therefore I draw on studies which highlight how underlying issues – such as social and economic factors – have major influences on roles played by managers and employees and on the management of OHS.

2.2 Socio-economic factors influencing the management of OHS

The discussion in this section identifies some of the main underlying social and economic factors that play important roles in effective management of OHS. It starts by looking into the importance of involving employees in the organisations' OHS decision-making process. It reviews the literature that identifies how assessment of workplace risk – which is central to the notion of self-regulating OHS management – is socially constructed and particularly requires input from employees. The discussion also identifies how trust and communication between employers and employees play a significant role in operationalising OHS management. It draws attention to how successful implementation is also conditional upon effective communication between employers and employees. The discussion at the end of this section also highlights how economic globalisation throws further challenge at the management of OHS. In particular it reviews the literature that looks into how lack of job security among the workers acts as a significant barrier to effective upward risk communication.

2.2.1 Risk Assessment: a social construction

There is an ongoing debate in the academic literature as to who should have an input to assess risks posed by sensitive industrial plants (such as nuclear installations) – the management and the experts or the employees and the public. Authors such as Krewski (1987), Mandeloff and Kaplan (1989) and Margolis (1996) argue that risk assessment should be conducted by experts as they possess the logical, scientific and analytical minds to judge the risks involved. They point out that experts can provide the objective assessment of risks that the public may face as a consequence of large-scale industrial accidents.

The most popular argument in favour of not involving the public in risk assessment comes from the notion that the public lack scientific understanding of the subject matter. Cross (1998), for example, claimed that the general public are too inaccurately informed to contribute to risk assessment in the event of a large-scale catastrophe. Their knowledge about the objective risk is limited and that they are largely driven by the media and misguided emotions. Experts on the other hand can produce superior and definitive guide to risk assessment by using scientifically verifiable probabilistic tool.

However, this form of argument has met with severe criticism. A growing number of authors (such as Fischhoff *et al.*, 1981; Flynn *et al.*, 1994; Toft, 1996; Slovic, 1999) argue that risk assessment is socially constructed and it is far more complex than what the purely scientific models claim it to be. They argue that every individual influenced by their race, gender, social status and such other variations sees the same risk differently (Lupton, 1999). These researchers continue to highlight that risk assessment is yet another function of human activity and as a result the organisational and social contexts within which they are embedded play a vital role (Horlick-Jones, 1998). They highlight that although objective science definitely has its place in risk assessment, it provides a partial picture. The authors stress that the process of risk assessment is not free from human values and judgement as 'psychological, social, cultural, and political factors' are elements that constitute human values, play a major role in the result of risk assessment (Slovic, 1999: 699).

Pidgeon (1998: 12) also supported this argument. He pointed out that even when the 'impartial experts' or the 'well informed' managers carry out risk assessment there is a considerable scope of them reflecting their bias and subjectiveness. By studying the importance of risk perception, the author argued that 'experts cannot be viewed as unbiased gold standard of judgement' as risk assessment inherently involves a degree of personal interpretation. In the same way, debating on the relative importance of perceived risk against probabilistic-based risk assessment, authors, such as, Freudenburg (1988) highlighted that although the experts are trained to conduct risk assessment objectively, they draw from their personal experience and their own interpretation of knowledge when using their professional skills.

Some authors, such as Jasanoff (1998) and Bohle and Quinlan (2000: 471) make a further point that the popular model which attempts to objectively quantify risk by simply multiplying the degree of harm with the probability of the harm occurring not only distorts the result of the assessment but also provides a false sense of numeric comfort. They argue that these quantitative tables are far too clinical for assessing OHS risk particularly when such tables are filled in without the employees' input. Moreover, this form of risk assessment stands in between participatory and inclusive styles of decision-making which involves wider players. Jasanoff (1998: 98) argues further and cautions that this method simply reduces risk assessment to a 'box filling' mechanical process which fails to take

into account the vast uncertainties of human perception and points out that human beings' natural faith in numeric objectivity hides the frailty of the very process of quantitative risk assessment.

Although most of the above debate has centred on risks posed to the public at large from industries such as the nuclear power plant installations, there is a recognisable parallel to risks posed to workers within the confines of workplaces. Walters and Frick (2000: 59-60), for example, argued that democratisation of decision-making as discussed against the general context of risk faced by the public should be even more pertinent in the case of workplaces. In the case of workplaces, the workers should be involved in conducting risk assessment because of their knowledge of the workplace hazards. Moreover, the authors argue that the workers should also be involved due to the unequal distribution of risk. In the event of an incident, it is the workers who face greater likelihood of encountering the dangers of workplace hazards than the managers or the risk-experts. Thus, the central reason for involving workers in risk assessment and in OHS decision making processes is in appreciating the variation of risk perception that exists in our societies.

However, as pointed out in an earlier discussion (section 2.1.1), the regulation in the maritime industry does not clearly state the roles of the seafarers in the process of risk assessment. A study conducted by Bailey (2006) on the impact of risk perception among the managers and different ranks of seafarers on board pointed out that in the maritime industry formal risk assessment was largely carried out either by the shore-based ship managers or by external contractors. The author, using qualitative interviewing technique, found that although the perception of risk in the industry varied considerably among the different ranks of seafarers and managers, the assessments were almost invariably skewed towards the managers' line of thinking.

Arguably, the difference of risk perception between the seafarers and managers is potentially wider in the maritime industry. Unlike most shore-based industries, here the seafarers spend all their working time as well as their off-work time in their workplaces (Alderton *et al.*, 2004). In other words, it is the seafarers who *live* with the hazards at work while the experts and the managers located ashore are likely to take a distant view of the risks faced by the seafarers. Thus, in the maritime industry Walters' and Frick's (2000) argument discussed above has even greater relevance.

2.2.2 The importance of trust and communication

A number of studies also discuss the importance of positive social relationships between employers (managers) and workers in workplaces. They show how features such as trust and communication between managers and workers play important roles in an organisation's day-to-day business. Although these studies do not focus on regulated self-regulation *per se*, the relevance of these social relationships is arguably critical to its effective implementation.

Fox (1974), for example, in his classical work: *Beyond Contract: Work, power and Trust Relations*, discussed issues affecting work and work organisation. There he argued that trust is institutionalised between managers and employees through the roles the latter are required to play under the rules set by the managers. Discussing the different levels of institutionalised trust, the author showed that in an organisation where managers entrust workers with a high degree of discretionary role it promotes a high-trust relationship. These are typically characterised by managers who show long-term obligations towards their workers, the presence of personal commitment from workers and the convergence of the organisation's and employees' goals.

Expanding further, Fox (1974) showed that in high-trust relationships, managers' long-term interest in the workers is typically reflected by offering long-term employments. It is also found in the way managers give workers a relatively high degree of freedom to use their skills and expertise to carry out their tasks. In such situations workers also demonstrate dedication and tend to develop long-term personal commitment towards their employers. On the other hand a low-trust level in employments exhibits divergent interest between workers and managers in which both parties have short-term agendas. In such relationships, workers are typically given limited leeway and asked to comply with the managers' specific requirements using specific work procedures. The author argued that such low-trust relationships between managers and workers generally result in both workers and employers limiting their obligations to the contractual requirements.

The relationship of reciprocation between managers and workers has also been highlighted by a number of other authors. In another well-known piece of work, Blau (1964), in his theory of social exchange, described how social relationships are based on a social

exchange process. The author argued that in social relations people show tendencies to be motivated by expectations of returns. In its rudimentary form low-trust relationships typically resemble economic exchange process where both managers and workers engage in immediate and measured reciprocation. Such relationships are seen as myopic and not conducive for long-term relations between managers and workers. Arguably, this kind of social relationship between managers and workers also do not support effective management of OHS. The author also pointed out that on the other hand, high-trust relationships initiated by managers are likely to be reciprocated by higher levels of social exchanges. Typically such relationships go beyond short-term reciprocation, as employers, for example, tend to look into workers' welfare and include them in their long-term business plans. Also the employers neither expect their workers to reciprocate immediately nor do so in a measured way. Similar virtues of high-trust levels are also reciprocated from the workers' perspective. In such situations workers typically also show trust in their managers which, for instance, enables them to better communicate their views and concerns to the managers.

By viewing this argument in the light of the discussions in the previous section, it shows that a high-trust relationship between managers and workers has the potential for the involvement of the employees in the organisations' OHS decision-making process. It also creates a suitable environment for workers to share their skills and expertise and thus freely communicate their views with the organisations' managers.

Looking at how trust plays an important role in organisational communication, O'Reilly (1978), for example, showed that workers need to develop trust in their managers before they can communicate freely and effectively. Such trust-building needs to be initiated from the managers, based on which the workers open up and communicate their views. Conversely in organisations where workers have limited trust in their managers, they tend not to communicate the unfavourable yet potentially important information to their managers. In such cases the upward communication is largely filtered and thus made significantly ineffective.

Reviewing a large body of literature on various forms of employee programmes used in North America, Seibold and Shea (2001) also pointed out how various forms of employee participation programmes required both upward and downward communication. The

authors showed that regardless of the type of participation programmes used, the common building-block for successful employee participation was better communication between workers and managers.

Studies in organisational management also point out how effective communication leads to increased motivation, self-efficacy and empowerment. Conger and Kanungo (1988), for example, reviewing the literature from organisational management and psychology backgrounds, highlighted how improved communication within organisations could successfully empower workers and make them feel like important members of the organisation. The authors specifically highlighted the way managers needed to provide opportunities for communication and information-sharing for workers to get closer to the organisation and increase their self-determination.

In the same way, studies have also identified effective communication as a prerequisite for successful OHS management. By reviewing the literature on factors acting as barriers to effective OHS management Gallagher *et al.* (2003: 71), for example, highlighted the importance of effective communication. The authors pointed out open and free communications was one of the prerequisites for effective worker participation.

In the maritime industry, however, reports and publications from the industry stakeholders and maritime press generally point to lack of trust and communication within organisations. They indicate that one of the greatest hindrances in safeguarding OHS through self-regulation can be seen in how seafarers show reservations in communicating with their shore-based management units. One such example can be found in a report from the Marine Accident Investigation Branch (MAIB)[26]. In its 2001 annual report, it highlighted lack of trust and cooperation between those at sea and ashore within the same organisation and pointed out how it affected the implementation of the ISM Code (MAIB, 2001).

Similar views are also available in the maritime press where by taking the example of the practice of incident reporting in the maritime industry, articles claim that the seafarers' limited trust in their managers fail to encourage them to report OHS related incidents (see for example Lloyds List, 2002b; 2006a; 2007d). Such reports and articles suggest that lack

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[26] MAIB: It is an UK agency examining and investigating maritime accidents to or onboard ships registered in the UK or to foreign ships meeting with accidents in the UK territorial waters.

of trust and communication between managers and seafarers fail to promote effective implementation of OHS management in the maritime industry.

2.2.3 The impact of globalisation on job security

Moving on, the discussion now looks into a more contemporary issue affecting the implementation of regulated self-regulation. It points out how economic globalisation has resulted in job insecurity among the workforce, and how in turn it affects the workers' participation in the implementation process.

Quinlan (1999), for example, conducted a review of a large number of studies to determine the impacts of economic globalisation on labour market restructuring and changes to work arrangements on OHS. The author found that the implementation of arrangements for health and safety management was noticeably affected by these changes. Since mid 1970s there was, for instance, a significant increase in work outsourcing and subcontracting, growth of temporary, casual and part-time-workers (widely identified as precarious employment), and an increase in the young and female workforce. Along with these changes there has also been an increase in shift and night work, widespread downsizing and work intensification. The author pointed out that some of these changes not only affected workers' OHS as a direct consequence, but also had a serious impact on the conditions that are important for the management of OHS.

In this regard, Dwyer (1994), in his work on the impacts of precarious employment, pointed out how temporary workforce generally does not enjoy the benefit of collective representation or protection from trade unions. Their fear of lack of continuity of their employment places serious constraints on their ability to communicate with their employers on issues on OHS and labour conditions more generally.

A number of empirical research studies also consistently point in the same direction. Bohle *et al*. (2001), for example, analysed 48 studies conducted by different researchers on precarious employment in over nine countries. The authors found that in 44 of them, workers suffered from significant job insecurity which prevented them from communicating their concerns to the managers. Subsequently, such lack of communication resulted in comparatively inferior outcome in workplace safety.

In the same way, studies from the psychological perspective have also demonstrated a link between precarious employment and job insecurity. Näswall, and De Witte (2003), for example, based on a combination of postal and telephone survey from nearly 4000 respondents in four European countries, found that workforce employed under temporary contracts felt more insecure and vulnerable with regard to their future employability.

In yet another study, Aronsson (1999) re-examined a stratified representative sample from Sweden's Labour Market Survey of over 1500 employees to find out how full-time employees and employees in precarious labour market compared on effective participation in the management of OHS. The author determined that non-permanent employees perceived it much harder to criticise their working conditions or to get their voices heard due to their precarious employment structure, as compared to their counterparts employed on a full-time basis.

Investigating the concerns from regulatory perspective, Johnstone *et al.* (2005) were among those who pointed out that the restructuring of the labour market and changes in the workplace setting make management of OHS more challenging. The authors argued that legislative strategies towards regulating self-regulation essentially assume large organisations offering full-time permanent employment. It also assumes that workers can present their views to the employers through their representatives and are actively supported by trade unions operating in a setup that has a strong regulatory drive supporting these mechanisms. However, the authors pointed out that the developments in the labour market in the last three decades made it harder for workers to be represented or made it more complex for them to access their rights. Workers employed on short-term temporary contracts having limited support from the trade unions thus find it harder to communicate their employment concerns, including OHS concerns to their managers. The authors concluded that underlying these concerns is the weak labour condition and lack of regulatory protection because of which workers feel intimidated by the possibilities of losing their jobs.

The current employment conditions in the maritime industry, too, corroborate these findings. The discussion in section 1.2.2 revealed how economic globalisation significantly weakened the position of labour in the maritime industry. It showed that in the last three decades the employment pattern in the maritime industry shifted considerably to short-term contractual employment through crewing agencies along with downsizing and work

intensification. An ethnographic study of the labour conditions of seafarers on car carriers conducted by Kahveci and Nichols (2006) also pointed to similar practices. It reported that a very high percentage of seafarers worked for over 14 hours per day and were engaged in fixed short-term contracts lasting between six and 12 months depending on the rank of the seafarers. From survey data of 627 seafarers working on car carriers, the authors found that 96% of them were employed on short-term contracts.

Anderson's survey (discussed in section 2.4) on the usefulness of the implementation of the ISM Code also indicated that seafarers were anxious about losing their jobs (Anderson *el al.,* 2003). The survey, which looked into the practice of various elements of SMSs, suggested that the primary reason why seafarers chose not to report shipboard incidents or near-miss occurrences to their managers was because they feared that they would be victimised as a consequence of reporting and may even lose their jobs. Although studies in the maritime industry do not categorically identify how precarious employment weakens the scope for seafarers' participation in the management of OHS, analogy with the studies conducted in shore based industries points in the same direction.

The discussion in this section thus demonstrated how social relations and social and economic factors have major influences on managers and employees – who are the main players in managing OHS. It showed, for example, a high-trust relationship between employees and workers is a prerequisite for effective employee participation in safeguarding workplace health and safety. While employers' commitment and employee participation are essential elements in the effective management of OHS, it is the positive social relationships between these players that act as the building block. The discussion also identified how the impact of economic globalisation weakened the labour conditions which in turn hindered the management of OHS. Throughout the section the discussion also reviewed the literature that examined the practice in the maritime industry. Due to the limited research, however, the underlying social factors in the maritime industry could not be established. Yet, based on the available information, the overall impression in the maritime industry indicated that the social relationship between the managers and seafarers lacks some of the preconditions that support participative approaches to OHS management.

Thus the review of the literature shows that roles played by the employers and employees (identified as the two prerequisites) for effective management of OHS were essentially

conditional upon social relations between them and on socio-economic factors prevalent in the industry. These underlying elements, therefore, are important in understanding what influences the managers and seafarers in the practice of the implementation of the ISM Code and will thus be the crucial focus of this study.

The theoretical perspectives discussed in this chapter helps in understanding a range of causal factors that could influence the management of workplace (health and) safety generally. The purpose of presenting them is to be able to embark on an innovative empirical study in an informed way and be receptive to a range of factors that could be affecting the implementation of the ISM Code in the maritime industry. These theoretical perspectives have been used as heuristic devices to facilitate an in-depth analysis of the finding of this study. It helps the readers become aware of the various types of issues that could require further exploration during the course of the analysis of the empirical work. Equally, the interview schedule too used in this study is largely drawn on the discussion on these theoretical perspectives.

However, in order to better appreciate the practice of the management of the ISM Code it is important to identify what constitutes the Code. In the next section, therefore, I identify its different elements and describe their core functions and locate its practice in the maritime context.

2.3 Safety Management Systems

With the introduction of regulated self-regulation, various forms of Safety Management Systems (SMSs) emerged as popular tools to implement it. Authors such as Bluff and Gunningham (2004) and Gunningham (2007), pointed out how SMSs potentially facilitated employers systematically manage OHS in their organisations. They argued that SMSs provide an opportunity for employers to incorporate the various elements such as risk assessment, incident reporting and audit in managing OHS. They also argued how SMSs give regulators a legitimate tool to verify whether employers carry out their role of general duties to safeguard OHS. Moreover, Bluff and Johnstone (2005) exploring the role of regulators in the management of OHS in the Australian context pointed out that increasingly the courts' interpretation of the legal term of employers' general duties towards safeguarding OHS presupposes that in practice organisations follow SMSs.

Studies looking into the development of SMSs identified how they have parallels with quality management systems used more generally in businesses. Bohle and Quinlan (2000: 296-300), Frick and Wren (2000), Nielsen (2000) and Zwetsloot (2000), for example, discussed how the overarching influences of quality management systems seeped into the developments of SMSs. The authors argued that around the time when employers were required to develop strategies for systematically managing OHS, privately developed and promoted quality management systems were increasingly gaining popularity in business organisations and were thus also adopted in the management of OHS.

Teubner (1983), Creech, (1994), Mottel *et al.,* (1995), Hill, (1995), Gunningham and Johnstone (1999) and Reiley, (1997) are among those who also presented similar arguments. They pointed out that as employers are expected to systematically manage OHS along with systematically managing other business activities, they see OHS management in the same light as with the rest of their managerial tasks. Thus, they find an appeal to integrate the features of quality management systems in the management of OHS.

However, there is a wide body of literature which criticises the influence of quality management systems in the development of SMSs. Nichols and Tucker (2000: 292), for example, pointed out that the new wave of OHS management systems with 'all-encompassing' elements, such as performance benchmarking and self-improving techniques, on the surface appear to offer technically sound mechanisms in safeguarding OHS, but in reality they may not play any role in persuading the employers to accomplish the fundamental requirements of providing safe and healthy working environments for their workers.

Similarly, Frick *et al.* (2000), in the review of the literature on the effectiveness of SMSs, argued that subscribing to SMSs does not automatically assure safeguarding of OHS or constitute compliance with the requirements of regulated self-regulation. They pointed out that SMSs merely offer a set of tools and stressed the point that employers should make use of these tools keeping the focus on systematically managing OHS to safeguard workers from workplace hazards.

It has been argued by a number of scholars (see Bennett, 2002; Frick, 2007) that due to the influences of quality management system, however, the structure or purpose of safety

management systems used across the different industries located around the world have not been uniform. They pointed out how a number of systems have been developed and marketed by private organisations often by auditing firms which only take into account the managerial perspective ignoring the benefits of including the views of the employees or trade union representatives in the management of OHS.

From the different enforced and voluntary guidelines that are available for safeguarding occupational health and safety, the European Framework Directive (EEC, 1989) and the ILO Guidelines on the management of occupational health and safety (ILO, 2001b) are widely acknowledged as the two which are built on the principles of effective OHS management system. As discussed in the review of the literature (section 2.1 and 2.2) they exhibit three principle features. Firstly, the central to the EU Directive and ILO Guidelines is a participative style of management of OHS. This includes 'worker participation' which requires workers or their representatives to have the legal rights to participate on all matters relating to OHS in their workplaces (Vogel, 1994). As discussed in section 2.1.2 it is also important to reiterate that the participation that the EU Directive and the ILO Guidelines require is essentially a bottom-up form where typically elected worker representatives contribute in the management of OHS and not direct form of participation where managers use it merely to persuade workers to follow the corporate objectives.

Secondly, the EU Directive and the ILO Guidelines both lay stress upon upstream management of OHS based on the principles of risk assessment. As discussed in section 2.1.1 the EU Directive (Article: 6), for instance, categorically requires employers to follow a safe place approach in which it requires them to provide a safe working environment by first considering ways to avoid risks at workplace, then evaluating those risks which cannot be avoided followed by combating risks at source (EEC, 1989). Thus the emphasis is on making the workplace safer and not on ways to transform the workers' behaviour with the intention to change them into safer individuals. The EU Directive and the ILO Guidelines also clearly places equal emphasis on managing workers' occupational health in the same way as occupational safety. The ILO Guidelines (section 3.11), for example, points out employers should conduct 'surveillance of workers' health, where appropriate, through suitable medical monitoring or follow-up of workers for early detection of signs and symptoms of harm to health in order to determine the effectiveness of prevention and control measures (ILO, 2001b: 14).

Finally, the general principle of both the EU Directive and the ILO Guidelines is to achieve the final outcome of effectively safeguarding workers from workplace hazards. In other words they are target oriented which implies that although complying with the means (i.e. the different procedures of SMSs) is important, the critical objective is to purely use the means to facilitate reaching the end (Frick, 2007). In this respect there is a minor difference between the EU Directive and the ILO Guidelines. While the latter incorporates self-critical mechanisms such as auditing and reviewing to ensure continuous improvement to the SMSs used in organisations, the EU Directive, on the other hand, does not mention the requirement of such procedures and sticks to the more fundamental mandated principles of OHS management.

In the maritime context, however, the principles of the ISM Code shows significant difference in its focus from the three principle features of the EU Directive or the ILO Guidelines discussed above. As highlighted in sections 2.1.1 and 2.1.2 the ISM Code places little importance to worker participation or the benefits of including workers or their representatives in contributing to the management of OHS on ships. The only mention on workers in the ISM Code relates to promoting their motivation, training them and checking their medical fitness. Also, what is different in the ISM Code from either the EU Directive or the ILO Guidelines is the way in which the Code places no emphasis on the employers to ensure that shipboard risk is effectively assessed (see discussion in section 2.1.1). It avoids detailing, for instance, how risk should be evaluated, avoided or combated at source. Moreover, in a stark contrast to the EU Directive or the ILO Guidelines, the Code completely ignores issues related to occupational health or its management. Finally, from the review of the literature it also appears that the ISM Code places heavy emphasis on complying with the intricate details of the several procedures of the SMSs. While this in itself is not an indication of success or failure of the effectiveness of the Code, it remains to be seen in this study whether in practice it helps in making shipboard work any safer.

As such the company managers are required to develop their own SMSs based on the infrastructure of the ISM Code. The way the Code is presented it allows a great degree of flexibility for managers of the shipping companies to interpret it and develop SMSs suitable for their style of management. The discussion in chapter 4 presents in detail the layout of the SMSs of the two companies (in which I conduct my case studies) indicating

how the two organisations have interpreted the ISM Code and laid out the foundation of the management of occupation (health and) safety.

For the benefit of the empirical research I have identified three main components of the ISM Code. They are risk assessment (ISM Code sections 7, 8 and 10), incident/ near-miss reporting (ISM Code section 9) and audit and review of the SMS (ISM Code section 12). From the broad objective of the thesis – which is to understand the practice of the ISM Code, the focus is narrowed down to evaluate the operation of each of these three procedures of SMSs. In the following section therefore the discussion draws on studies that point out the main features of these SMS procedures and highlight their practice in the maritime industry.

2.3.1 Risk Assessment

Risk Assessment is a central component in the management of OHS (see for example EEC, 1989). It provides the mechanism to employers to systematically identify, assess and control workplace risks. The UK Health and Safety Executive (HSE), for example, points out how employers are required to examine what hazards could harm their employees and how hazards could arise as a consequence of carrying out their jobs. The whole process of appreciating the hazards, determining how they could harm employees and the controlling mechanisms is regarded as risk assessment. It also highlights that the risk-assessors should have the knowledge of hazards at work as well as the knowledge of working activity and work practices (HSE, 1997).

In the maritime context the Code of Safe Working Practices (CSWP)[27] offers a guide to how risk assessment should be conducted (MCA, 2006). It states that the responsibility for conducting risk assessment lies with the individual employers and that it should be carried out by 'suitably experienced personnel, using specialist advice if appropriate' (2006: 4) The main part of the publication enumerates hazards that are likely to be encountered during different types of work on ships and offers a list of predetermined risk assessments. It includes, for example, the risks associated with hot work and indicates the set of controls that should be in place.

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[27] Code of Safe Working Practices is a Government of UK publication which is required to be complied with as per the UK statute and is required to be carried on all UK merchant ships. This publication, however, is widely regarded as a standard industry guideline globally.

The second part the CSWP points out how risks should be assessed especially for those tasks which are not enumerated in the main part of the guideline. Drawing on the British Standard 8800: 2004[28], the CSWP guideline shows how risks should be assessed by determining the severity of harm and the likelihood of the harm occurring for each of the hazards at work. The three following tables are reproduced from CSWP to explain the point.

Category	Slight Harm	Moderate Harm	Extreme Harm
Health	Headache, temporary ill-health	Dermatitis, asthma	Occupational cancer, acute fatal disease
Safety	Superficial injury, minor cuts	Burns, minor fractures	Amputation, fatal injury

Table 8: Examples of how to categorise severity of harm
Source: MCA (2006).

Category	Very Likely	Likely	Unlikely	Very Unlikely
Typically occurring	Once every 6 months	Once every 5 years	Once in a working lifetime	Less than 1% chance

Table 9: Examples of how to categorise likelihood of harm
Source: MCA (2006).

Severity Likelihood	Slight Harm	Moderate Harm	Extreme Harm
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	High Risk	Very High Risk
Very Likely	Low Risk	Very High Risk	Very High Risk

Table 10: Risk Estimator Table
Source: MCA (2006).

There is however very little information available on the practice of risk assessment or in general on the implementation of the ISM Code in shipping companies. However, from the available sources discussed in the review of the literature (Bailey, 2006), it suggests that there is an emphasis on the quantitative approach and a reliance on risk experts' knowledge in assessing risk for day-to-day jobs onboard.

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[28] British Standard BS 8800: 2004 is an Occupational Health and Safety Management Systems Guide published by a private British organisation.

Maritime press articles are by and large critical about the way risk assessment is conducted in the industry. They indicate that in the ship management offices and among seafarers risk assessment is synonymous with 'tick-boxing' checklists and mechanically filling-in risk assessment forms. The articles point out that as a consequence there is an added burden on seafarers to comply with paperwork but it remains a question whether or not it actually contributes to the assessment of risk (Lloyds List, 2002c; 2004b).

2.3.2 Incident Reporting

Incident Reporting entails a systematic way of reporting incidents and near-miss occurrences at workplaces. It serves as a mechanism to check the effectiveness of SMSs by learning from errors. The UK Health and Safety Executive (HSE, 1997), for example, identifies incident reporting as an effective technique to determine the shortcomings in the way OHS is managed in organisations. It suggests that by analysing the cause of incidents or near-miss occurrences, organisations get the opportunity to learn their root causes and make sure that such mistakes are not repeated. It also provides an opportunity to identify inadequacies of organisations' risk assessment techniques or even companies' policies. Incident reporting in most industries also forms part of a legislative requirement (EEC, 1989: Article-9). It serves the purpose of developing accident databases at the industry, national and in some cases even at the supranational levels.

The importance of reporting near-miss occurrences is also argued in several studies. Heinrich's (1931) and Bird's (1966) works point out that for each serious incident, such as an employees' fatality due to a fall from a height, there takes place a number of less severe incidents, such as a similar fall but resulting only in spraining of the leg. The argument highlights that as injuries and serious incidents are relatively less in number, managers should make use of analysing near-miss cases (which are relatively more in number) and learn from the 'common' root causes. While there are critics to this common root cause argument (see for example Wright and Van der Schaaf, 2004), the importance of reporting near-miss occurrences is widely acknowledged.

Based on empirical studies conducted in the UK oil, food, construction, health and transport sectors, the UK HSE indicated the following ratio between major accidents, minor injuries and non-injury cases to support the argument why near-miss occurrences should also be reported (HSE, 1997).
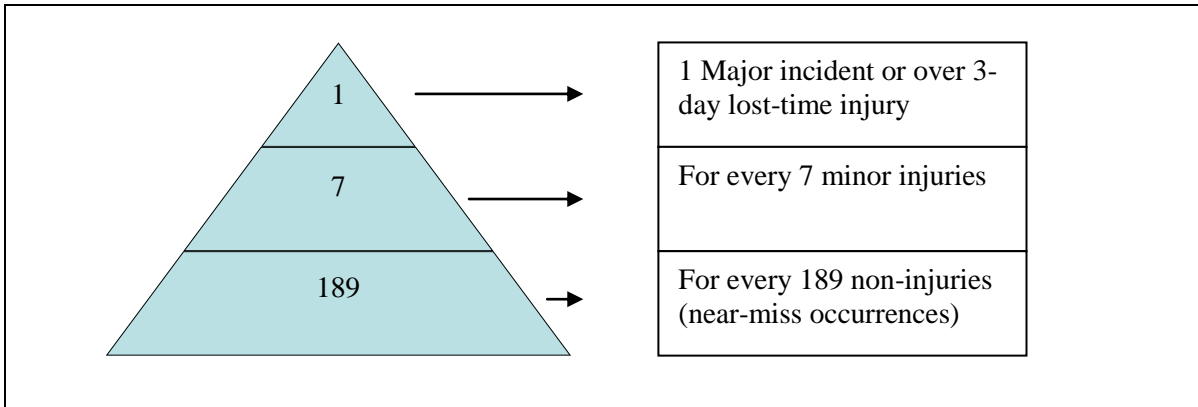
Figure 7: Accident Triangle
Source: HSE, (1997: 8).

The available data on the practice of incident and near-miss occurrence reporting in the maritime industry shows that it is an area of concern. It indicates that the industry suffers from underreporting due to seafarers' fear of being victimised from the reports. The 2001 annual report from the MAIB, for example, highlighted that seafarers fail to report because of their fear of being blamed as a consequence of reporting. The report stated that 'throughout the industry, mariners are genuinely frightened that if they were known to be reporting safety deficiencies, they would almost certainly lose their jobs. This climate of fear is not conducive to the establishment of a safety culture at sea' (MAIB, 2001: 9).

2.3.3 Audit and Review

The UK Health and Safety Executive (HSE, 1997: 68) states that audit and management review mechanisms are 'feedback loops for a systematic check of efficiency' of one or more activities of an organisation. It defines audit as:

> The structured process of collecting independent information on the efficiency, effectiveness and reliability of the total health and safety management system and drawing up plans for corrective actions

Similarly, the ILO guidelines on the management of occupational health and safety (ILO, 2001b) also points out that audit programme should check all the elements of SMSs to locate whether appropriate management arrangements are in place in relation to the risks encountered. It points out that audits among other things should establish whether SMSs are capable of emergency prevention, preparedness and response, risk prevention and control measures, and equally are successful in promoting effective worker participation and fulfilling the goals of continual improvement.

The guideline (ILO, 2001b) also points out how SMSs should be subjected to regular review. It suggests that for the purpose of the review, managers should consider the results of risk assessment, incident reports and audit outcomes besides considering input from regulators, employees and other industry stakeholders. All these different inputs should be taken into consideration when updating an organisation's SMS.

In the case of the maritime industry, however, there is a lack of instruction in the ISM Code on the operation of these two proactive elements. In its absence, industry norms as per guidelines set by Flag State Administration, Classification Society and such other key stakeholders (IACS, 2005; NKK, 2007; MCA, 2007) provide some information. They indicate that audit and review should be conducted at least once every year. With regard to the audit, these guidelines recommend that among other objectives, organisations should identify the training requirements for their auditors who should establish how well organisations' procedures are being followed. With regard to 'who should conduct reviews', these guidelines indicate that the ships' captains are expected to play an important role in the review process.

Similar to the two previous cases, there is limited information on how these two elements are practised in the maritime context. The available evidence from press articles is, however, critical about the way they are operated. Some maritime press articles suggest that the way audits are conducted on ships are merely to secure the ISM certification which is mandatory for their trading. One such article stated that audits are 'gradually becoming more symbolic than real and often undertaken by the use of the same checklist, over and over again' (Lloyds List, 2003b).

This discussion thus highlighted the main features of the three central elements of the ISM Code and from the available data presented a sketchy picture of how they are practised in the maritime industry. Through out the review of the literature it however revealed the lack of academic studies conducted on OHS in the maritime industry generally and on the implementation of the ISM Code in particular. Nonetheless, there have been a few studies conducted in this field which specifically attempted to understand the effectiveness of the implementation of the different elements of the ISM Code. The two studies which are

widely acknowledged in the industry as most relevant in this field are Anderson's (2002) and IMO's (2006). They are examined in the following sections.

2.4 Earlier studies on the impacts of the ISM Code

Anderson undertook a research project to study the benefits of the implementation of the ISM Code (Anderson *et al.*, 2003). In 2001 he sent out nearly 70,000 questionnaires to seafarers and other industry stakeholders, such as shore-based managers, State regulators, surveyors and maritime educational institutes. The main objective of the questionnaire was to inquire into the perceptions of the individuals on the usefulness of the implementation of the ISM Code. The author used a series of multiple-choice questions to elicit respondents' perception on the effectiveness of the different elements of the Code. Besides, at the end of the questionnaires, the respondents were also encouraged to express their views on the impact of the Code. Additionally, a dedicated website – www.ismcode.net – containing the same survey format was launched to invite a broader participation from across the maritime industry. Over 3000 completed questionnaires, of which around two-third were from the seafarers, and another 800 comments were received and used to analyse the findings.

The study concluded that the ISM Code has the potential to work, but different companies and individuals experienced different levels of achievement. It revealed how the perceptions of seafarers differed significantly from the managers or other shore-based personnel in the industry. The main findings pointed out that for the success of the implementation of the Code, leadership, commitment from the top, continuity of employment and good communication between shore and ship were some of the most important factors. Besides, education and training programmes for seafarers were also essential for its implementation.

The author, however, also admitted that the study failed to infer any definitive answer on whether the ISM Code was perceived as 'working or not' and consequently whether or not it made the industry any safer. In the conclusion he also suspected that the lack of 'verdict' was due to the different culture across the globe that produced a cluster of different results. While seafarers from OECD countries, such as the UK, were upfront and dismissive of the values of the Code, their counterparts from places like India and Philippines gave favourable response in the questionnaire implying that the Code was beneficial.

Thus, the research was a piece of work that was largely a presentation of the perceptions and views of seafarers and other industry stakeholders. In fact, in the study the author stated that the intention of the survey was not for 'pure academic' purpose but to reflect on the implementation of the first phase[29] of the ISM Code and make such feedback accessible to the industry personnel around the global maritime industry.

Two years after the 2nd phase of the implementation of the ISM Code, between 2004 and 2005 a similar study was conducted by the IMO. It set out to identify the impact of the ISM Code and its effectiveness in the enhancement of safety of life at sea and protection of the marine environment by engaging an independent group of experts comprising of 32 professionals from the academia and industry (IMO, 2006).

This group used a similar questionnaire based survey for eliciting the perceptions of the members of the Flag State Administrators, shore based managers and seafarers. The group sent out 162 questionnaires to the Flag State Administrators and received 32 responses. For the shore based managers and seafarers it used various professional bodies to distribute the questionnaires. In all, the group received 118 responses from shore-based personnel and 2959 responses from seafarers.

The study showed an overwhelmingly positive perception from all three professional groups. Nearly all the respondents from the Flag State Administrators, for example, suggested that the Code is useful and starting to work (2006: 15). Similarly, 99% of the shore-based personnel believed that the SMS used in their companies was either useful or very useful (2006: 20). Equally, 95% of the seafarers who responded indicated that as a consequence of the implementation of the ISM Code the ships are now safer places to work (2006: 26). From the results, the group of experts concluded that the ISM Code was beneficial to enhance the safety and pollution prevention standards and revealed that, 'where the ISM Code is embraced as a positive step toward efficiency through safety culture, tangible benefits are evident'. It also identified a number of issues such as the need for better motivation of the seafarers, streamlining and reducing paperwork, greater use of technology and involving seafarers in the continuous improvement of SMSs (2006: 29).

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[29] The first phase of the implementation was in 1998 in which the international tanker, bulk carrier and passenger ship sectors were required to comply with the Code. The remaining types of ship were required to comply with the ISM Code in the second phase of the implementation in 2002.

However, the group of experts was sceptical about the overwhelming positive response of the survey. It believed that 'interest in taking part in the study was highest among those that had generally enjoyed some benefit from the implementation of ISM'. Thus, the group concluded that the response was *not* a representation of the industry. It also acknowledged that such methodological problem 'could only be addressed by investing in a study employing researchers in the field to ensure that the views of the non-supporters could be specifically captured' (2006: 28).

Both these studies, thus, suffered from methodological weaknesses, although they were greatly significant and major attempts on a global scale to understand the impacts of the implementation of the ISM Code. The questionnaire based survey technique proved useful in revealing some of the main impediments to the operationalisation of the Code, but failed to elicit the underlying factors, such as what caused the impediments and how were they so important. It thus had acknowledged limitations to determine underlying factors that influenced the operation of the ISM Code. The method, for instance, was not able to consider issues relating to social relations or to look into the socio-economic factors, which, as pointed out in the earlier discussions play a major role in the practice of implementation of SMSs.

In the wake of this discussion, the present study thus attempts to address these issues by taking a different methodological stance. The discussion in the following chapter identifies the appropriate methodological approach for the study keeping in mind how best this study can determine the underlying factors influencing the implementation of the ISM Code.

Summary

The discussion in this chapter presented a review of literature based on international findings on the implementation of regulated self-regulation of OHS. It discussed the roles of employers, employees and regulators in relation to the management of OHS and argued that commitment from the managers in providing a safe working environment and participation of the employees in the management of organisation's OHS are two main prerequisites for effective management of OHS. It also pointed out how trade unions' support is central to employee participation. The discussion further highlighted how regulators were vital in providing a regulatory steer for the implementation of regulated self-regulation as well as in conducting surveillance of workplaces.

In the second section the discussion drew on the literature that showed how some underlying social and economic factors affecting managers, employees and organisations have major influences on the management of OHS. It revealed, for example, how a high level of trust and good communication between managers and employees provided the foundation for effective management of health and safety in organisations.

The third section introduced the SMSs and discussed their relevance to the management of OHS. It presented the central elements of the ISM Code (risk assessment, incident reporting, and audit and review) and described their main features and highlighted their practices in the maritime industry.

The final section of the chapter discussed studies specifically focused on the implementation of the ISM Code. It pointed to their limitations and noted that these studies themselves acknowledge a need for further research concerning underlying social factors affecting the operation of the ISM Code.

What emerges most forcefully from the review in this chapter therefore concerns the importance of the social relations of employment in underpinning the operational aspects of systems to apply OHS management in practice. Yet research in the maritime industry has so far failed to adequately investigate these issues in relation to the implementation of the ISM Code. There is therefore an opportunity to further explore the role of factors inherent in employment relationships in the maritime industry in mediating the impact of the ISM Code on occupational health and safety management on board ships.

This is the aim of the research as reported in the following chapters. It focuses on the perceptions of shipping company managers concerning the operation of various procedures to implement risk assessment, incident reporting and audit and review as required by the ISM Code and compares and contrasts them with the perceptions of the seafarers involved in the operation onboard ships. It seeks to understand the findings that emerge from this process in terms of both the social relations on board ships and between seafarers and their managers as well as in terms of the wider context of the organisation and relations of employment in the maritime industry as a whole.

Chapter-3: Methodology

Introduction

The purpose of the thesis is to address the question "what is the impact of the International Safety Management (ISM) Code on the management of OHS in the maritime industry". Although occupational safety and occupational health are the two interrelated factors which affect workers' wellbeing generally (see discussion by Nichols, 1997: 6), the discussion in section 1.1.3 revealed how the two are treated very differently in the maritime context. Such skewed focus on issues related to safety and its management also affects in the way in which the empirical study as well as the methodology on which the empirical data collection and analysis are based is also compelled to focus on factors affecting shipboard safety and the way its management is practised.

In the previous chapter the discussion drawn on the extant literature identified that the management commitment and employee participation are the two key prerequisites for effective implementation of SMSs generally. Moreover, it also showed that the effectiveness of these prerequisites is largely reliant on social underpinnings, such as employment relations and social relations between managers and employees in an organisation. Thus, in order to determine how such social influences worked in the maritime context and address the research question it is important that my research took an appropriate methodological approach.

In this chapter the discussion focuses on the research process followed in this thesis and provides an account of how the research was conducted. It incorporates the different stages of the empirical work, from justifying the choice of research methods to my experiences of using the data analysis techniques.

The first section of this chapter therefore provides a justification of how from the different available methods used in studies on organisational health and safety, a case study method using qualitative techniques was the most appropriate for its purpose. It then points out the process of selecting the two case studies and presents an account of the hindrances faced in the process of getting access to the two organisations. The second section describes the detail of the data collection process, which was divided into two stages: shore-based management office and research voyages, and illustrates the different research techniques used at each stage of the fieldwork. The third section presents an overview of the research

data analysis where it shows how computer-based data analysis program 'N-Vivo' facilitated the analysis process. The fourth and final section presents how the study took into account the ethical dimensions of the research.

3.1 Research methods commonly used in earlier studies

The studies which have attempted to establish the effectiveness of the implementation of various elements of OHS management systems used different research methods. The review of these studies indicates that three of the most commonly used methods are:

1. studying objective indicators
2. safety climate surveys
3. qualitative method using case study approaches

The following subsections critically assess the use of these three methods.

3.1.1 Objective Indicators

One of the common approaches adopted in such studies is to look into certain objective indicators of the performance of the management of OHS. It typically includes investigating the number of incidents in workplaces or injuries affecting employees. A high rate of incidents in organisations, in general, indicates a poor standard of occupational health and safety and vice-versa. By establishing the causal factors, for instance, with a high rate of workers' injuries, it can identify the weaknesses in the management of OHS. This method can facilitate longitudinal analysis of such data and also offer comparative analysis across different industries or organisations.

One such study which used objective indicators was conducted by Spangenberg *et al.* (2003) in a research on workers' OHS. By comparing the data from two groups of workers, the authors found a significant difference in their injury rates. The study revealed that the group of workers who were better trained through an apprenticeship programme had a comparatively lower injury rate. The authors concluded that one of the causal factors for higher injury rate for the second group was the lack of such training.

While such examples show the benefit of using objective indicators to establish the causal links of injuries or other workplace incidents, it is not straightforward. One of the most serious impediments with using this methodology is underreporting of industrial injuries

and incidents. Powell *et al.* (1971), for example, in their study on industrial injuries and incidents revealed the extent of the problem. By observing reportable cases and comparing them with the number of cases actually reported by the workers, the authors estimated that as high as 70% of the cases were not reported. Such studies point to the weakness of using such method in my study.

Moreover, studies also show that the rate of underreporting of incident or near-miss occurrences is inconsistent across industries. An analysis of the UK Labour Force Survey by Nichols (1997: 201), for example, estimated that the rate of underreporting differed from one industry to another. The author estimated that while in the agriculture sector underreporting of personal injuries was as high as 85%, the corresponding figure in the energy sector was at a moderate 30%.

Also, with regard to assessing the effectiveness of the implementation of OHS management systems, the problem with focusing on objective indicators of causal factors is not just limited to the lack of such indicators or their accuracies, but also the complexities associated with the interpretation of the data. By way of illustrating this point, Hughes and Ferrett (2003), for example, pointed out that a rise in the number of reported near-miss occurrences could mean poor implementation of OHS management systems. However, it could also be unrelated to the performance of the systems, because of a shift in the definition of what constitutes a near-miss occurrence. Yet another alternative explanation could be that it signifies a positive effect on the system's performance, for example, if the system prompts active reporting where hitherto a culture of 'non-reporting' might have been prevalent.

The studies in the global maritime industry indicate that carrying out research based on the number of incident, injury or near-miss occurrences or such other figures on OHS performance is significantly more challenging (see Ellis, 2007). Besides the weakness of underreporting, they point out that in this international industry it is hard to establish the occurrence rate of these incidents owing to the lack of the knowledge of the number of seafarers employed at an international level. Wu and Winchester's (2005) study, for example, exposes the problem. Their work on the global labour market of seafarers pointed out that the paucity of data on the total number of seafarers employed from each nation makes it nearly impossible to find out the rate of incident or injury in this industry with any

certainty. Nielsen and Roberts (1999) in their study also revealed how some of the FOC administrators refused to share data or cooperate with their research. Basic information, such as the number of seafarers employed by them and the number of fatalities occurred on ships under their registry, was denied. Thus, research with numeric values conducted in this global industry at best is likely to produce a tentative result.

Conducting a study on non-fatal injuries or occupational ill-health in the maritime industry is significantly more speculative. As pointed out in the review of the literature (section 1.1), major incidents in this industries causing noticeable pollution or resulting in large numbers of fatalities are generally reported and analysed, while a less severe incident, for instance, which only causes personal injuries do not draw the same attention. The lack of focus on non-fatal injuries or occupational ill-health thus leads to the second difficulty in using such data for study. Research in fact shows nearly a total absence of systematic study on non-fatal injuries or occupational ill health in the maritime industry. Moreover, Jensen *et al.*'s (2004) analysis on self-reported occupational injury cases pointed out that even the national authorities which process these reports and make them available for research barely facilitate a worldwide comparative analysis. Besides the lack of detailed information of the cause of the incidents, the different data processing and analysis standards used by each maritime flag states played as a major hindering factor.

Notwithstanding the problems of underreporting, the use of this approach would have been particularly challenging to determine the social underpinnings that affect the implementation of the ISM Code in the maritime industry. While such data could have provided valuable information on factors affecting seafarers' injuries and ill health, it would not have been useful for the purpose of this study.

3.1.2 Safety Climate Studies

Another type of methodology commonly used in such studies relies on revealing the perception of organisational safety culture. The researchers taking this approach focus on the managers' and workers' perceptions of the standard of organisational safety. They point out that within working environments positive safety cultures relate closely with a good level of safety awareness among the managers and workers and their willingness to adopt safe working practices and vice-versa. Thus, the researchers argue that if human qualities, such as beliefs, values, priorities, norms and practices that are prevalent in social groups

can be measured they should provide a reliable indicator of the effectiveness of the management of OHS (Pidgeon, 1991; Hudson, 1999).

According to Reason (1997) this form of research method integrates well with preventative management of organisational safety. It is a proactive concept which helps explore a set of latent conditions – an approach which in the last two decades has gained significant prominence. Studies using questionnaire surveys conducted on offshore oil industries (Rundmo, 1993), chemical processing plants (Hofmann and Stertzer, 1996) and British Railways maintenance (Farrington-Darby *et al.*, 2005) indicated that managers' and workers' perception of safety standards has close parallels with the number of organisational injuries and near-misses occurrences.

However, a number of studies point to serious weaknesses of this method. Williams *et al.* (1989), for example, conducting a study on cultural influence on organisations, pointed out that safety perception is not a firm indicator of the standard of safety in the entire organisation. The authors highlighted that responses of individuals to perception studies differed from department to department and workgroup to workgroup and pointed in the direction of the presence of multiple safety cultures within an overarching corporate culture in each organisation.

Gherardi and Nicolini (2000) on the discussion on communities of practice identified a similar feature. The authors argued that organisational safety culture is largely a product of local influence. As a result, within a single organisation there could be traits of different cultures, each exhibiting specific work practices and therefore possessing specific safety cultures.

In discussing another weakness of this form of study, a number of researchers have argued that the use of questionnaire surveys to investigate employees' perceptions is particularly ill-suited for identifying the effectiveness of the management of health and safety in industries which are globally spread. Saari (1998), for example, discussing the various methods of safety intervention programmes pointed out how safety climate measurement tools were not transferable from one physical location to another. The researcher highlighted how a set of survey questionnaire meant to identify the safety perception among the employees in an American construction industry prepared by Dedobbeleer and

German (1987) could not be used effectively in his own research which was conducted in a completely different setting in Canada. He argued that safety climate studies require incorporating the special requirements of each industry besides taking into account the cultural idiosyncrasies of each location.

In this context, Anderson *el al.*'s (2003) remark on the findings of his work on the implementation of the ISM Code is of particular relevance. As discussed in the previous chapter (section 2.4), the authors revealed that the questionnaire survey used for the research failed to answer the research question. The authors believed that due to the dispersed geographic origin of the seafarers (Indian and British, for example) the use of a single questionnaire survey may not have been appropriate. They speculated that different cultural backgrounds played a major role in generating clusters of different and often contradictory results to his questionnaire.

The discussion so far has described two types of research method which have been used in studies identifying organisational safety standards. It however showed that the weaknesses of these methods were particularly pronounced in conducting research in the maritime setting and thus were not considered in my study. As outlined in the beginning of this chapter, the review of the literature revealed the intricacies associated with the management of OHS and pointed to the importance of looking into various underlying factors that affect it. Such studies commonly take a qualitative research method using a case study approach – which is discussed below.

3.1.3 Qualitative research method using a case study approach

The discussions in the previous chapter identified how the management of OHS is dependent on a number of issues. It includes for example socio-economic factors affecting the organisation and the social relation between the employers. Earlier studies, such as by Kochan (1998) and Vaughan (1999) show that for appreciating issues related to workplaces, it is important to look into the wider context and investigate the central as well as some of the peripheral issues.

Similarly, Yin (2003) pointed out that because different factors affect workplaces in varying degrees no two workplaces are the same. As a result the research subject gets heavily embedded in the context, so much so, that the boundary between the context and

the subject becomes blurred. Thus, matters pertaining to workplaces must also be studied along with the factors affecting the core subject. Eisenhardt (1989), too, highlighted that an in-depth study of the subject in its natural setting leads to a good understanding of the type and the strength of the 'unknown' variables.

Whipp (1998), too, provided a similar argument. The author pointed out that for understanding the problems in the world of work each workplace needs to be looked at separately and deeply by getting under the skin of the organisation. Hidden features of employment relations, for instance, are likely to be revealed only if individual attention is paid to each of the cases. An apparent single problem may have its roots extended to a number of social issues. Following this argument, Kochan (1998) pointed out that for a full appraisal of the social elements within a workplace or industrial setting, the 'case study' approach is most suited.

Similar claims can also be made in the case of my study. It can be argued that the 'numerous' factors that affect the operation of the ISM Code cannot be removed from the context in which they occur. As a result, for a better appreciation of what affects the operation of the Code an understanding of the context is equally important. Thus a case study approach involving field trips to the ships in particular is considered a very important element of my research.

Selection of Case Studies

The argument that naturally follows is 'how then does a detailed study of the dynamics within a unique case add to the knowledge of a broader phenomenon in question?' And if that is the question in hand, the other related issue that also needs to be addressed first is: 'how do researchers choose the appropriate case or cases in the first place?'

For the selection of the case studies, research has pointed to the importance of having a low level of prior knowledge of the organisations where case studies are to be conducted. This, as pointed out by Miles (1979), gives an opportunity to the researchers to enter the field with some supporting structure about the organisations in mind. Yet it does not prejudice the researcher preventing him or her from 'learning' and building theoretical construct. Moreover, it also provides the opportunity for the researcher to decide on the types of organisations to approach and the sources of data to explore. In fact, a number of

researchers, such as Mintzberg (1979), Eisenhardt (1989), Gersick (1988) and Harris and Sutton (1986) have recognised its benefits and advocated an 'in-between' route of applying a limited yet informed knowledge on the subject matter and the phenomenon of research at the outset of case study. They point to the importance of the choice of organisations as cases should not be random. The cases chosen should reflect a well informed and purposeful sampling based on all known typologies that include balance and variety of the industry and most importantly the ones that provide the opportunity to learn (Stake, 1980; 2000).

Now, the argument on the detailed case studies of one or more cases for the understanding of the bigger picture is discussed. In the wider literature this issue is described as generalisability of case study research. The critics question the usefulness of the detailed study of a case which does not represent the population of the study. The proponents of this form of study acknowledge this as a problem and provide their counter argument. Yin (2003), for example, pointed out that the strength of this form of study draws on the detailed investigation which allows the researcher to immerse in the 'thick description' (Geertz, 1973) of the case. The research engages in thorough analysis and at the end of the research it leads to the development of theories. Unlike statistical generalisation, where the analysis may be transferred from the representative sample to the population of the study, each of the case studies gives the opportunity to create theories, and it is the *theory* that may be generalised and extended beyond the immediate case and applied to other cases (Meredith, 1998).

Many authors, such as Stuart *et al.* (2002) and Bryman (2004), have gone on to argue that it is entirely possible to generalise from even a single case study. The criticism for not studying a sufficient number of cases does not wane if two, four or even ten organisations are studied. These are still very small numbers. The authors point out that attempting to evaluate the merit of case studies through numbers of cases is a cardinal error and an invalid criticism in the first place. No matter how many cases are studied, it is the evolving theory that is of significance, and not the number. Stake (2000) further highlighted the dangers of getting obsessed with generalisation from case studies. He pointed out that the essence of any particular case, even when it demonstrates atypical features, should not be lost in pursuit of generalisation. He emphasised on giving priority to learning from whatever each case has to offer and not consider its representativeness or typicality.

I considered these arguments when choosing the two case studies in my research. The selection process was based on purposeful sampling that took into account the type of ships the companies operated and the businesses they conducted.

In order to avoid the complexity of excessive variation which could have posed problem at the analysis stage, I looked at the better end of the market and chose the oil tanker sector. As pointed out in the review of the literature the tanker sector of the maritime industry is widely acknowledged as one of the safest (see for example Lloyds List, 2005b). By studying this sector the aim was to identify the general issues that affect the implementation of the ISM Code across the industry while accepting that other sectors may face specific challenges. Arguably, it could also expose certain best practices in the industry and show how these have contributed to making the tanker sector one of the safest in the maritime industry.

Then, for the purpose of bringing in variety I searched for large and small companies – in terms of number and/or size of ships operated (see section 2.1.1) and their type – ownership-based[30] and third-party management based[31] (see section 1.2 concluding remarks). These factors were considered as pertinent as the discussion in the literature review indicated that they may have influences on the organisations' standard of OHS.
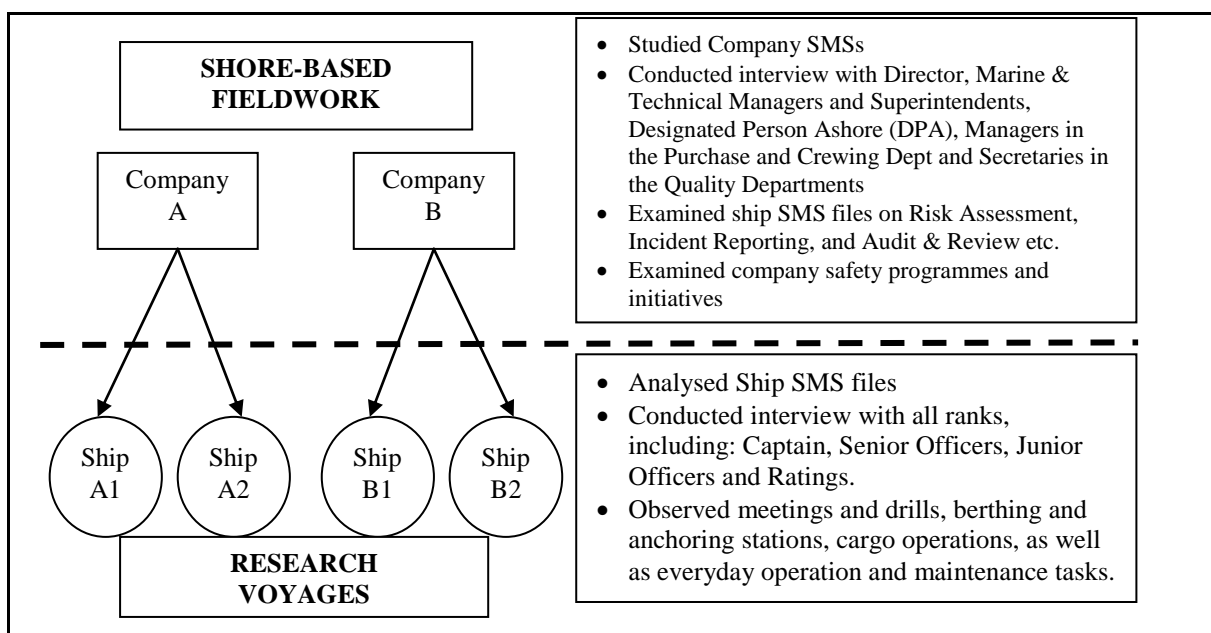
Figure 8: Overview of the fieldwork.

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[30] Ownership: Shipping companies which own and manage the ships in their fleets.

[31] Third-party management: Companies which are outsourced management units of ship-owners.

In the selection I did not pay any attention to the 'generalisability' of the cases, instead I chose the two companies which offered me unrestricted access to the fieldwork. The two organisation in my study have been identified as Companies A and B. The fieldwork was split between the shore-based management office of the company and two of its ships. Thus the four ships where I conducted my research are identified as Ship-A1, A2, B1 and B2 (see figure: 8).

Although the registry of ships was initially considered as an important factor for case study selection, but soon it proved difficult because very often one company had ships in its fleet registered in different maritime nations. Therefore, in most cases the companies *per se* did not indicate where their ships were registered.

Thus, the choice of the two case studies had to meet the following set of criteria (see table format below). Firstly, I tried to locate two companies which operated oil tankers trading on a typical oil trade. Secondly, the two companies had to have diverse fleet sizes, and thirdly, they had to have two different management styles. Considering these options, I looked for two shipping companies which fit into either of the following criteria:

Criteria	Company-A	Company-B
Ship type	Tankers	Tankers
Company size	Big	Small
Company type	Management/ Ownership	Ownership/ Management

Table 11: Criteria for case study selection

Based on these criteria, I looked into databases of global shipping companies[32] and identified several companies which fit into either the Company-A or Company-B type. In all, I identified nearly 30 shipping companies around the world.

However, the difficulties of getting access to the fieldwork became apparent soon after I started requesting companies for access. The complexities of approving researchers on ships are particularly acute in this industry. For accommodating a researcher, a shipping company needs to overcome a number of hurdles before it can permit a researcher to sail on its ships (discussed later in this section). Therefore I could only send request letters to a pair of companies (one from each type) at a time to allow them time to respond. I followed

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[32] Database used: Lloyds Shipping List and Fairplay Register 2004.

it up with subsequent requests on phone calls and e-mails till they either accepted or turned down my request. I also exploited my prior contact in the industry hoping to get a prompt response but soon realised that getting access to the fieldwork was going to take a long time.

From the large number of negative responses that I received, I could identify three main reasons for the delay in getting access to my fieldwork. Firstly, the focus of my research which attempted to look into the organisations' practice in the operation of SMSs was particularly sensitive in the maritime industry. From the response of the companies, which declined my request, it showed that the practice of the management of OHS in those companies was classed as *confidential*. For example, one gatekeeper of one such company said: 'we don't want to draw high profile attention unnecessarily', while another said: 'it's (managing OHS) our internal business, we don't want people meddling it up'.

This corroborated Smith's (2001) work on the challenges of conducting ethnographic studies in workplaces. In the study the author pointed out conducting research on organisational practices is often considered as a threat as researchers can potentially disclose operational deficiencies to the regulators or pass on the operational tricks to the organisation's competitors.

Secondly, getting access to conduct research on board ships is considerably more complex than shore-based industries because of a series of procedural and logistical problems involved. For instance, the company manager has to determine whether the insurance company insuring the seafarers would also insure me, and if it does what would be the additional premium involved. Also, very often modern ships sail with minimum amount of life saving equipment. Thus, the manager had to determine whether the ship had space and equipment to accommodate me. Furthermore, the manager also had to take into account the various immigration rules that I was likely to be subjected to. He or she needed to ensure that I not only had the appropriate travel documents (such as a visa) for the country in which I would join the ship but also of all the places that the ship subsequently visits during the research including the port from where I would disembark.

Thirdly, some companies may have viewed my prior knowledge of the industry[33] as an additional threat. My intimate association with the practice of the implementation of the ISM Code, both from shore-based management as well as ships, may have been one of the reasons for deterring them. Indeed when conveying rejection over the phone, one of the managers, for instance, stated: 'we did not want us to get inspected by you'.

Lack of academic research in the maritime industry has been revealed in a number of places in the review of the literature. The difficulties of access I experienced also go some way to explaining this dearth.

Finally, after getting rejection from around 20 shipping companies between December 2005 and July 2006, I finally received access to the fieldwork from two companies which matched the criteria set for the two types of organisations. The following table provides an overview of the two case studies selected for the research.

Criteria	Company-A	Company-B
Ship type	Oil tankers	Oil tankers
Trading	Typical location	Typical location
Company size	Relatively Large	Relatively Small
Company type	Management	Ownership
Location	Europe	Europe

Table 12: Key features of the two companies.

My experience of getting access to the case studies suggests that the two companies represent the better end of the industry. It can be argued that these companies operated within the requirements of various maritime regulations and allowed me access because they did not have anything to hide. The next chapter provides an outline of the two case studies in more detail, while the focus of this chapter returns to the discussion on the method used in each stage of the fieldwork.

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[33] I have more than 15 years of experience in the maritime industry. During this period I served on tankers in different capacities including two years as ship's captain and one and half years as a safety manager in a management-unit of a shipping company.

Use of Qualitative method

Stake (2000) emphasised the point that the choice of case study approach has no direct bearing on the methods used in the process. Both quantitative and qualitative methods have their places in this mode of inquiry. Bryman (2004) supported this and argued that although the methods commonly used in case studies tilt the scale towards qualitative forms of inquiry, in case studies quantitative methods too have been successfully used.

The strength of using qualitative methods has been revealed by authors who have compared its benefit over the use of quantitative questionnaire based studies on topics related to the management of OHS. Lin and Mills (2001), for example, revealed significant differences between using qualitative and quantitative studies by comparing data between two particular studies in the construction sector in Australia. The authors used self-assessed questionnaires in their studies which according to them failed to expose the underlying factors influencing the performance of OHS. Whereas, a few years earlier, Monk's (1994) study, which used a qualitative approach on a similar setup, was successful in locating several underlying hindrances to successful OHS outcome. After their experiment Lin and Mills (2001) concluded that studies using quantitative questionnaires face the danger of receiving exaggerated reports on OHS performance from the respondents.

Strauss and Whitfield (1998) pointed to the suitability of qualitative methods for understanding the dynamics of workplace relations and its ability to draw out causations. By applying different techniques from qualitative methods hidden features in employment relationship may be revealed. In one such example Kunda (1992) successfully used observation and documentary analysis techniques in his research to reveal the contradictions between documented company procedures and actual practices. The author pointed out that such cross checking and triangulation provided rich sources of data and careful analysis of such contradiction resulted in locating the underlying explanation to the research question.

By taking the argument further, a number of authors highlighted the importance of ethnographic studies on organisational research. Roethlisberger and Dickson (1939) and Roy (1954) argued how social relations at work, motivations of the workforce, social norms that govern workers rate of production are some of the examples which can be best understood by using an ethnographic approach. Kanter's (1977) work on diversity in organisation; Piore's (1983) research on acquisition of new technological skill; and

Zuboff's (1988) work on impact of computers at work have all used extensive ethnography. Van Maanen (1988) also pointed out how the ethnographic approach has been successfully used to uncover underlying causes that are unique to the workplace, the industry and the culture of the workforce. Similarly, Piore (1983) showed how studies using qualitative case study approach using ethnographic methods open up new avenues of interpretation in the world of work which could not have been possible through methods that use fixed question and answer structure. By allowing the subjects to express their views in interviews and by observing them in their natural settings, the researcher takes the opportunity to connect different problems in the same arena. To the researchers such methods open up the workers' logic, their rationale, their interpretation of the rules and their views and values that inform their actions. Besides, such methods provide an opportunity to understand the dynamics of a hierarchical society, social relations among workers and the varying degree of worker solidarity that form within all workplaces (Piore, 1983; Friedman, 1994).

The above arguments thus provide a rationale for the use of a qualitative method in my study. In particular Kunda's (1992) example of using different techniques of qualitative method to understand the actual work practice is particularly relevant in my study. Moreover, following Goffman's (1961) argument the use of this methodology is highly suitable in the case of my research. As a ship is seafarers' place of work and *off-work* where they live, eat and also spend the lighter moments of their days, it becomes their temporary home. The author argued that studies on subjects in such 'total institution' is best captured by understanding the context in which they live and therefore the most appropriate method to capture such context is by being in the field and spending time amongst the subjects.

Thus, by looking at the focus of my study and in particular its attempt to bring to light the underlying social constraints in the implementation of the ISM Code, the benefit of the use of case study approach using qualitative methods is evident. It uses two case studies and within those it employs research methodology that uses ethnographic techniques involving qualitative semi-structured interviews, observations and documentary analysis.

In a retrospective way I can fully appreciate the arguments presented in this section and the benefits of following this approach in this study. The underlying factors affecting the practice of OHS management in the two case studies could only be understood by studying

the practices in the two companies and analysing the rich qualitative data which I gathered by following this method.

However, studies have also revealed how this form of research is not without practical weaknesses. Bryman (2004), for example, pointed out how ethnographic research is by nature extremely time consuming and labour intensive. Besides, this type of research is considerably invasive which relies heavily on appropriate access at various stages of the fieldwork. It also involves a relatively small group of respondents with whom the researcher spends a considerable amount of time and takes researchers too 'close' to the data. To alleviate this problem the author pointed to the benefit of the use of multiple research techniques and the importance of confirming and contrasting data from each of the techniques by the means of 'triangulation'.

There were other constraints too. Like most doctoral studies, this also had limited financial support and a fixed period of sponsorship within which to complete the study. Although a wider perspective involving various regulatory authorities, trade union organisations or other industry stakeholders may have helped in generating a better understanding of the research question, completing the research within the given time frame and with the available resources was also important.

3.2 Research techniques used in fieldwork

This section is divided into two; the first subsection describes the research techniques used in the two shore-based management units, while the second subsection describes the research technique used onboard the four research ships.

A total of 59 days of fieldwork was undertaken which included 10 days in the shore-based management units of two shipping companies and another 49 days of research voyages on the four ships (see table below for breakdown). Qualitative interview methods and documentary analysis were used in both cases, while additionally observation technique was used during the research voyages.

Location of fieldwork	Total days of fieldwork
Shore-based study in Company-A	5
Research Voyage of Ship-A1	13
Research Voyage of Ship-A2	16
Shore-based study in Company-B	5
Research Voyage of Ship-B1	9
Research Voyage of Ship-B2	11
Total	59

Table 13: Duration of my fieldwork.

3.2.1 Fieldwork in the companies' shore-based management office

In both companies I conducted the first stage of the fieldwork in the shore-based management offices where I used documentary analysis and qualitative semi-structured interview techniques.

Document analysis

In each case study, I first investigated a set of documents to get an overview of the company's business, its OHS policies and specifically its operating procedures on risk assessment, incident and near-miss occurrence reporting and audit and review. The main source of this information came from the company's Safety Management System (SMS). These were presented in several bound volumes and were also available in electronic format. The company's SMS included company policies, operating procedures, shipboard emergency procedures, incident and near-miss reporting mechanisms, cargo operating instructions, and accompanying checklists and forms.

I also looked into the company's filing room, where for two days I studied the company's archived checklists and forms and correspondence with administrators and ships. These also included archived reports from ships of onboard safety meetings and subsequent action taken by the managers, reports on risk assessment, incidents and near-miss occurrences, audits and reviews. The analysis of these documents helped me familiarise myself with the two organisations in general and gave me an overview of the companies' policies, procedures and practice on the three elements of SMSs in particular.

The importance of document analysis is supported by several authors. Prior (2003), for instance, reviewing the role of documents in social science research pointed out that

documents introduce researchers to a social setting. They provide a structured understanding of organisations and also help in supporting or contradicting data gathered through other research techniques.

While these documents were useful in familiarising me with the companies' working procedures, they offered only a partial view of how each of the SMS elements was practised in the two organisations. They did not, for instance, provide explanation on why the managers responded to the reports from the ships in the way they did.

In this context Atkinson and Coffey (1997), for example, analysing the role of document analysis in social science research, also pointed to certain weaknesses of this research tool. They argued that as these documents carry with them the organisational identity the persons who produce them generally do so keeping in mind the wider organisational objectives. Thus, documents alone do not offer the absolute 'black and white' reality.

In both companies, during the course of the document analysis I was confronted with a number of questions which I noted down for clarifying during the subsequent semi-structured interviewing with the managers.

Semi-structured interviews

The interview technique I used in the company management offices was semi-structured as it allowed me to retain a degree of flexibility in developing the ongoing conversation against a fixed outline of topics. While I followed the general framework of the interview schedule (presented in Appendix-E) I also allowed the conversation between me and the interviewee to drift. It helped me clarify issues raised by the interviewees. The semi-structured interview technique in general also facilitated a detailed investigation and allowed the managers to express their views in their own languages. For instance, during an interview, a manager who conducted audits on ships remarked that he had to 'produce objective evidence for every audit finding'. On getting such a reply I raised several questions to learn why there was so much emphasis on producing documented evidence. It allowed the manager to explain the underlying factors that influenced the practice of audit in the organisation. On occasions I also used 'probes' and 'prompts' to engage the interviewees or to start a fresh discussion. For instance, on one occasion during an interview with a superintendent in one of the companies I used an article from the maritime

press. The article highlighted the risks of operating ships in the coastal trade with reduced number of seafarers on board. It helped me elicit from the superintendent how their company addressed this concern. It, as pointed out by Johnson (2001) in the discussion on in-depth interview research, helped me in drawing out the respondents' views.

The purpose of conducting semi-structured interviews with the managers in the shore-based management units was to learn how each of the three elements of the SMSs was practised. For each of the three SMS elements, I focused on inquiring how the managers viewed their roles in implementing them and the impediments faced by them in the implementation process. I used questions for instance, 'how does the company assist the ships in making risk assessment', 'what problems does it face in receiving the incident reports' and 'what does one expect to learn through audit?' While these were some of the fundamental questions from the interview schedule, through subsequent probing and discussions I attempted to elicit whether there was a commitment from the top management in the organisations in operationalising the ISM Code. I tried to locate if there were any underlying social constraints and factors such as social relationships between the managers and seafarers that affected the implementation of the SMS elements.

Benefits of semi-structured interview technique were also pointed out in the literature. Rubin and Rubin (1995), for example, in their overview of the qualitative interviewing, pointed out how semi-structured interviewing allows for detailed investigation. It focuses on the interviewees' personal beliefs and insights and lets them elaborate which may otherwise get lost in structured interviewing.

On average, each interview lasted between an hour and an hour and half. While some of the interviews were organised in the office conference rooms, many were conducted at the interviewees' work desk. On several occasions these were disrupted by phone calls and other sources of interruption and thus had to be conducted over several sessions. In both setups for the majority of the interviews I used a tape-recorder as that allowed me to concentrate on thinking about the next question. However, in some cases, the interviewee did not give me the permission to record in which cases I resorted to hand-written notes. The following table provides the gist of the number of interviews I conducted during the first phase of my fieldwork.

	Company - A			Company - B		
	Number of interviews	Of which recorded	Total duration of recorded interviews (in hours)	Number of interviews	Of which recorded	Total duration of recorded interview (in hours)
Director	2	1	0.75	2	1	1.50
Manager	2	2	5.50	3	2	3.50
Superintendent	4	3	3.50	4	3	4.00
Support Staff	2	1	1.25	1	1	0.75
Total	10	7	11.00	10	6	9.75

Table 14: Key information of the interviews conducted in the two management units

Towards the end of the fieldwork at the shore-based management offices, I discussed the plans for the second stage of the research with the managers who were in charge of arranging my research voyages. While I short-listed a few ships from the companies' fleet lists based on their trading patterns, the final decision on allocating the two ships for my research rested with the company's managers.

3.2.2 Fieldwork onboard research ships

For joining each ship the company's managers advised me when and to which port I should proceed to. On each occasion I travelled to a different port and sailed with the ship wherever the ship went. The following table provides an outline of my four research voyages.

	Ship- A1	Ship- A2	Ship- B1	Ship- B2
Area	Asia	N. America	Europe	Europe
Duration	13 days	16 days	9 days	11 days

Table 15: Outline of the four shipboard research voyages

On joining each ship, I first discussed the scope and purpose of my research with the captain and generally spent a significant amount of the first few days with him. This helped me in getting the captain's confidence which I felt was crucial in getting access to the rest of the seafarers besides getting permission to conduct observation and look into ship's documents. I also took formal permission for interviewing him and observing the activities

of colleagues. As pointed out in the subsequent findings chapters, it was evident that the captain had significant powers on ships. As a result I felt that it was prudent to take the captain's permission before, for instance, looking into a file or speaking to other seafarers on board. In certain cases, such as for being on the bridge[34] during manoeuvring[35] it was apparent that I needed the captain's explicit permission but in several other occasions, such as before interviewing other seafarers, I also asked for his consent only to ensure that I did not offend the captain in any way. The importance of staying on the 'right side of the captain' was also pointed out by Sampson and Thomas (2003b) in their account of ethnographic work conducted on board ships. Similar to what was described by the authors I found that for the benefit of the study it was imperative that I maintained a good rapport with the captain throughout my stay on the ship.

In the three following subsections the discussion shows how I conducted fieldwork on board the ships by using three different research techniques.

Semi-structured interviews

During the research voyages I used the semi-structured interview technique extensively. The objective of interviewing seafarers was to find out their perspective on the management of the ISM Code. With the help of this method I wanted to elicit what roles the seafarers played on the ships in the management of each of the three elements of the SMSs. For instance, I wanted them to describe how they assessed risk in their workplaces, and how they practised the company's incident and near-miss occurrence reporting procedures. From the seafarers I also inquired, for instance, their views on the use of SMSs, their experiences with shipboard safety meetings and safety trainings and drills. The underlying purpose of these discussions was to identify whether they participated in the decision making process of the management of OHS and their social relationships with the managers and how social factors, such as the nature of onboard communication affected the day-to-day implementation of the ISM Code on their ships.

On each research voyage, for the first two days I only engaged in familiarising myself with the ship and its activities. During this period I did not engage in any interviewing as I let the seafarers get used to my presence on board. Various port chaplains, who are widely

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[34] Bridge: Navigation control centre of a ship, normally located on the top of accommodation block
[35] Manoeuvring: Term used to indicate critical moments of ship navigation.

regarded as sympathetic and experienced listeners, have also pointed to the importance of allowing long periods of rapport building time before seafarers feel comfortable with their presence and start to talk to them freely (Kahveci *et al.*, 2003).

Also, in a majority of the cases I interviewed the seafarers in their cabins or in common rooms after their work. This, I felt worked particularly well for the ratings as it made them feel more at ease during the interviews. In the case of the officers, I adjusted the timings of the interviews as per their convenience. While some chose to be interviewed during their rest periods, many found that it was best to be interviewed while they were on watch. In some cases, I even interviewed junior officers in the middle of the night during their watch on the bridge. On all occasions the interviews with the senior officers, especially the captains, were spread over several sessions. Besides the formal interviews I also spent a significant amount of time talking to the seafarers informally (as part of data collection), which generally took place during meals or while watching videos in the common rooms.

On reviewing Angrosino and Perez's (2000) discussion on how practitioner turned researchers face potential threat of non-cooperation from respondents when they return to their original field of work, I was particularly anxious at the start of my first research voyage. I was worried that due to my prior knowledge in the industry the seafarers on Ship-A1 may not cooperate with me, or worse even become annoyed on being asked questions on the ISM Code – answers to which they may believe that I already have. However, in my experience I did not face any such hostile environment. In general, the response from the seafarers' was extremely frank and cooperative. On a number of occasions in their interviews both officers and ratings narrated stories to illustrate their experiences on workplace hazards, incidents and near-miss occurrences. Some seafarers after completing the interview with me even requested to speak to me a second time for sharing more experiences with me. One rating on one of the ships, for example, came to me and said: 'I forgot to tell you how we nearly had an accident four months ago, may I come in?'

The number of interviewees on board varied from ship to ship. While the maximum number was 24 (on Ship-A2), the minimum was 10 (on Ship-B1). In any case, each research voyage offered a full spectrum of views which included views from the captain, senior and junior officers as well as ratings. During the interviews I realised the particular benefits of interviewing the ratings – as they were directly exposed to workplace hazards.

They offered rich data on the practices of the different elements of SMS onboard their ships.

The benefit of interviewing an organisation's blue collar workers has been underlined by a number of researchers. Wilson Jr. and Koehn (2000), for example, in their interview-based study on the American construction industry, noted how workers' views contributed significantly in portraying the practice of OHS management systems. Similarly, Hutter (2001: 23) in her study on the practice of implementation of OHS regulation in the British Railways found that views of employees from every level, particularly from those who were directly exposed to workplace hazards, were vital in bringing out the underlying concerns.

The following table provides an outline of the interviews conducted during the second stage of my fieldwork. It shows that the majority of my respondents permitted me to record their interviews which on an average lasted over an hour.

	Ship –A1			Ship –A2			Ship –B1			Ship –B2		
	Number of interviews	Of which recorded	Total duration of recorded interviews (in hours)	Number of interviews	Of which recorded	Total duration of recorded interviews (in hours)	Number of interviews	Of which recorded	Total duration of recorded interviews (in hours)	Number of interviews	Of which recorded	Total duration of recorded interview (in hours)
Senior Officer	4	3	3.50	4	3	6.50	4	4	6.00	4	4	7.50
Junior Officer	4	2	1.75	7	5	4.50	1	1	1.25	3	3	4.00
Rating	11	6	4.25	13	12	11.25	5	5	4.00	7	6	5.50
Total	19	11	9.50	24	20	22.25	10	10	11.25	14	13	16.00

Table 16: Key information of the interviews conducted on four research voyages

Next I discuss the way I conducted observation of seafarers' work activities as the second research technique. It shows how it made a significant contribution to answering the research question and consolidated the data already collected through interviews.

Observation of onboard activities

A considerable section of my time on board was spent observing seafarers engaged in various work activities. These activities included their day-to-day maintenance and upkeep work on different parts of the ship. On one ship, for instance, I observed how the seafarers worked on repairing a hydraulic crane or prepared cargo tanks for subsequent cargo, while in the engine room how the engineers overhauled a diesel generator or carried out gas cutting and welding. I also observed the activities of the seafarers during various critical operations, such as the starting of cargo loading or unloading operations or manoeuvring of ships in and out of harbours. Besides, on all ships I also attended a number of safety and other operational meetings. These were of particular significance as they were referred to in the companies' SMSs as important opportunities to discuss the practices of safeguarding OHS, and particularly for ratings to bring out their OHS related concerns. Moreover, I also participated in the safety trainings and drills, which included simulated fire rescue operation, lowering of lifeboats into the water and watching safety videos.

Before carrying out observations, I first ensured that it was safe for me to be in the vicinity of such activities and equally that I was not causing any impediment to others. I dressed myself in overalls and wore appropriate personal protective equipments. On all occasions I took the permission from the individuals as well as the captain and the head of the department.[36]

Through the observations I could better locate how social processes influenced the operationalisation of the ISM Code on board the ships. It helped me to identify how certain beliefs and constraints were translated into the ways the seafarers worked and thus shaped the implementation process of the ISM Code on these ships. By observing, for instance, the ways the seafarers communicated with each other provided an indication of the social relationships onboard. Equally, by noting the senior officers' ways of organising the day-to-day work I could appreciate some of the major factors that influenced their decisions. However, as Atkinson *et al*. (2003) pointed out that interpretation of qualitative data requires a long period of familiarity with the data, it also took me several observations to appreciate the complexity and richness of the social influences that affected the implementation of the ISM Code. Only after conducting several observations could I better

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[36] Head of the Department: Generally, on ships the Head of the department of the deck side is the Chief Officer while in the engine room it is the Chief Engineer.

appreciate the social factors that influenced these human actions, such as their contribution to risk assessment.

Although I am discussing the two qualitative techniques separately, on ships I often seamlessly switched between the two. In fact, on most days I used a combination of the two methods. On an average I interviewed two seafarers per day and spent the remaining time conducting observation and generally socialising and talking to the seafarers informally. Besides, every day I also spent around an hour writing down my experiences of the day in the field notes.

The field notes from the observation alone provided a rich source of data eliciting several underlying social features affecting the implementation of the ISM Code. Thus it qualified as an independent source of information and stood in its own right as an effective research technique. However, as described by Hammersley and Atkinson (1995: 131), by combining it with the data collected through interview I presented a richer collection of data. Such combined sources of data allowed for better analysis of social values and priorities influencing the practice of the implementation of the ISM Code at the shipboard level. It also allowed me to move away from relying excessively on one technique. As Shipman (1997: 106) and Ackroyd and Hughes (1981: 137) argued, the use of multi-technique approach or triangulation was vital for me to remove any inherent bias that may have been in either of the two techniques.

Although interview and observation were the two main research techniques used on ships, a small part of the fieldwork on all four ships also included documentary analysis. In the final subsection I shall discuss how this technique further contributed in identifying the factors influencing the operationalisation of the ISM Code.

Document Analysis

The main purpose of conducting document analysis as part of the second stage of the research was to investigate the different documents related the implementation of the ISM Code and to look at the nature of the written communication between the ships and their shore-based offices. These archived copies of communication reflected the seafarers' contribution in the implementation of the ISM Code. While the documentary analysis conducted in the first stage of the fieldwork provided an overview of the working

procedures, the purpose of repeating it on each ship was to get a better understanding of the practice on each ship and the nature of communication between each of the four ships at its management office. It was a considerably effective technique as its primary contribution served to reinforce or contradict data obtained through the two other techniques.

Archived e-mails and letters as well as filled-in checklists and forms as part of the requirements of the companies' SMS implementation were vital sources for this purpose. By studying these documents and taking their photocopies and notes from them, I was able to form a better understanding, for instance, of the way risk assessments were recorded on these ships. Likewise, several years of archived documents on 'incident reporting' also indicated the types and frequencies of incident and near-miss occurrences that were reported from these ships. Also, letters and e-mails written by the managers of the shore units suggested the managements' priorities and factors that influenced their instructions to the ships. The tone of these messages also carried with them an indication of the managers' communication style. Thus, by reviewing these documents I could offer a new perspective to identify the social factors that influenced the implementation of the ISM Code in the two case studies.

The importance of using different techniques (triangulating) in organisational fieldwork has been pointed out in earlier studies. Kunda (1992), for example, used in-depth interviews, observation and documentary analysis as research techniques to understand the organisational culture of an American corporation in his well acclaimed work of *Engineering Culture*. It was similarly beneficial in my research. It gave me the opportunity to reveal the contradictions between what was meant to be done and what was actually done. I achieved it for example by observing what the seafarers entered in the safety checklists and what precautions they actually took at work.

Having completed the discussion on the data collection methods and presenting the experiences in the fieldwork the discussion in the following section provides an overview of the data analysis process used in this thesis. It draws on analysis techniques used in research and justifies how they were appropriate for the purpose of my study.

3.3 Analysis of data

From the fieldwork I interviewed a total of 87 people, of which I used tape-recording for 67 interviews. The total duration of the recorded interviews was around 80 hours. I took hand-written notes for the remaining 20 interviews which on an average also lasted for an hour. Besides, on each of the research voyages, I wrote a copious amount of field notes. In all, the field notes from the four research voyages consisted of around 200 A4 pages. Finally, in addition I also took photocopies of some of the documents from the management units and ships for the purpose of analysing.

During the fieldwork I used a digital tape-recorder and downloaded the recordings on computer for subsequent transcription. The majority of the managers and seafarers who I interviewed did not have English as their first language. They came from places such as the Far East and East Europe. Some of the interviews were thus a little difficult to transcribe. In all I took around four months to transcribe all the interviews.

The interview transcripts and copious field notes produced a large bank of data. For ease of analysis I made use of computer assisted data analysis software 'N-Vivo'. As a first step I imported the transcripts and field notes into the N-Vivo program. Then, in order to make the data more manageable and easier to retrieve, I started assigning various codes to the data bank. Each of these codes signified an idea or a topic that emerged from the interview transcripts or field notes. While in some cases these ideas were captured in a few sentences, at other times they were presented in considerable detail which ran into several pages. This process of assigning codes took me approximately another two months. Ten such common codes from my thesis were:

- Seafarers fear of being blamed
- lack of time for conducting risk assessment
- paperwork unnecessary/ superfluous
- importance of oil major inspection
- importance of budget
- unresponsiveness of managers
- focus on paperwork checking
- importance of keeping to schedule
- complying with paperwork protects from blame
- ISM Code induces mechanisation of tasks

Having assigned the codes I started examining them and identifying the ones which were most significant. With the help of the N-Vivo program I also flagged potential regularities and patterns for the purpose of identifying conceptual links and thematic guides (van Maanen, 1988). For instance, I identified whether certain ideas emerged only from a particular group of managers or seafarers. I found out whether, for example, they only occurred in Company-A or were viewed by seafarers of one particular rank, such as ratings, or were common with seafarers who were employed under a particular type of contract.

Also, I utilised the N-Vivo program for the purpose of conducting 'between-method' triangulation (Denzin, 1970). With its help I analysed whether the findings of the different data collection techniques used in the same stage of the research were reinforcing or contradicting each other. In the second stage of the research, for instance, I found out how the findings from the documentary examination complemented the findings from interviews or the observations.

The next step of the analysis was to group these codes together into categories based on their common attributes. The purpose of doing so was also to manage the data in such a way so that it led to answering the research question. This helped in building a robust argument, often including views from the managers, officers as well as ratings. One such example on how a set of codes was grouped together to form into a category can be seen from the example below.

- (managers' emphasis on) focus on procedural compliance
- ignore SMS instructions
- importance of skill utilisation and work experience
- understudying seniors/ need sea experience
- learning to work through experience
- SMS instructions assume shipboard tasks are circumscribable

The six above codes featured in several interview transcripts, both from the managers and seafarers, as well as in the field notes. By thoroughly scrutinising the contents and studying them in conjunction with the arguments made in the literature, I identified a common thread. The underlying theme running through all these codes was the importance of the 'shipboard communities of practice' which contributed in safeguarding seafarers' OHS.

This particular category is pointed out and analysed in section 5.3.4 and subsequently discussed in section 8.2.3 of this thesis.

In this way I determined several categories, such as:

- fear of unemployment (section 6.3.1)
- concerns with hierarchy (sections 5.3.5; 6.3.3)
- bureaucracy (sections 5.2.2; 5.3.2)
- commercial influence (sections 5.2.2; 7.2.2)
- nature of communication (sections 5.2.1; 5.3.4)

These categories have given rise to the themes that are discussed in the three subsequent findings chapters. The development of the categories from the codes however was an iterative process. It was developed by revisiting the literature, discussing the findings with my supervisors and writing and re-writing the findings from my fieldwork. This process of interpreting and reinterpreting the data as described by authors, such as Coffey and Atkinson (1996), helped me better analyse the data and produce my findings from the fieldwork. Roughly the entire process of analysing the data took six months.

Having discussed the data collection and analysis method, the subsequent discussion will reflect on the ways I considered the ethical dimensions of the study.

3.4 Ethical considerations

The methods used in this research were in strict compliance with the British Sociological Association's Statement of Ethical Practice (BSA, 1992) and the requirements of the School of Social Sciences Research Ethics Committee (SREC) at the Cardiff University. As per the rules of the university, prior to embarking on the project I sought approval from the SREC. For that purpose, in February 2006, I provided the committee with an outline of my research project including the detail of the persons who I proposed involving in the project, how I planned to obtain their consent, whether the research could potentially harm the persons involved and, if so, how I planned to protect their identities. After reviewing my proposal, in April 2006 my proposed research was deemed suitable by the SREC which subsequently gave me the approval to proceed with the study[37].

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[37] Ethical Approval: The ethical approval form along with the outline of the research proposal and subsequent permission from the SREC are attached in the Appendices of this thesis.

For the purpose of getting access to the companies I provided the detail of the project and also at the start of each of the stages of the fieldwork I discussed it with the managers and ship-captains. Moreover, prior to conducting each interview I took around five minutes describing my research project with each interviewee. With each manager and seafarer I first discussed the aim of the research, its method and answered any questions that he or she had. I also described how each participant was assured of anonymity and reminded each of them that he or she could refrain from answering my questions or even stop the interview at any stage. At this stage I also asked whether I could record the interviews. Equally, on ships I took explicit permission from the captains, the heads of the department and the persons involved before conducting observations. In the same way I took explicit permission from the managers, captains and heads of departments, as the case may be, before looking into any logbooks, files or such other written material. Thus, only on obtaining clear permission and informed consent did I start my fieldwork. As pointed out by Hammersley and Atkinson (1995) social science research should not be conducted by compromising the ethical elements of our societies. Obtaining an informed, unconstrained and voluntary consent of all the individual respondents thus was the foundation of the ethical dimensions of my research.

On completion of the interviews, hiding the identities of the interviewees was thus an important ethical element of the research. As a first step I disguised the names of the interviewees by allocating random numbers against their interview transcripts. For the purpose of analysing the fieldwork, however, I retained only the ranks of the interviewees, the identity of the shore-based management units (Company-A or B) and the identity of the ships (Ship-A1, A2, B1 or B2). In the subsequent finding chapters in most cases I used language such as: 'one rating from one of the research voyages said', when quoting interviews, while in some cases for the purpose of emphasising a particular feature of the case study I had to mention, for instance, 'one of the managers in Company-B said'.

Concealing the identities of the organisations as well as the four ships in my thesis was thus integral to making the managers and seafarers anonymous. This has been pointed out by several scholars as an important ethical element of research. Christians (2005: 145), for example, in the discussion on the codes of ethics in social science research discussed how 'shielding all personal data ought to be secured or concealed and made public only behind

a shield of anonymity'. There the author also warned how insiders to organisations can recognise pseudonyms and disguised locations. Keeping this in mind, I took extra precaution for the purpose of protecting the identities of all individuals and organisations featured in this thesis. In some cases, thus, it has been necessary to be somewhat vague about the detail of the companies and the ships, the voyages I took and the seafarers' nationality.

Chapter-4:   Introducing the Case Studies

Introduction

The purpose of this chapter is to introduce the two case studies, Company-A and B. In order to do so more effectively the two companies are first located within the tanker sector of the maritime industry. The chapter begins with a discussion of the main features of the two companies, such as their business, management structure, responsibilities of their managers and seafarers and then provides an overview of their Safety Management Systems (SMSs). It also highlights the standards of OHS of the two companies in reference to the maritime industry. Finally some key features of the four research ships: Ship A-1, A-2, B-1 and B-2 are presented.

4.1 The Tanker sector of the maritime industry

As a primary carrier of world trade, the maritime industry is closely associated with the world economy and growth. Between 2000 and 2005, for instance, the worldwide economic output maintained an annual growth rate of around 4.5%. During the same period the world trade also grew at the rate of above 5.0% and seaborne trade increased at about 4.0%. In fact, the seaborne trade has grown from 2763 million tons in 1972 to 6808 million tons in 2005, which is an increase of approximately 2.5 times (ISL, 2006).

	2000 – 2005 Growth rate	Growth rate in the year 2004
Worldwide economic output	4.5%	5.3%
World trade	5.0%	9.0%
Seaborne trade	4.0%	6.6%

Table 17: The relation between worldwide economic output and trade.
Source: ISL, (2006).

4.1.1 The world oil trade

The bulk of the seaborne commodities are oil and coal, which are the main sources of energy, and iron ore, which is the main raw material for the steel industry. Other key commodities in the seaborne trade are grain and containerised merchandise forming part of the 'other cargoes' (see table below). In the last 20 years the combined trading volume of crude oil[38] and petroleum products[39] has risen steadily contributing to an increase in the total seaborne trade volume. Roughly, these two have formed one-third of the total volume

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[38] Crude Oil is naturally occurring flammable liquid which requires refining before it may be used commercially.
[39] Petroleum products are processed by refining crude oil. These include Jet Fuel, Gasoline and Furnace Oil.

in seaborne trade. The figures also suggest that the combined volume of crude oil and petroleum products in seaborne trade has nearly doubled during this period (ISL, 2005b; ISL, 2006).

Year	Crude Oil	Product Oil	Total Oil	Coal	Iron Ore	Grain	Other Cargoes	Total Seaborne Trade
1985	871	288	1159	272	321	181	1360	3293
1995	1415	381	1796	423	402	196	1895	4712
2005	1820	485	2305	690	650	242	2894	6808

Table 18: Volume of seaborne trade (Figures in Million tons), 1985 to 2005.
Source: ISL (2005b) and ISL (2006).

Furthermore, despite the increasing importance and availability of alternate sources of energy, the use of petroleum oil has remained the most popular source and is predicted to remain so for a considerable period of time (see table below).

Year/ Fuel type	1985	1995	2005	2015 (projection)	2030 (projection)
Oil	125	145	160	195	235
Coal	80	80	100	130	180
Natural Gas	60	75	100	125	170
Renewable	20	25	35	40	55
Nuclear	5	20	20	25	25

Table 19: World marketed energy use by fuel type Unit: Quadrillion BTU, 1985–2030.
Source: EIA (2007).

The discussion thus shows that seaborne oil transportation feeds into the lifeline of the world trade by providing essential fuel for the growing world output. This makes the oil tanker sector within the maritime industry a mature and stable sector.

In order to introduce the two case studies the discussion now focuses on the global seaborne oil trade areas. It points out how crude oil export from the Persian Gulf and import into the North America (as in Company-A), and the oil product trade in Europe (as in Company-B) occupy significant importance within the wider oil sector transportation of the maritime industry. The purpose of the discussion is to point out that the business activities of the two case studies and in particular the trading areas of the four ships were part of main stream seaborne oil trade.

International crude oil trade

The international oil trade involves a complex arrangement of oil transportation as there are a number of geographically dispersed nations involved in the production of crude oil, its refining and its final consumption. From the complex trading patter, the figures below show the top five crude oil exporting and importing regions of the world.
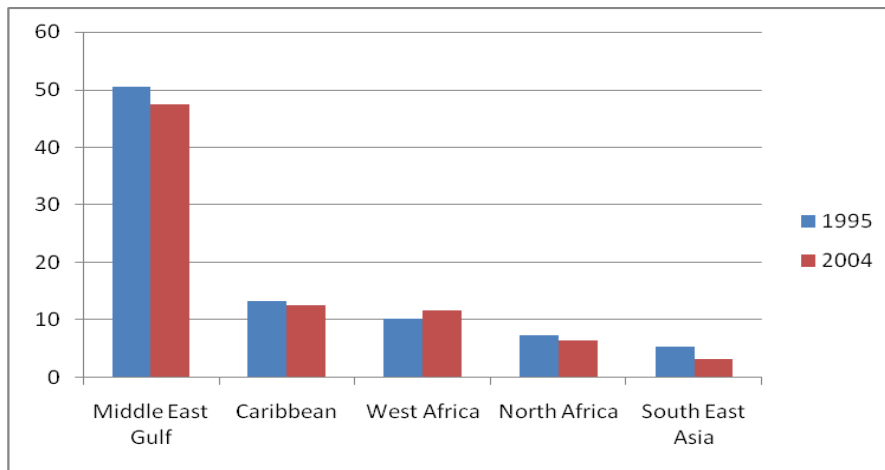
Figure 9: Leading Crude Oil Exporting regions in the world, 1995 and 2004.
Percentage of the world total. Source: ISL, (2006).
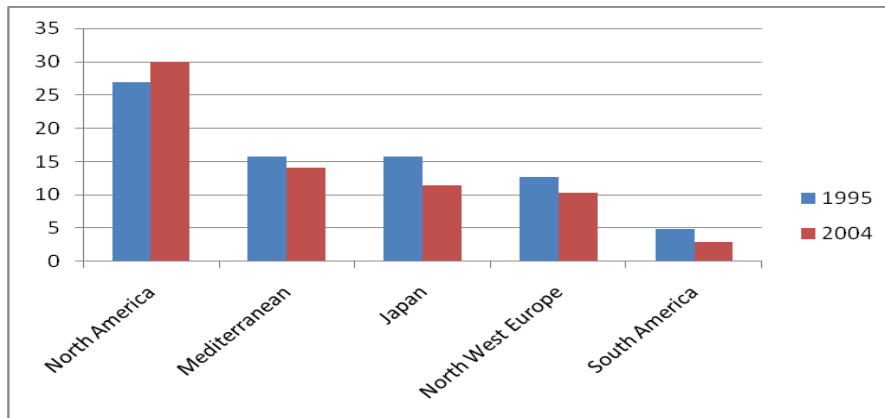
Figure 10: Leading Crude Oil Importing regions in the world, 1995 and 2004.
Percentage of the world total. Source: ISL (2006).

The world route map (see next figure) provides a diagrammatic indication of the major crude oil seaborne trade routes. It shows that the Middle East Gulf is the primary crude oil exporting region, while Western Europe, North America and Japan are the largest importers of crude oil.
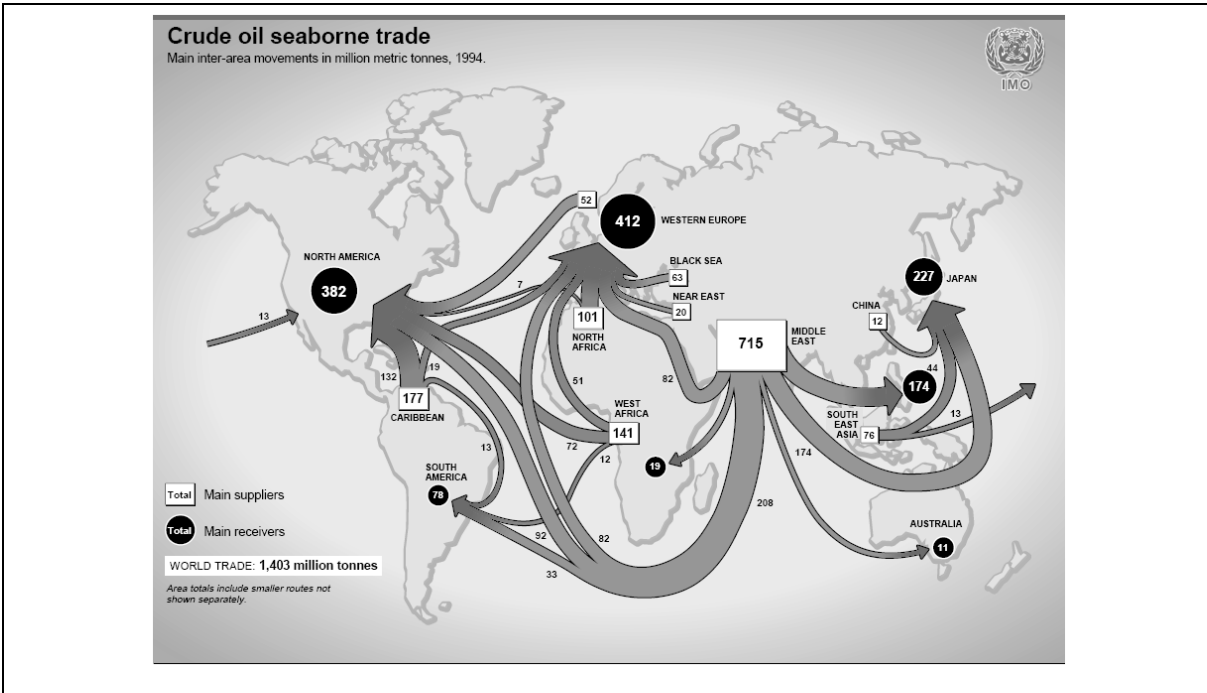
Figure 11: Crude oil seaborne trade in million metric tonnes
Source: Oceans Atlas (1994).

These distinctive features of the crude oil trade were taken into account when choosing the two research ships in Company-A. The Ship-A1 was engaged in exporting crude oil from the Middle East Gulf while the Ship-A2 traded in North America.

The European oil product trade

The other significant area of seaborne oil trade is the oil product trade in Europe (see graph below).
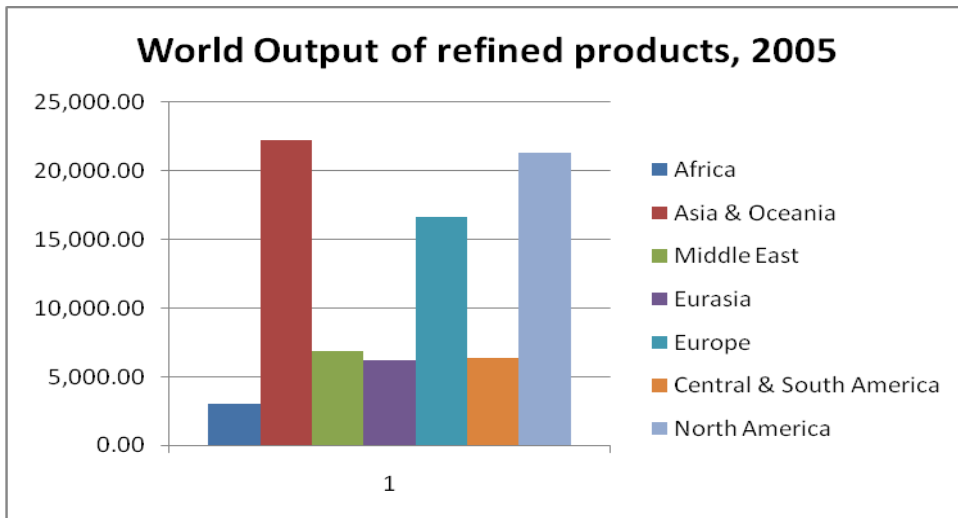
Figure 12: World Output of Refined Petroleum Products, 2005.
Unit: Thousand Barrels per day. Source: EIA (2006).

The production of refined oil products and its transportation depends on the interplay of complex elements of oil business involving storage, refining and exporting capabilities of a country as well as the demands of petroleum products in domestic and foreign markets. From this intricate business structure, the following graph shows that Asia and Oceania, North America and Europe are the three leading regions of the world for output of product oils. They also have the significant amount of crude oil refining capabilities (see the global distribution of crude oil refineries).
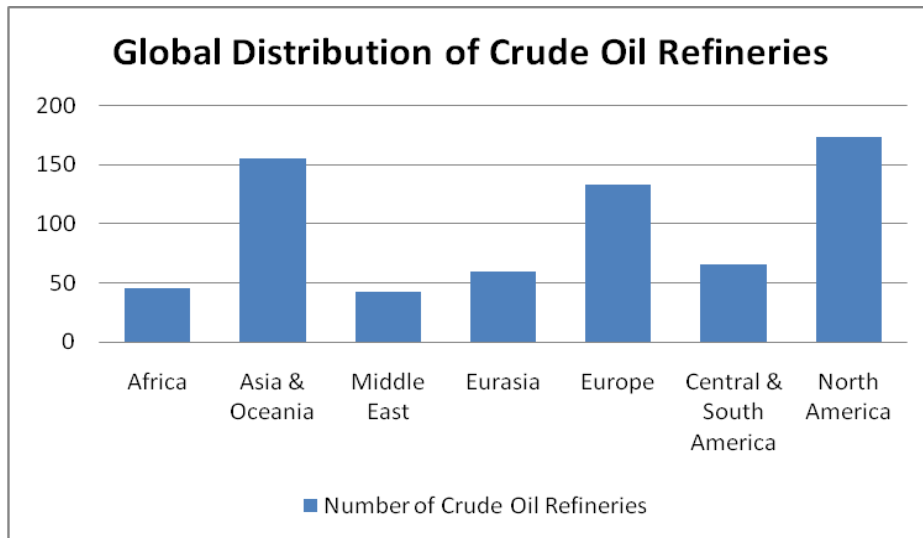
Figure 13: Global distribution of crude oil refineries, 2005.
Source: EIA (2006).
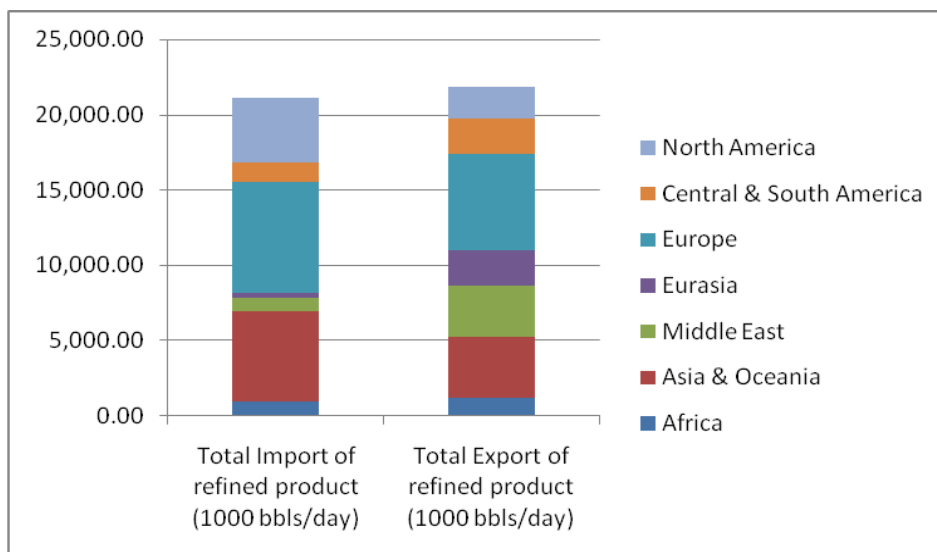
Figure 14: World Import and Export of Refined Petroleum Products, 2005.
Source: EIA (2006).

The same three regions also lead the way in the import and export of refined petroleum products, with Europe leading the list (see graph on the previous page).

Thus it shows that Europe is a major source as well as destination of product oil. With regard to setting up the criteria for selecting the second case study, the product oil trade in Europe was therefore taken into account. Company-B was located in Europe with its fleet mainly engaged in the trading of refined petroleum products in the European waters.

4.1.2 Oil Tankers

In the maritime industry, tanker is a generic term used for crude oil and oil product carriers. In comparison to the other sectors in the maritime industry, statistical data show that the tanker sector is the largest both in terms of the number of ships and also their cargo carrying capacities (see table below). The figures in 2005, for instance, indicate that the highest percentage of ships (19.2) were tankers followed by bulk carriers which constitute 15.5% of the world fleet. Similarly, in the same year the oil tankers constituted 37.9% of the world cargo carrying capacity followed by the bulk carriers at 34.8% (ISL, 2005b).

Year	Percentage of number of ships in the world fleet			Percentage of DWT of ships in the world fleet		
	Tanker	Bulk Carrier	Container	Tanker	Bulk Carrier	Container
2005	19.2	15.5	8.1	37.9	34.8	11.2

Table 20: Percentage of number and DWT share of worldwide tanker, bulk carrier and container fleets, 2005. Source: ISL (2005b).

Also, a significant proportion of world's larger ships are tankers. In 2005, for instance, the tankers of the size of 90,000tons DWT and above formed a staggering 64% in terms of ship numbers and 67.3% in terms of their cargo carrying capacities (see table below).

Ship Type	Total Numbers (% in bracket)	Total DWT (% in bracket)
Oil Tanker	1305 (64.0)	237.5 (67.3)
Bulk Carrier	633 (31.0)	104.3 (29.5)
Combination Carrier	47 (2.3)	6.2 (1.8)
Container	50 (2.5)	5.1 (1.4)
Total	2039 (100.0)	353.1 (100.0)

Table 21: The different types of ship of size 90,000 DWT and above in number and DWT, 2005
Source: ISL (2005b).

However, tankers are also a significant threat to the marine environment. In the last 30 years they have been involved in large-scale maritime oil pollution incidents polluting different coastlines around the world (see table below).

Tanker	Year	Location	Spill size in Metric Tons
Atlantic Empress	1979	Tobago, West Indies	287,000
Castillo de Bellver	1983	Saldanha Bay, South Africa	252,000
Amoco Cadiz	1978	Brittany, France	223,000
Torrey Canyon	1967	Scilly Isles, UK	119,000
Braer	1993	Shetland Islands, UK	85,000
Sea Empress	1996	Milford Haven, UK	72,000
Prestige	2002	Spanish coast	63,000
Exxon Valdez	1989	Alaska, USA	37,000

Table 22: Major Marine oil spills since 1967.
Source: ITOPF (2008).

With growing awareness of the preservation of the marine environment the tanker sector of the maritime industry has thus been the major focus of the industry's policy-makers as well as other stakeholders. The policy-makers have introduced a number of new measures on tanker construction (see IMO, 2002b; 2009) and (as pointed out in the review of literature) the Oil Majors as the heads of the supply chain in the oil trade have taken active initiative in regulating the operation of tankers globally.

4.2 Case Study: Company-A

Introduction
In this and the following sections, the discussion presents some of the important features of the two case studies. It highlights:

- the key features of the companies and their businesses
- companies' management structure and responsibilities of the managers
- the shipboard structure and seafarers' responsibilities
- the operational requirements of the SMS used in the two organisations
- the safety standard of the organisations
- the key features of the ships where I conducted the fieldwork

This data is collected from the following three sources:

1. The SMS of the two companies
2. Interview with the managers of the two companies
3. Information available on the two companies' and other's websites

Company-A, was a branch office of a relatively large third-party ship management company. The shore-based management office of Company-A was located in Europe and was responsible for managing between 25 and 35 ships[40]. The Head Office of the entire group was located in another city while the other branch offices (shore based management units) were located in various places around the world. The main details of Company-A are provided below in tabulated form.

Location	Europe
Type of company	Third party ship management
Types of ship managed	Tankers and Bulk Carriers
Number of ships managed	Between 25 and 35
Size of ships	Between 2500 and 60,000 GRT
Ship trading area	Worldwide
Flag States	Both TMN such as UK and FOC, such as Liberia
Total number of office employees	Around 30
Total number of seafarers	Sailing around 450

Table 23: Kay features of Company-A.

Company-A managed the ships on behalf of the ship-owners without having any ownership stake on those ships. To Company-A these ship-owners were its clients who paid fixed service charges in advance on a monthly basis. The relationship between them and the ship-owners was contractual which could be terminated by either party at a short notice.

4.2.1 Company Function

Although Company-A belonged to a wider group of companies, each of the shore-based management units was responsible for operating the ships that belonged to its own fleet. Thus, Company-A operated its ships independent of the way its sister offices operated theirs from other parts of the world.

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[40] As pointed out in section 3.4, some of the data are deliberately presented in this thesis in a vague way in order to protect the identity of the organisations studied.

Around half of the ships managed by this company were tankers, while the remaining were dry cargo ships[41]. As the study only looked into the tanker fleet, the detail of the dry bulk fleet is not presented. The tankers carried crude oil as well as oil products and sailed all over the world, such as the Mediterranean Sea, Persian Gulf, Asia, Australia and America. The tanker fleet had several different owners and were registered with different Flag States including TMN as well as FOC.

In the case of Company-A, the ship-owners were responsible for selecting the Flag States of their ships, their ship's commercial employment and for providing logistics support for their ship's commercial ventures. However, the managers of Company-A were required to protect the ship-owners' commercial interests besides managing the safety and technical operations of the ships and providing support to their day-to-day operational needs. In particular, the ship-owners required the managers to ensure that the tankers were vetted and approved by as many Oil Majors as possible because the owners were keen to have the Oil Majors as their clients.
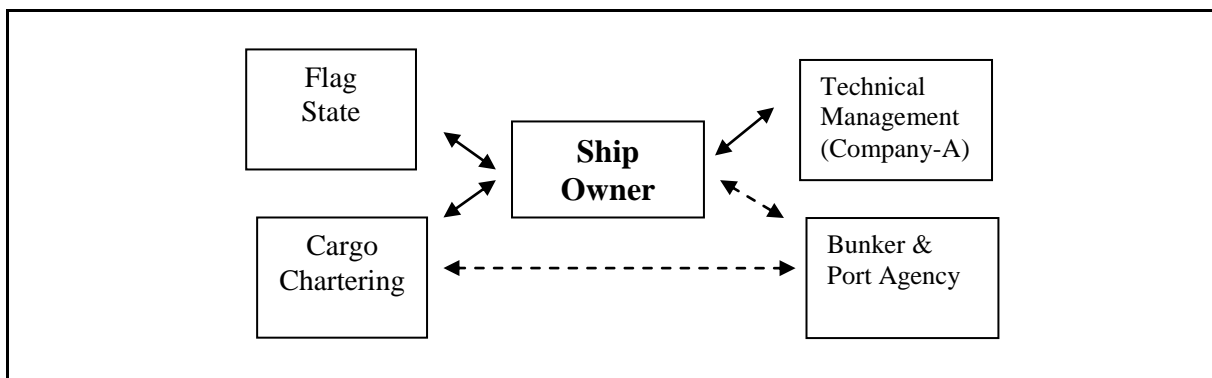
Figure 15: Business relationships between Company-A and its ship-owners.

The type of services offered by Company-A is widely acknowledged in the maritime industry as *total technical management service*, which includes providing services for crewing, technical support, insurance, accounting, stores and supplies, as well as being responsible for the safe operation of ships and prevention of shipboard pollution (as required by the ISM Code). An overview of the functions of Company-A is presented below.

Although the selection of the Flag State was the ship-owners' obligation, Company-A was responsible for liaising with them for complying with the regulatory requirement for each

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[41] Dry Cargo Ships trade cargoes such as containers, grain and iron ores.

of the ships. It also required coordinating with a number of Classification Societies for carrying out surveys and inspections on all its managed ships. As pointed out earlier (in section 2.1.3) in the maritime industry the Classification Societies play an important role mainly in looking into the ships' structural and technical aspects.
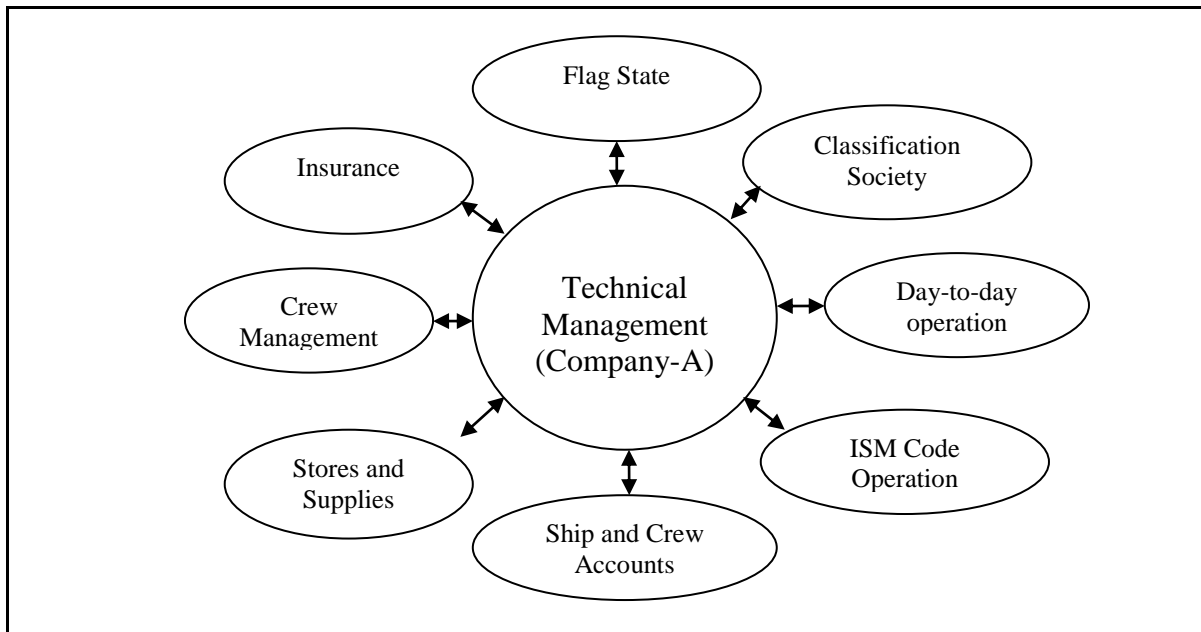
Figure 16: The different functions of Company-A.

A significant part of Company-A's task entailed providing the day-to-day technical support to the fleet. This included advising the ships' crew on technical matters and monitoring ships' maintenance schedule. It also required them to occasionally liaise with technical experts, such as manufacturers of shipboard machineries. As part of the technical assistance, Company-A was required to arrange for supplying machinery spares and consumable stores as well as victuals and drinking water to the ships. As the fleet was scattered around the world, supplying stores and provision involved a significant logistical challenge.

The other major task of the managers of Company-A involved the operation of the ISM Code. It included operationalising the different functional requirements of the Code (see section 1.3.3) such as monitoring risk assessment, conducting audits, reviews and also getting appropriate certification from the Flag States.

The accounting element of the service involved keeping a detailed account of the fleet's running expenses. It included maintaining a record of expenses related to the seafarers' wages, their travel, as well as the ship-related expenses such as their maintenance, surveys,

and communication costs. Detailed account keeping was deemed essential for negotiating the fleet's operating budget with the ship-owners.

The crew management aspect of the service included selecting and appointing seafarers in the fleet and relieving them at the end of their contract period. It also involved providing seafarers with certain trainings (which were in excess of the regulatory requirements) and among other things conducting their pre-joining medical checkups.

Finally, the insurance aspect of Company-A's function involved obtaining Hull and Machinery (H&M) and Protection and Indemnity (P&I) insurance covers for each of the ships in the fleet. The former insured the ship's structure and its machinery equipments while the latter provided protection against the liability of seafarer or cargo related matters.

4.2.2 Overview of the managers' responsibilities

The managers at the Head Office of the group of companies were in charge of administrating the SMS and overseeing the safety and pollution prevention standards in all its fleets. They also took the major business decisions, scrutinised the financial statements and employed the top management teams in the shore-based management units of Company-A and its sister offices.

Head Office Responsibilities

- Administer the overall ship management business
- Implement the SMS and oversee safety and pollution prevention standards
- Monitor profit/ loss from all the branch offices such as Company-A
- Employ and train Managing Director and Senior Managers in all branch offices

The responsibility of the managers in Company-A (and all such other sister units) included managing the day-to-day operation of the ships in their own fleet. To carry out these tasks effectively, there were three layers of managerial posts.

Branch Office (such as Company-A) Responsibilities

- Provide day-to-day technical management functions to the fleet
- Monitor OHS and pollution prevention for the entire fleet
- Take into account the ship-owners' (clients') commercial needs

- Be self-sufficient in terms of company balance sheet
- Employ and train Middle level managers and all support staff

The Company-A's managers' responsibilities are now presented. The organisation's core staff included Director, senior-level and middle-level Managers, Superintendents and Secretaries (see diagram below).
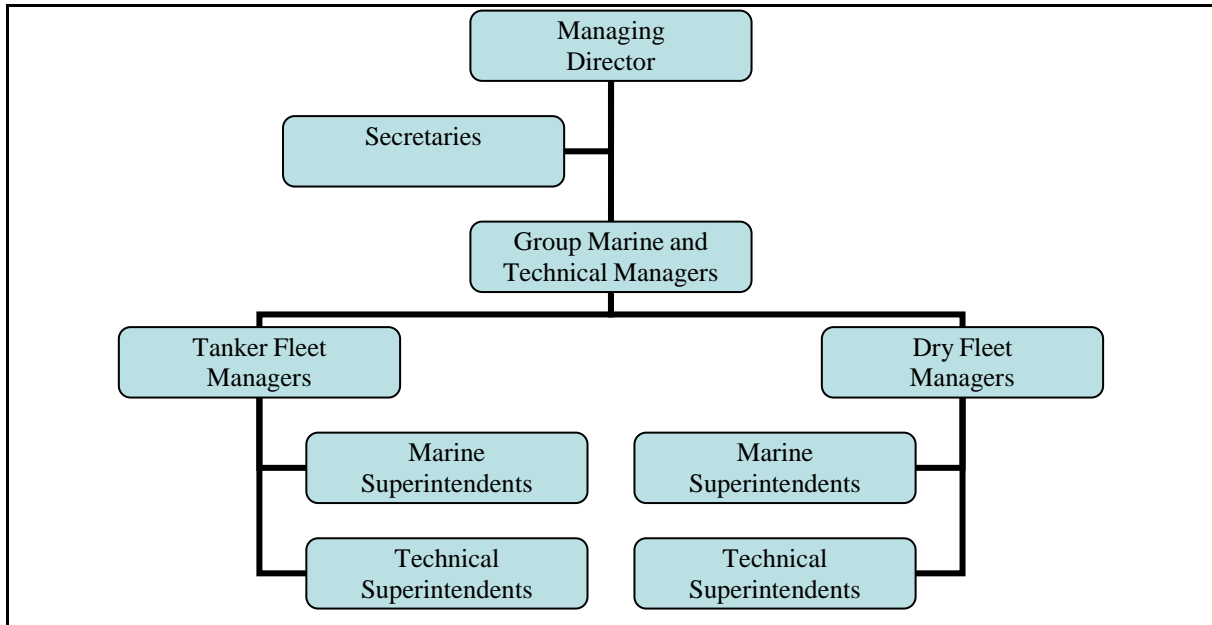
Figure 17: The organisation chart of Company-A.

The office staff came from different parts of the world although English was used as the working language. Except for a few secretaries and accountants in the office, the rest were male. All managers and superintendents had a seafaring background and had been employed in the organisation for around ten years.

The Superintendents were responsible for monitoring the day-to-day activities of the ships. Each one of them was responsible for a minimum of one and a maximum of four tankers, and was the first point of contact from ships. While the Marine Superintendents were responsible for overseeing the safety, pollution prevention and operational aspects of the ships, the Technical Superintendent was responsible for overseeing machinery related matters, such as planned maintenance of mechanical and electrical equipments and supply of spare parts. On an average once every three to six months these technical and marine superintendents visited the ships that they were responsible for.

These superintendents were responsible to the Fleet Managers who in turn were responsible to the Group Managers. The Fleet Managers were mainly involved in liaising with the ship-owners, charterers, insurers, ship repair yards and other entities involved in the business. They were also the Designated Persons (DPA) (see section 1.3.2) for the entire fleet although for all practical purposes it was the superintendents who were contacted by the ships as a first point of contact. They were also in charge of coordinating with the crewing offices located in different parts of the world, such as in the Far East, for the employment of seafarers. The Group Managers on the other hand were common to both the dry and oil tanker fleets. They represented the office at the wider company level and were more involved in the group's business. One of their major tasks was to vie for new business and liaise with the existing clients.

The Managing Director was in charge of the office and among other tasks was responsible for ensuring company's SMS compliance. The commercial success of the company and the employment of managers and superintendents were also his responsibility. It also included reviewing and approving all budget and contract documents, maintaining close contact with clients and ensuring that the services provided to them were in accordance with the clients' expectations.

Finally, the secretaries of the company liaised with the Head Office and were thus considered a link between the Head Office and Company-A. One of them in particular was responsible for maintaining a record of the ISM Code related matters including gathering information for incident and accident statistics and audits.

4.2.3 Overview of the seafarers' responsibilities

The contract between the ship-owners and Company-A also specified the nationalities of the seafarers who could be employed in each rank. Although there was flexibility in terms of the junior officers and ratings, the ship-owners had strict requirements with regard to the nationality of the senior officers and especially captains. They even required Company-A to send a copy of the employment history of the senior officers for their approval before they could be appointed.

In Company-A the seafarers were employed with the help of the company's global network of crewing offices. They came from over ten different countries of which the majority were

from Far East, South Asia, and Eastern Europe. The local crewing offices also offered in-house training to seafarers with short courses – which were attended by seafarers when on leave. The exact number of seagoing employees was not fixed due to the frequent changes in the number of ships managed by Company-A, but could be estimated as 450.

Company-A employed all its seafarers on short term contracts. While the senior offices were contracted for four to five months, the junior officers were employed for six months and the ratings were employed for nine months. None of them, however, were paid when they went on leave. As a result, the seafarers who were on leave did not strictly form part of the list of employees. Nonetheless, the interviews later revealed that a significant percentage of the officers and ratings regularly returned to work in Company-A, and on some occasions were even employed on the same ship time after time.
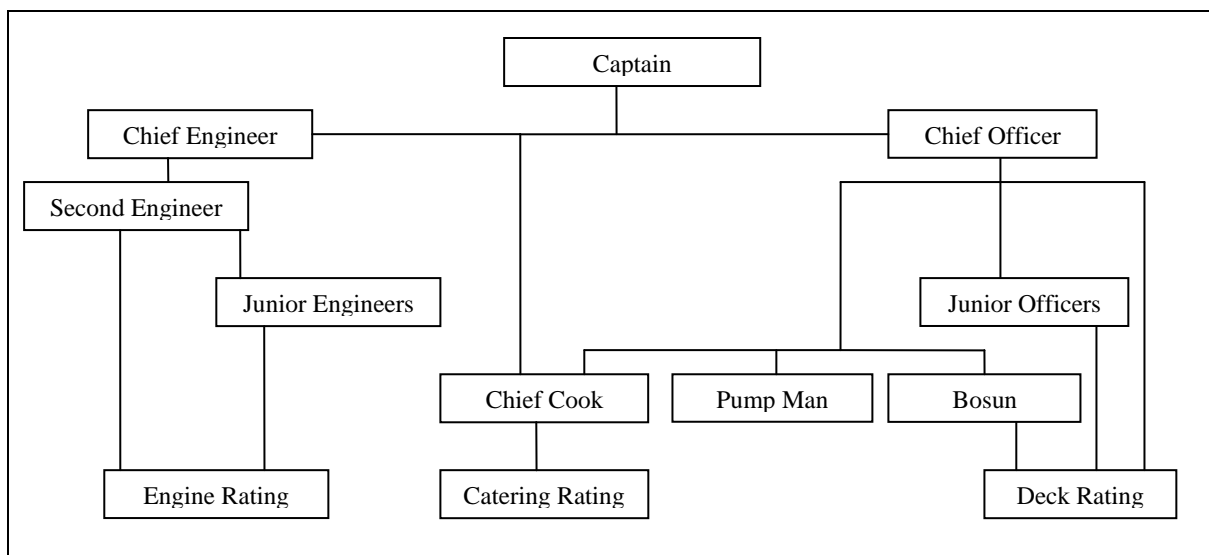
Figure 18: Shipboard organisation chart.

The Captain of the ships was given the responsibility and authority to ensure the overall safety and pollution prevention from the ship and the safety and welfare of the seafarers. On each ship the captain was in charge of ensuring that the ship implemented the company's SMS and the local and international regulations and complied with the ship-owner's commercial endeavours. He[42] was also specifically responsible for ships' safe navigation and communicating with all external organisations including the company managers.

The Chief Officer was regarded as *second in command* on each ship and was required to assume all of the above responsibilities in the absence of the captain (through some

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[42] All my interviewees (in management offices and on ships) were male.

exceptional circumstances, such as the captain's incapacitation due to an accident). He was the head of the deck department and was responsible for the day-to-day maintenance work on deck and all operations related to cargo including the stability of the ship. In certain cases the chief officer was also required to keep navigation watch when required by the captain. Being the head of the deck department, he was particularly responsible for the safety of the junior officers and ratings employed in the deck department.

The Second Officer and the Third Officer (junior officers) were responsible to both the Captain and Chief Officer of the ship. Their general duties included navigation and cargo operation watch-keeping for between eight and twelve hours a day. The second officer's tasks included monitoring the conditions of the navigational equipment and planning and preparing ships for safe navigation between ports, while the third officer's specific responsibility included maintaining the safety and fire-fighting equipments on ships.

The Chief Engineer was in charge of the engine department. He was responsible for all technical operations on ships. He was particularly responsible for smooth operation of the most critical engineering operations, such as ship's bunkering operation and manoeuvring. His duties included systematic maintenance and survey of ship's machinery and electrical equipments.

The Second Engineer was responsible to the Chief Engineer and his responsibilities included day-to-day planning and execution of technical maintenance and operation. He was also responsible for the safety of the junior engineers and ratings working on machineries. On some ships, when required by the chief engineer, the second engineer was also expected to carry out watch-keeping duties for up to eight hours a day.

The junior engineers, i.e. the Third, Fourth and Electrical Engineers were responsible to the ship's chief engineer as well as the second engineer. Their responsibilities included watch keeping for between eight and twelve hours a day and safe operation and maintenance of machinery equipments. The electrical engineer was responsible for providing assistance to technical operation and maintenance activities.

Among the ratings, the Bosun was the senior-most. He was responsible to the chief officer for ensuring proper and safe execution of operation and maintenance tasks in the deck

department. The tasks included supervising the deck ratings and ensuring that they comply with the company's safety procedures. The Pump-man was also a senior member of rating. He was responsible to the chief officer for all operation and maintenance tasks in the deck department. His particular responsibilities included assisting the chief officer in planning and executing loading and discharging of cargo.

The other ratings in the deck department were A.B. (able seaman) and the O.S. (ordinary seaman). They were responsible for assisting in the navigation of the ship, the cargo operation and in the maintenance of the deck department. They reported to the watch-keeping officers during navigation and cargo operation or to the bosun during ship's maintenance work. Similarly, the ratings in the engine room department, namely the Fitter and Motorman, were responsible to the second engineer. Their tasks included maintenance of the machinery and providing assistance to the engineers during watch-keeping. The Chief Cook was responsible to the captain and chief officer for the day-to-day catering and housekeeping tasks. The Mess-Man reported to him; his tasks included serving meals to the officers and cleaning the accommodation to maintain hygiene.

4.2.4 Outline of the Company's SMS

The policies, procedures and instructions written in Company-A's SMSs were common for the entire group of companies. The SMS was broad and incorporated the different types of ships, such as oil tankers and bulk carriers, and different shipping trades, such as coastal and deep sea. It provided procedures and instruction for standard shipboard operations as well as specific cargo handling instructions. Such policies, procedures and instructions included:

- company's drug and alcohol policies
- communication and reporting procedures
- safe navigating procedures
- risk assessment procedures
- incident and near-miss occurrence reporting procedures
- audit and SMS review procedures
- cargo loading, stowing and discharging procedures for tankers

In addition, it also included emergency procedures for different eventualities. The SMS also included a folder containing forms and checklists which complemented these

procedures and instructions. Most of the procedures made explicit reference to the form(s) and checklist(s) that were required to be filled in. These forms and checklists were available in both hard copy and electronic format.

The Head Office prepared the SMS and amended it approximately once a year and sent the revised bound-volumes and CDs to all its branch offices (including Company-A). Subsequently, the responsibility of implementing them at each branch office and in its fleet was given to the managing director. At the ship-level the captain was required to play a major role in the implementation of the SMS. With the assistance from the senior officers, the captain was expected to ensure that the all the elements of the SMS were implemented. The process of implementing the SMS thus took a complex route which is described using the following schematic diagram.
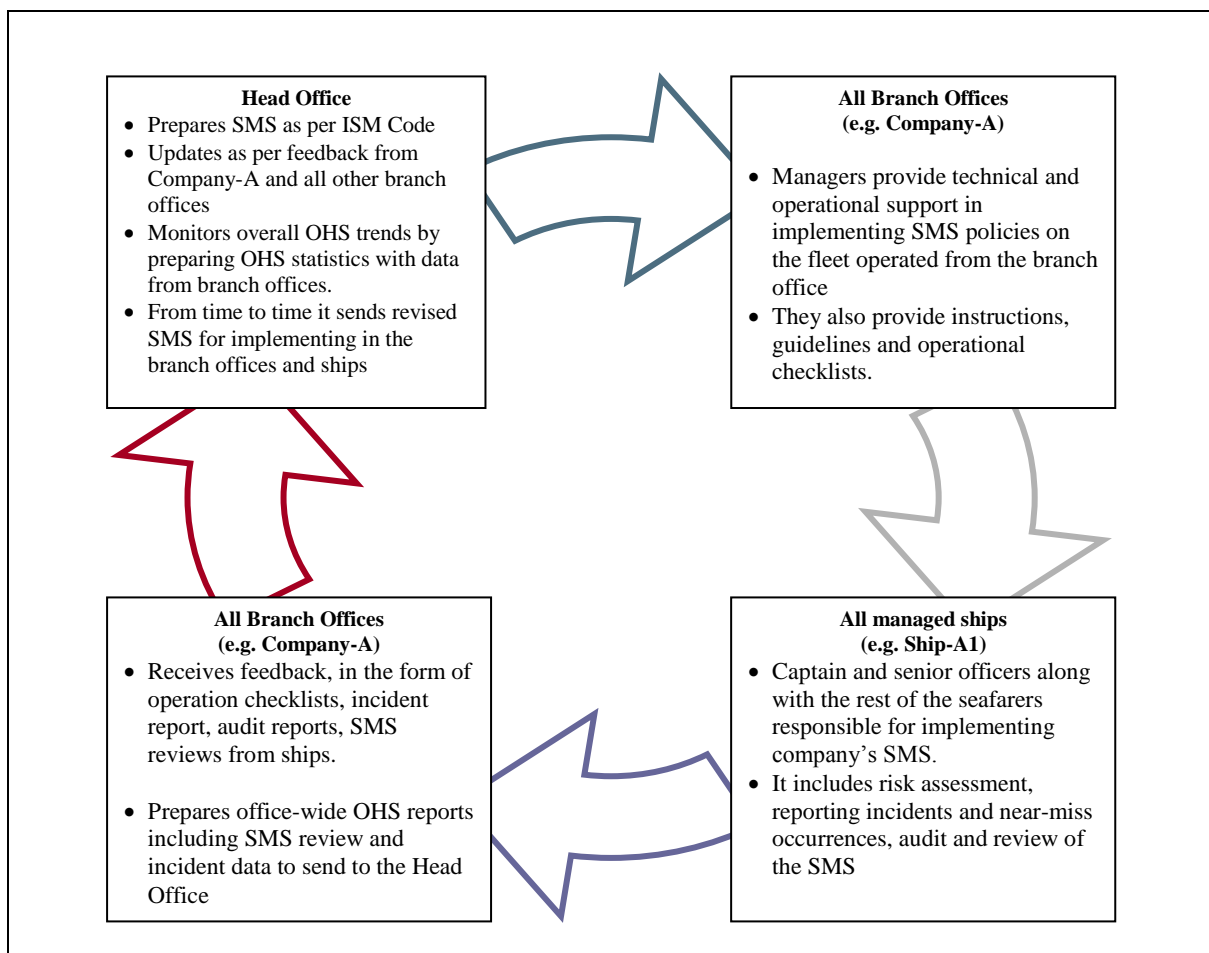
Figure 19: Flow diagram showing implementation of Company-A's SMS.

The following table shows the main requirements and the key actions to be taken at the shipboard and management levels of the operating requirements of risk assessment, incident reporting and audit and review elements of the SMS. In particular, it points out when and how often should the tasks be conducted, and the persons responsible for

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conducting the tasks and the nature of action required both at the shipboard and management levels.

Principle Requirement	Main tasks on ships	Main tasks in Company-A
(1) Risk Assessment: Use Checklists, or use shipboard risk assessment forms. Degree and possibility of harm is to be considered in assessing a task in order to reach any of the five levels of risk: minimal, tolerable, moderate, substantial & intolerable. Work not to start if risk intolerable	How often: Prior to all critical as well as day-to-day tasks Person Responsible: Senior Officer responsible for the task, while the Captain remains overall responsible Support: Input from Junior Officers and ratings who are involved in the task Send to managers: For Checklist type: A selection For Shipboard type: Only if risk is intolerable	Person Responsible: Superintendent Action: Review assessment with intolerable risk and arrange for risk mitigating steps. Superintendents when visiting ships are required to review all risk assessments conducted onboard.
(2) Incident/ Near-miss Occurrence Report: Require detailed account of circumstances of ships and seafarers involved. Reporting form to be filled in by Captain and Safety Officer. Near miss occurrence may be reported anonymously by any seafarer on a one-page form.	How often: After any incident/ near miss Person Responsible: Seafarer to report to his/ her line-manager. Chief Officer, Chief Engineer or Captain is required to fill in report. The Captain responsible for communicating it to managers. Although, it is possible to report near miss reports anonymously, the Captain remains responsible for posting them Support: Required from all seafarers Send to managers: All reports to be sent	Person Responsible: Reports to be reviewed by Marine Superintendent. Action: Marine Superintendent/ Fleet Manager/ Group Manager (as the seriousness of the case may be) conduct root cause analysis to understand causes deeper than immediate and direct cause. It involves filling in a form with checkboxes and a list of suggested causes. Preliminary analysis to be sent back to ship and entire report with analysis sent to the Head Office.
(3a) SMS Audit: Annual Audit. The auditors need to locate supporting evidence, such as checklists, forms, logbooks to highlight deficiencies.	How often: Once a year by auditor appointed by Company-A. May be superintendents or auditors from hired organisation. Person Responsible: Auditor responsible to carry out onboard audit. The seafarers are	Person Responsible: The audit report is reviewed by Marine Superintendent. If report contains major deficiencies then report is reviewed by the Group or Fleet Managers (as the seriousness of the case may be) Action:

	expected to co-operate Send to managers: Auditor sends report to the management office	All deficiencies pointed out by auditors needs to be rectified within a stipulated time period, which is usually three-months
(3b) SMS Review: Captains are urged to review once in every contract.	How often: Once in every contract or twice a year, whichever is more Person Responsible: Captain Support: Senior officers Send to Company: Each time a captain signs off	Person Responsible: Reports to be examined by Marine Superintendent. Action: Scrutinised and then forwarded to manager's annual meeting where reviews from ships as well as managers are discussed. Deficiencies pointed out by auditors/ regulatory/ commercial inspectors also included. Then all such reviews are forwarded to the Head Office.

Table 24: Overview of the implementation of three main elements of the ISM Code in Company-A.

The above table points to the importance of a close cooperation between the managers and seafarers. In particular it presupposes an effective upward communication from ships to the managers. Equally, the SMS assumes that the senior and junior officers as well as the ratings communicate their views freely and extend their support to the ship's captain for effective implementation of the company's procedures and instructions on ships.

4.2.5 OHS indicators

This subsection presents some of the records of OHS in Company-A and by comparing it with data from the wider maritime industry it estimates the standard of OHS of Company-A. However, as pointed out in section 3.1.1, such data has significant inherent weaknesses and should only be used as in indicator.

The Company-A did not maintain any statistics indicating the standard of OHS for its own fleets. Instead, the group of companies maintained a list of all the accidents, incidents, fatalities and Port State Control (PSC) detentions at the wider company level (see discussion on PSC in section 2.1.3). The most recent set of data (between 2001 and 2005) showed improvements in the absolute number of incidents as well as PSC detentions for the whole fleet although there were fluctuations along the way. Moreover, despite the increase in the number of ships managed by the group of companies (which rose by around

40% during the same period), the absolute number of incidents and PSC detention for the Group has dropped.
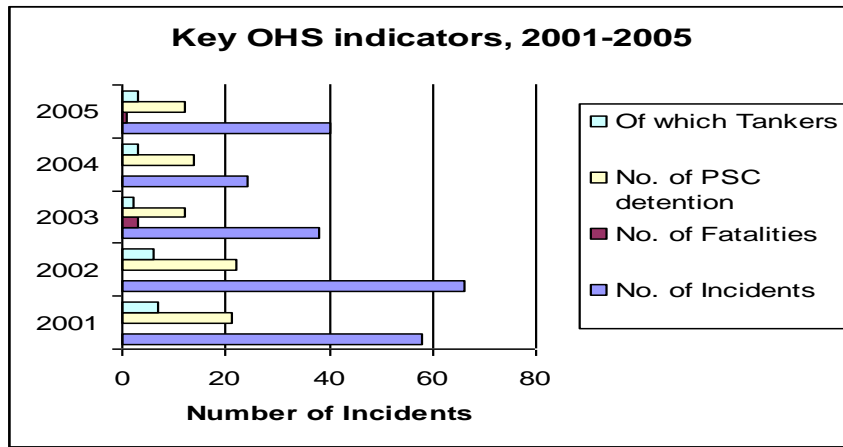
Figure 20: Key OHS indicators of Company-A, 2001-2005.

Compared to the world maritime statistics (Casualty Report), the Group fared considerably better. While between 2001 and 2005 the annual worldwide fatality ratio of the seafarers was roughly at around 1.8%, the ratio of fatalities in this group of companies stood between nil and 0.5% during the same intervening period.

The group of companies also performed better than the industry-wide average in terms of the PSC detention rate. The data from the Paris MoU[43] group of countries indicate that in 2005, for example, 4.7% of all ships inspected had significant safety deficiencies and were thus detained in their ports. While in the same year the rate of PSC detention based on global PSC figures for all ships managed by the group of companies was much lower at 2.0%.

Year	Paris MoU PSC overall detention rate %	Group of companies PSC detention rate %
2003	7.1	1.5
2004	5.9	1.5
2005	4.7	2.0

Table 25: Company-A PSC detention rate in relation to the Paris-MoU PSC detention rate, 2004-2005.
Sources: Company data and Paris, MoU (2008).

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[43] Some PSC operates in group of nations with mutual understanding between them. One such group is known as the Paris Memorandum of Understanding which started in 1982 and presently consists of 25 participating maritime in Europe and North America. It is considered one of the most effective groups of countries in conducting PSC inspections. It conducts over 20,000 inspections annually (Paris MoU., 2006).

While there was no statistical report available for the fleet managed from Company-A, an internal memo indicated that Company-A's rate of incident and PSC detention rate in 2005 matched the group's average.

4.2.6 Ship-A1

Having discussed the details of Company-A, the following two subsections highlight some of the important features of the two ships (Ships A1 and A2) belonging to Company-A on which I conducted research. Ship-A1 was one of the largest ships in the management of this company. Its size was approximately 50,000 GRT and was capable of carrying around 90,000 tons of oil cargo. In relation to the global standard, Ship-A1 was comparatively large falling within the top 17% in terms of its cargo carrying capacity (see ISL, 2005b).

The ship was a crude oil carrier and carried different varieties of crude oil on international trade. For the last year the ship traded in different parts of Asia. On most voyages it loaded in Persian Gulf and discharged its cargo in different Asian ports. The owner contracted the ship out to oil trading companies (known in the industry as 'charterers') for the commercial utilisation of the ship on a voyage-by-voyage basis. In other words, after every cargo unloading operation the ship-owner had to negotiate for a fresh contract. However, the records from the previous one year suggested that the ship did not have any waiting period between any two successive voyage charters.

The ship was built in the early 1990s and was registered with one of the FOC. A reputable Classification Society conducted its statutory survey on behalf of the State. The construction of the tanker was single-hulled[44] – which placed certain restrictions in its trading capability. Due of its construction the ship was not allowed to trade for instance in the European waters. Some of the important features of the ship are shown in the table below.

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[44] Single-hull: It is a type of ship construction where there is no intermediate compartment between the cargo carrying space and the sea. As a result these ships are more prone to polluting the sea as a consequence of structural damage.

Flag	FOC
Ship GRT	50,000 tons approximately
Ship DWT	95,000 tons approximately
Size in relation to worldwide fleet	Top 17% of worldwide fleet
Built	Early 1990
Type of cargo carried	Various types of crude oil
Current trading area	Persian Gulf, Asia and Australia
Number of seafarers	Around 21
Nationalities of seafarers	From East Europe and Far East

Table 26: Key information of Ship-A1.

The OHS records from the PSC data suggest that the ship was regularly inspected by the PSC inspectors and performed better than the average in the wider group of companies. Between 2000 and 2005, the number of deficiencies per inspection was 0.63 in the case of Ship-A1 while the corresponding ratio at the group level was 1.15. Also, none of these deficiencies were of the seriousness resulting in the ship's detention[45] (see table below). Thus, it indicates that the ship may be considered as one of the safer ships in the wider group of companies.

	Group of Companies PSC deficiency per inspection ratio	Ship-A1 PSC deficiency per inspection ratio
2000 – 2005	1.15	0.63

Table 27: Position of Ship-A1 in the overall PSC records of Company-A, 2000–2005.

4.2.7 Ship-A2

I conducted the second research voyage on another ship (Ship-A2) belonging to Company-A. It was also built in early 1990s and was of similar size as Ship-A1. It was registered with one of the FOC and classed with a reputable Classification Society, but unlike Ship-A1, this ship had a double-hull construction which did not impose any such trading restriction on it. For the last two years Ship-A2 was time-chartered[46] by a multinational company involved in crude oil transportation in the North American region. Some of the important features of the ship are presented in the table below.

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[45] These data were obtained from the publicly available website 'www.equasis.org'.

[46] Time chartered: Hired by chartering companies on a daily rate and the contract usually lasts at least one year

Flag	FOC
Ship GRT	55,000 approximately
Ship DWT	90,000 approximately
Size in relation to worldwide fleet	Top 17% of worldwide fleet
Built in year	Early 1990
Type of cargo carried	Various types of crude oil
Trading area	North America
Number of seafarers	Around 22
Nationality of seafarers	From East Europe and Far East

Table 28: Key information of Ship-A2.

Finally, the data on PSC inspections and company records show that Ship-A2 held an above average record in the fleet. Except in the year 2004, for the period between 2000 and 2006 the PSC inspectors did not point out any deficiency nor did they ever detain the ship. Thus, it suggests that the safety standard of Ship-A2 was also better than the fleet's average.

	Company-A PSC *deficiency* per inspection ratio	Ship-A2 PSC *deficiency* per inspection ratio	Company-A PSC *detention* per inspection ratio expressed in %	Ship-A2 PSC *detention* per inspection ratio expressed in %
2000	1.67	0.00	6.67%	0.00%
2002	0.28	0.00	0.00%	0.00%
2004	1.17	3.33	0.00%	0.00%
2006	1.45	0.00	0.00%	0.00%

Table 29: Position of Ship-A2 in the overall PSC records of Company-A, 2000–2006.

With this overview of Company-A and its two ships the discussion now moves to highlight the important features of Company-B and the Ships-B1 and B2.

4.3 Case Study: Company-B

Introduction

Company-B was a technical ship management unit of a ship-owning company which only owned tankers. It was located in Europe and employed a group of managers and technical experts to operate the ship management unit of the business. The company also had a separate tanker chartering unit which looked into the commercial activities of the tankers. The ship management unit of the company is specifically identified as Company-B (see figure below).
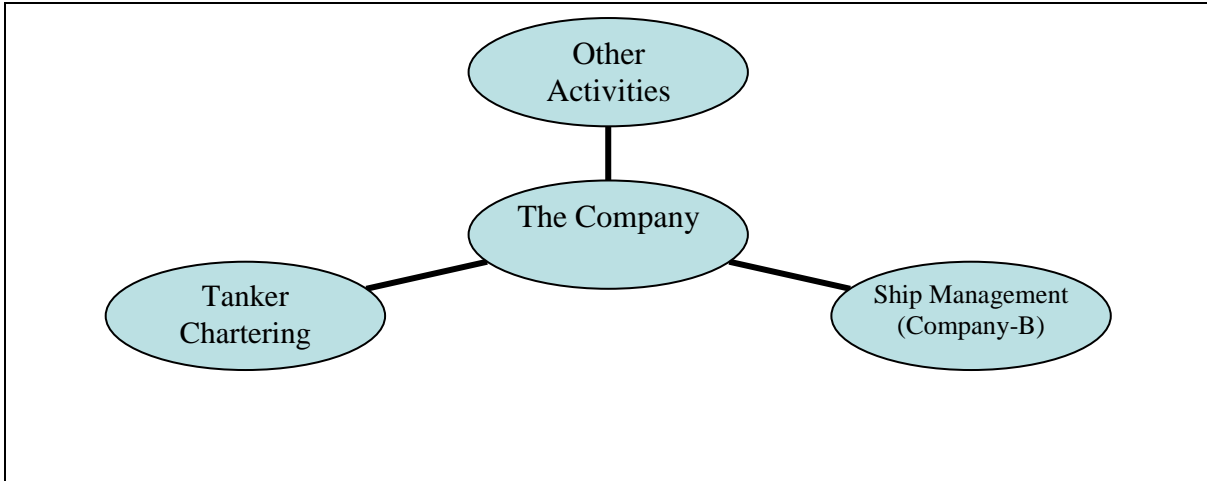
Figure 21: Company-B within the company's wider business setup.

Although Company-A, which offered third-party ship management services to different ship-owners, and Company-B, which managed the company's own ships, had significantly different approaches to the business of ship operation their functions were very similar.

4.3.1 Company Function

Company-B managed between 8 and 15 tankers which predominantly operated in Europe. For the purpose of calculating the balance sheet, Company-B was considered a separate entity within the wider company. It acted as a service provider as it did not bring in any revenue to the business. The costs incurred by this unit in operating the ships were considered as 'expenses' to the ship-owning business. The main costs included:

1. The tax, repair, survey and maintenance cost of the tankers
2. The wages and training expenses of the seafarers and their travel costs
3. The wages and training expenses of the managers
4. The cost of maintaining the office premises

The tankers of Company-B carried clean petroleum products[47] and operated in various ports in Europe. The size of the tankers ranged from 3000 to 9000 tons GRT. About half of the fleet was registered with TMN and the other with FOC. All ships in the fleet carried company's logo on their funnels and their names followed a particular pattern. All the ships

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47 Clean Petroleum Product (CPP) is a range of oil products obtained after refining and distilling crude oil. CPP starts from Gasoil and get finer. It is used by finer machineries such as cars (gasoline) and aircrafts (Jet A-1)

in the fleet were between five and fifteen years old. The key features of the ships managed by Company-B are shown in the table below.

Location	Europe
Type of company	Company's own management
Total number of tankers	Between 8 and 15
Size of ships	Between 2000 and 10,000 GRT
Ship trading area	Mainly European waters
Flag States	Both TMN such as UK and FOC, such as Liberia
Total number of office employees	Around 40
Total number of seafarers	Sailing around 180 and on leave another around 120

Table 30: Kay features of Company-B.

Company-B was a Public Limited Company (PLC). It had a number of shareholders which included even international fund management groups. The company's share index over the period between 2001 and 2005 indicated a significant rise. Its data also showed that during this period its turnover and revenue grew by around 20% although during the same period its asset dropped by around 10%. However, the company's annual report highlighted that the decrease in the ship-owning asset was due to the company's current fleet renewal programme.

In 2005, the fleet carried out over one thousand voyages by calling over 2000 ports in Europe and transported over four million tons of oil-product. The company document also indicated that a substantial percentage of its business was chartered by the Oil Majors, such as BP, Shell and Exxon. It showed that Company-B had nearly two-thirds of its business through Contract of Affreightment (CoA)[48] with the Oil Majors.

The implementation of the SMS and the chartering procedure were common to the entire fleet. Although this section focuses on presenting the important features of the Company-B, for the purpose of appreciating its functions better, some of the main functions of its chartering counterpart are shown first. The chartering unit of the company was responsible for maximising the employment opportunities of the ships. The interview of the managers revealed that one of the major aims of the chartering unit was to secure CoA with the Oil

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[48] Contract of Affreightment (CoA) was between the shipper (Oil Major) and the ship-owner (Company-B) under which the latter undertakes to carry a specific quantity of commodity (oil product) on particular routes over a given period of time on its company ships.

Majors. CoA gave Company-B assured business with the Oil Majors which was significantly more lucrative than if the tankers were hired on voyage or time charter.

The chartering unit of the company had to liaise with a number of players in the oil trade business on a daily basis. It needed to have a close appreciation of the supply and demand situation in the region and with the hiring requirements of the charterers (Oil Majors) at all times. Their task also included liaising with the chartering and brokering companies. By liaising with these entities the chartering unit collected information on the supply and demand situation of the product oil and matched this information with the size, suitability and availability of all the tankers in the fleet to decide on the best combination for the entire fleet and put together a schedule for the fleet once a week.

In this way the chartering organisation controlled the commercial ventures of the fleet. It instructed the captains of the tankers directly and also kept the managers of Company-B in the picture so that the latter could provide the necessary managerial support to the tankers to maintain the schedule. However, due to a number of changing variables such programmes had to be revised frequently, sometimes even more than once a day. The interviews of the managers revealed that for the entire company it was imperative that the fleet maintained the schedule as any lapse from any of the tankers could result in a knock-on effect on the rest of the fleet thus disrupting the entire schedule. If the schedule was disrupted it could upset the schedule of the Oil Majors or the oil refineries as well as result in paying damages to them or even to the owners of other ships affected as a consequence.

Company-B, thus, was heavily influenced by the operations of the chartering arm. The following diagram offers a schematic explanation of the different entities involved in the operation of the tankers. It shows how Company-B had to liaise with the Chartering Unit, the Board of Directors as well as a number of external entities, such as the Flag State and the Ship Insurance Companies. It also shows the lines of communication and instruction that existed between and among them.

Board of Directors

Oil Charterers and Brokers

Oil Com. including Oil Majors

Oil Terminals (Load/ Unload)

Chartering Unit

Company-B

Tankers

Flag State

Ship Insurance

Classification Society

Repair and Maintenance

ISM Code Management

Crew Management

Ship & Crew Accounts

Stores and Supplies

⟷ Tasks and liaisons between the organisations and various entities

➡ Direction of flow of instruction

Figure 22: Wider organisational structure of Company-B.

Alongside such commercial responsibilities, Company-B remained fully accountable for the technical management of the fleet, which included the implementation of the ISM Code. Although it belonged to an ownership company in which its role was significantly different from the set up in Company-A, the functions of Companies-A and B were remarkably similar. These functions have been discussed in the description of Company-A (section 4.2.1) and thus are not repeated here.

4.3.2 Overview of the managers' responsibilities

The core office staff of Company-B shared a single floor of an office. The four departments of the office: operational, marine, technical (along with purchase) and personnel (along with administration) were seated in groups. There was also a separate room where all the office documents were filed and archived.
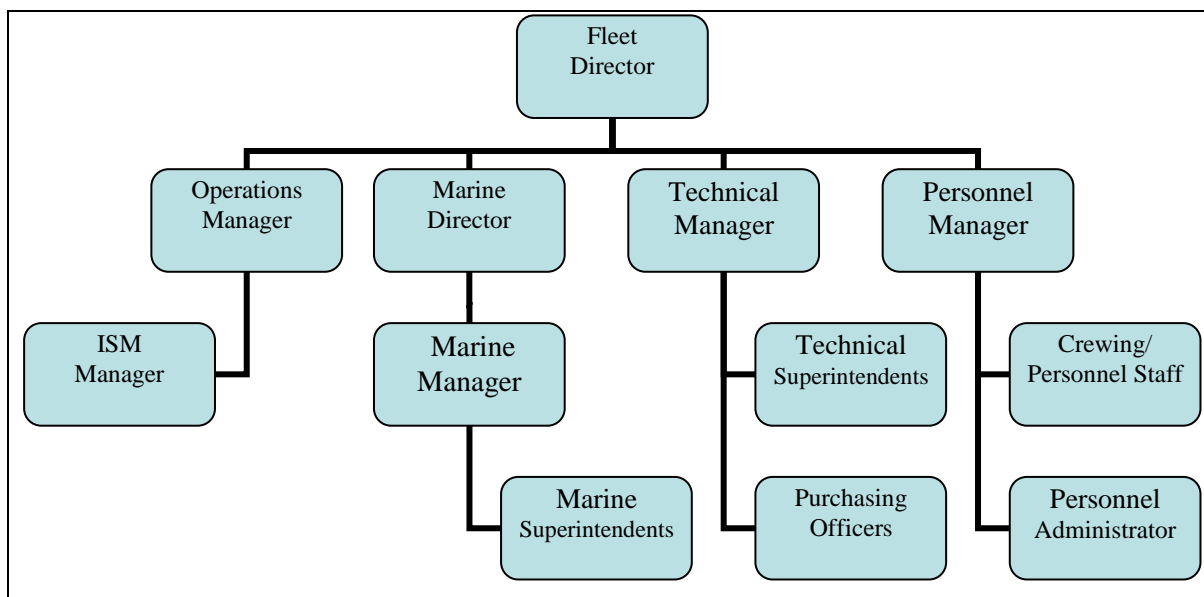
Figure 23: The organisation chart of Company-B.

The Directors, Managers and Superintendents were all male and ex-seafarers with sailing experiences of around 15 years. On an average the senior members of the staff worked in the Company-B for seven years.

The company's ISM Manager was in charge of overseeing the administration of the ISM Code and Quality Management certification of the fleet. He was responsible to the Operations Manager, whose tasks involved a wide range of functions including the company's subsidiary functions. The ISM Manager was required to conduct the company's audit and ensure that the Company's SMS was regularly reviewed and kept updated. The records suggested that the SMS was amended frequently – approximately three to four times every year. The ISM Manager liaised with the Marine and Technical Superintendents, Managers and Directors of Company-B in preparing different types of OHS reports and statistics. It included data on Loss Time Injury (LTI[49]), pollution incidents and personal injuries. Safety bulletins and reports, which contained description and analysis of safety related incidents, were also prepared by the ISM Manager and promulgated in the company.

The marine department consisted of Superintendents, Manager and Director. The superintendents who were responsible to the marine manager oversaw the safety and cargo operations of the entire fleet. They liaised with the ship captains on the day-to-day

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[49] LTI: Loss-Time Injury refers to any work-related injury or illness which prevents an employee from doing any work for one day after an incident.

operation of ships and, among other function, ensured that the captains were following the company's SMS and complying with the requirements of the chartering unit. The SMS of the company required them to visit the fleet on an annual basis for carrying out operational inspection.

The Marine Manager was also the Designated Person Ashore (DPA) for the entire fleet. His main tasks involved coordinating with the Flag States and the Classification Society. The Marine Director on the other hand was the key connection between Company-B and its chartering counterpart. He was the key contact between Company-B and the clients, such as the Oil Majors. With the help of the Marine Manager, he was responsible to ensure that the tankers operated safely and to the satisfaction of its clients.

The technical department of Company-B was responsible to oversee the technical operation of the fleet. The Technical Superintendents and Managers were required to liaise with the ships, arrange for supplying stores, spares and provisions as well as organise technicians' visit to the ships. The Superintendents were the first point of contact from the ships on technical issues and were responsible for between one and three tankers in the fleet. The SMS required them to carry out technical inspections on the entire fleet once every year. The Technical Manager, on the other hand, was in charge of the entire department and was primarily involved in making the major decisions with regard to the fleet's technical matters, such as major repair work.

The personnel department was responsible for crew selection, training and recruitment. They were also required to organise crew change including their travel arrangements. For the seafarers located overseas, this department liaised with crewing agencies in the countries overseas. These agencies were contracted and were subjected to regular audit by the crewing manager.

4.3.3 Overview of the seafarers' responsibilities

At the time of the study, the total number of seafarers in Company-B was approximately 300 of which around 180 were sailing on ships while the remaining 120 were on leave. The senior officers in Company-B were predominantly employed from different parts of Europe. The managers' interviews revealed that the company's policy was to employ more and more senior and junior officers from the East European countries in place of the

existing pool of officers from Western European countries. All officers, irrespective of their country of origin, were employed on continuous terms, but due to the pattern of seafarers' work and leave arrangement, they typically worked for six weeks at a stretch and went on (paid) leave for a period of four weeks.

The ratings on the other hand were either from East Europe or Far East. They were employed on temporary contracts which spanned between six and nine months. The ratings were not paid when on leave. Also, there was no specific leave period for them but they were expected to return to work after around two to three months of leave.

The interviews with the managers also revealed that despite the significant difference in the employment pattern, there was little turnover for both senior officers and ratings, while the turnover from the junior officers was slightly higher. The seafarers' salary structure was largely based on their nationality. Thus, on an average the salary for an East European officer was two-thirds of his West European counterpart.

The structure of seafarers' responsibilities was very similar to what has already been discussed in the case of Company-A, and thus is not repeated here. However, there were fewer seafarers employed on the ships of Company-B resulting in reorganisation of responsibilities. As Company-B did not have Mess-men, for instance, his tasks were shared by the Cook and an AB.

4.3.4 Outline of the Company's SMS

Having pointed out the major features and the responsibilities of the key employees of the Company-B, the discussion now moves to highlight the main features of the company's SMS. The SMS was divided into several volumes which covered the policies and routine as well as emergency operating procedures. All these were available in the office and on ships in the form of CD and hard bound files.

It, for example, described how to ensure safe access between ships and wharfs or quays. The instructions on tanker operation included pump-room safety checks, cargo tank preparation and procedures to be followed before commencing to load or unload. Similarly, the instructions on navigational operation included company's requirements on minimum under-keel-clearance and the requirements for safely manning the navigation bridge under

different conditions of visibility. It also highlighted the procedural requirement to implement the different elements of the ISM Code as well as the procedures for the Quality Management System.

The following table presents an overview of the procedural requirements of the operations of risk assessment, incident/ near-miss occurrence reporting and audit and review from the SMS of Company-B. It is presented in a tabulated form which also highlights the persons responsible for conducting the tasks in the management office and ships. It shows the detailed arrangements in place for the management of safety in the organisation and indicates that for effective implementation of each of the elements, there is a need for extensive communication and participation at every level of hierarchy in the organisation.

Principle Requirement	Main tasks on the ship	Main tasks in Company-B
(1) Risk Assessment: Use Checklists or shipboard risk assessment forms. Identify hazards and then the degree and possibility of harm to calculate the level of risk. Measures to be taken for reducing risk level, however work is not to start if risk remained intolerable	How often: Prior to all critical as well as routine tasks. Earlier assessments may be referred to if working conditions are similar. Minimum of one to be conducted during each safety meeting Person Responsible: Suitably experienced seafarer is to conduct risk assessment Support: Input from others involved in the task Send to manager: For Checklist type: A selection For Shipboard type: All	Person Responsible: ISM Manager is required to review the assessments and file it in the office. Action: Only if the ship informs that risk assessment cannot be conducted due to the complexity of a task, then the managers need to get involved for conducting assessment. Feedback to ships: None mentioned
(2) Incident/ Near-Miss Occurrence Report : Every incident to be reported. Captain and other investigator(s) as well as the safety officer are required to contribute and sign the report.	How often: After any incident/ near miss Person Responsible: Seafarer to report to captain for official reporting and investigation. Details such as sketch and narrative are also to be submitted. Support: Required from all seafarers including Safety Officer. However the Captain needs to communicate them to the	Person Responsible: Reviewed by the Marine Manager. Action: Reports first classified as per potential loss. They may be referred to the Marine Director, who in consultation with the Fleet Director decides the future action. The ISM Manager is responsible for processing the investigation till finally closed out. Feedback to ships: The Marine Manager is required to respond to

	managers. <u>Send to manager:</u> All such reports	the ships. He also has to send analysis to the fleet using safety bulletins. Safety reports highlighting the 'lessons learnt' should be prepared in conjunction with the ISM Manager
(3a) SMS Audit: ISM Manager is responsible for planning and conducting audits. Detailed steps for auditing are shown in the SMS. The auditor needs to look out for supporting evidence to point out deficiencies.	<u>How often:</u> Once a year. <u>Person Responsible:</u> ISM Manager. <u>Support:</u> Required support from all seafarers <u>Send to manager:</u> Auditor sends report to office	<u>Person Responsible:</u> Reports are reviewed by the Marine Manager and the Marine and Technical Superintendents. <u>Action:</u> Superintendents are required to support the ship staff to rectify the deficiencies pointed out by the auditor. ISM Manager responsible to ensure that the deficiencies mentioned in the reports are closed out typically in 3 months <u>Feedback to ships:</u> ISM Manager liaises with the captain to process the rectification of any deficiency identified during the audit
(3b) SMS Review: Captains and Chief Engineers to conduct review and offer comments/ suggestions once in every contract. The office staff may also initiate reviews	<u>How often:</u> Conducted once every contract and sent along with the Captains' and Chief Engineers' handing over notes. <u>Person Responsible:</u> Captains and Chief Engineers <u>Support:</u> Everyone encouraged <u>Send to manager:</u> All reviews on separate company form accompanying the handing over notes	<u>Person Responsible:</u> Reviews are examined by the ISM Manager. <u>Action:</u> Suitable reports are forwarded to the Marine or Technical Superintendent. Then with further comments forwards to the Marine or Technical Manager and discussed in the management office meeting. Other sources of input to SMS Review include external inspection reports. <u>Feedback to ships:</u> Managers are required to return copy of the SMS review comments to the ship.

Table 31: Overview of the implementation of three main elements of the ISM Code in Company-B.

4.3.5 OHS indicators

This section indicates the Company's OHS standard. It compares the statistical data produced by the Company and the data available publicly from the PSC inspection reports (Paris MoU, 2006). However, as pointed out earlier, such data carries with it the general weaknesses of underreporting.

The incident reports received from the fleet were first categorised into three levels of severity: 1, 2 and 3, where 1 indicated the least and 3 indicated the most severe incident.

Parameters for deciding on the overall incident severity included the extent of personal injury, damages to the environment and the focus of the media. The following table was used to determine the severity.

	Severity – 1	Severity – 2	Severity – 3
Personal Injury	LTI	Loss of limb or Multiple injuries	One or more fatalities
Environmental Impact	Short Term	Medium Term	Long Term
Media Impact	Local media Interest	National Media Interest	International Media Interest

Table 32: Determining Severity of Incidents in Company-B.

The company's OHS statistics indicated a decline in the number of incidents between 1998 and 2004. The record showed that between 1998 and 2004 there was a decline from 38 incidents of Severity-1 to 21 in 2001 and further reduced to 13 in 2004. Similarly, in the case of incidents of Severity-2 the numbers were reduced from nine to five between 1998 and 2001 and again to four in 2004. Incidents of Severity-3 category however were very few and remained low consistently.

	1998	2001	2004
Severity 3	1	1	0
Severity 2	9	5	4
Severity 1	38	21	13

Table 33: Incident figures in three levels of severity in Company-B, 1998-2004.

Moving to the data from the PSC inspection report (for appreciating how the company performed against the worldwide safety standard), it showed that the tankers in Company-B had better standards of OHS than the industry-wide average as well as the tanker fleet of the industry (Paris MoU., 2006). The result showed that the ships of Company-B consistently achieved this distinction between 1999 and 2004. For example, in 2000 while the industry-wide average on the number of deficiencies observed per inspection was 3.65, the corresponding figure for the fleet of Company-B was only 0.90 (see table below). Moreover, in this period the fleet did not suffer a single detention in the hands of the PSC.
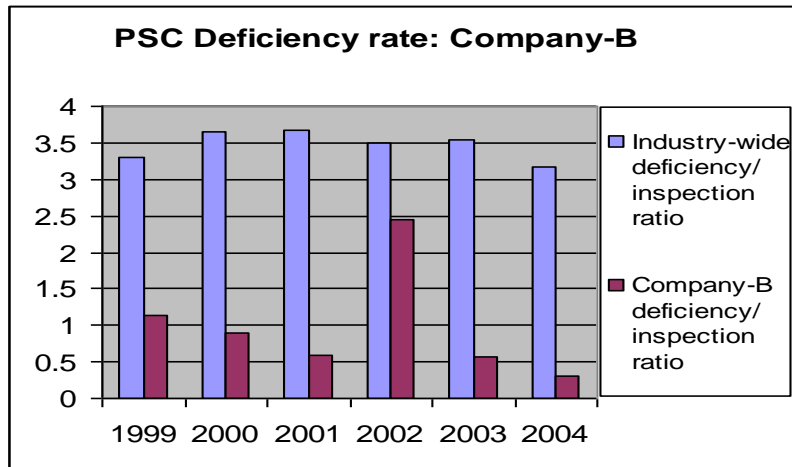
Figure 24: PSC figures of Company-B compared to worldwide figures, 1998-2004
Sources: Paris MoU (2006) and Equasis (2007).

4.3.6 Ship-B1

The discussion in this sub-section presents the important features of the two tankers of Company-B on which I conducted my fieldwork. The first tanker in Company-B, henceforth called Ship-B1, was one of the medium-sized tankers in the fleet with approximate 5000 ton GRT and built in early 1990s. It was a double hulled tanker engaged in trading clean petroleum product in Europe and was approved by five Oil Majors. Some of the main details of Ship-B1 are tabulated below:

Flag	FOC
Ship GRT	5000 approximately
Ship DWT	6500 approximately
Built	Early 1990
Cargo	Various Clean Petroleum Product
Number of seafarers	Around 10
Nationality of seafarers	West and East Europe and Far East

Table 34: Key figures of Ship-B1.

The OHS records showed that the standard of OHS on Ship-B1 was similar to the average fleet-wide figures. It, for instance, recorded one injury in 2005 during which time the fleet wide annual average was 1.3 injuries per ship. Similarly, while the annual average of the fleet was reported at around seven near-miss occurrences per ship, the number reported by Ship-B1 was eight. In the same way, the total period since the last LTI for this ship was around four years which was again close to the fleet wide average.

	Company-B PSC deficiency per inspection ratio	Ship-B1 deficiency per inspection ratio	Company-B PSC detention per inspection ratio expressed in %	Ship-B1 detention per inspection ratio expressed in %
1999	1.14	0.00	0.00	0.00
2000	0.90	1.00	0.00	0.00
2001	0.60	0.00	0.00	0.00
2002	2.44	2.50	0.00	0.00
2003	0.56	2.00	0.00	0.00
2004	0.31	0.00	0.00	0.00
2005	1.92	1.67	8.33	0.00

Table 35: Position of Ship-B1 in the overall PSC records of Company-B, 1999–2005.

Also, as per the PSC inspection, it shows that Ship-B1 performed similar to the average in the fleet. In 2000, for example, it was inspected twice in two different PSC inspections. In total there were two deficiencies pointed out resulting in an average of one deficiency per inspection. In the same year across the fleet there were a total of nine deficiencies identified from a total of ten inspections. In 2005, the deficiency per inspection ratio was 1.67 for Ship-B1 while the corresponding fleet wide figure stood at 1.92. Between 1999 and 2005, like most of the other tankers in the fleet, Ship-B1 was never detained during any of the PSC inspections.

4.3.7 Ship-B2

I conducted the fourth and final research voyage on Ship-B2 which was around three years old. It too was engaged in transporting clean petroleum product in the European waters. In the last one year and half the ship has been inspected and approved by eight Oil Majors. Some of the main details of the ship are tabulated below:

Flag	FOC
Ship GRT	8500 approximately
Ship DWT	13,000 approximately
Built	Early 2000
Cargo	Various Clean Petroleum Product
Number of seafarers	Around 15
Nationality of seafarers	North America, West and East Europe and Far East

Table 36: Key features of Ship-B2.

Despite being one of the newer ships in the fleet, Ship-B2 reported more incidents and near miss occurrences reported than the average in the fleet. A recent report indicated that in a 12-month period Ship-B2 reported four cases of injury which was the highest in the fleet and much above the fleet average of 1.3 injuries per ship. Similarly, there were two counts of significant incidents and another nine counts of near miss incidents during 2005 which were all higher than the fleet-wide average of 0.7 and 6.7 respectively. Ship-B2, however, had no LTI in the last three years.

	Company-B PSC deficiency per inspection ratio	Ship-B2 deficiency per inspection ratio	Company-B PSC detention per inspection ratio expressed in %	Ship-B2 detention per inspection ratio expressed in %
2005	1.92	1.67	8.33%	0.00%
2006	1.75	0.00	5.00%	0.00%

Table 37: The standard of Ship-B2 in the overall PSC records of Company-B, 2005–2006.

The PSC record for this ship is presented in the table above. However, as the ship is relatively new there is very limited data to determine the standard of safety of the ship in relation to either the fleet or the worldwide average generally. However, at the time of the fieldwork the ship was inspected four times by different PSC inspections. In all there were five deficiencies identified but none of them resulted in its detention which indicates that the standard of OHS of the ship was generally above the industry-wide average.

Summary

This chapter presented the main features of the two case studies including the business focus, management structure and responsibilities of the managers and seafarers, and safety standards of the two companies. It also highlighted some of the important elements of the two ships in each organisation on which I carried out my fieldwork.

It showed that the two companies were relatively well established and financially robust. Their businesses were longstanding, widespread and involved Oil Majors as their main clients. Moreover, in both companies the SMSs were well-developed for the purpose of implementing the ISM Code. The managers had detailed procedures and instructions in place along with checklists and forms to assist in the implementation process of each of the main elements of the SMSs.

The data from the PSC inspection reports indicate that the standard of safety in the two companies is better than the industry-wide average. Although the data has limitations, they nonetheless suggest that the two case studies are examples of the 'better' segment of the maritime industry. This argument also corroborates the earlier discussion in section 3.1.3 where, drawing on my experience on getting access to fieldwork, I pointed out that the companies which offered me access most probably belonged to the better end of the industry.

The overview of the requirements for implementing the SMSs also pointed to the implicit requirement of a significant amount of cooperation between the different layers of hierarchy in the two companies. It showed that for a systematic implementation of the different elements of the ISM Code, there was an especially important need for upward risk communication within each ship and its management office as well as between the ratings and senior officers.

Chapter 5: Risk Assessment

Introduction

Within the literature review (chapters 1 and 2) it was discussed how the move to regulated self-regulation led to the development of different forms of management system as means to manage workplace risk systematically. There, it was also discussed how the International Safety Management (ISM) Code in the global maritime industry provided the framework for ship-owners (managers) to develop their own Safety Management Systems (SMSs) for managing occupational health and safety (OHS) in their organisations.

As discussed in the methodology (section 3.2), this thesis explores the practices of the three main elements of SMSs: risk assessment, incident and near miss occurrence reporting and audit and review. These elements were also identified as central to the implementation of the ISM Code. In this and in the subsequent two chapters I shall present the findings of my fieldwork which was undertaken in two shipping companies in the maritime industry. These findings aim to illustrate the extent and the manner in which these three elements were operationalised. In so doing, they further attempt to draw out the factors which influence the ways in which individuals act in relation to the working requirements of their company's SMSs.

Discussion of the wider OHS literature showed that the concept of risk assessment is central to successful systematic safety management and an important step towards safeguarding workers from workplace hazards. As such, employers responsible for workplace OHS are required to lay down procedures based on a systematic assessment of the hazards liable to be encountered at the different stages of any work process. This chapter examines the practice of risk assessment in the maritime sector in compliance with the ISM Code.

The chapter is organised into three broad sections. It begins by discussing the requirements of risk assessment as developed in the SMSs of the two companies. Detailed description is provided of the two SMSs to illustrate the specific roles assigned to managers and seafarers in implementing the requirements of risk assessment and highlights the main influences that led to their respective developments. Then, it analyses managers' accounts presented in

their interviews on how they operationalised these requirements and the constraints they faced in the process. Finally, the chapter analyses the perspective of the seafarers from interviews, informal discussions, documentary analysis and ethnographic observations. It locates the influences that affected the seafarers' participation in the practice of risk assessment. By synthesising the data from the three sections, the discussion at the end of the chapter draws attention to a number of key findings that will be explored more fully in chapter-8.

5.1 Risk Assessment procedures in Company-A and Company-B

Risk assessment was identified as a central feature of the SMSs in the two companies studied. It was primarily implemented through the production of written procedures and instructions for various onboard operations. These included regular everyday activities, such as navigation and cargo operations, as well as operations which were carried out less frequently, like dry-docking or major repair work. In each case the company's SMS made explicit reference to the hazards associated with these tasks which ranged from large-scale maritime hazards such as collision, flooding and explosion, to occupational injuries to individual seafarers, which included asphyxiation, chemical burns and injury from falling. The procedures and instructions went further than just identifying the hazards – they also listed risk mitigating steps or risk control measures that must be taken for each of the hazards identified.

One of the companies, for example, had procedures and instructions on navigation in general and navigation at particular times and highlighted the various hazards that may be encountered. For instance when navigating in coastal waters the potential hazards were identified as:

- anchored ships, yachts and small crafts in the vicinity
- shallow water
- pronounced effects of wind and tide in the proximity of shore

It also stated how these hazards should be controlled or mitigated by, for example:

- officers using the largest scale chart to better appreciate the hazards
- captains specifying the maximum position fixing interval
- officers positively identifying navigational objects or marks for position fixing

5.1.1 Risk control measures using checklists

For a number of tasks, the instructions in the SMSs already contained risk assessment and enumerated the risk mitigating measures that the seafarers were required to comply with. These were made available to the seafarers in the form of work permits and checklists both in hard copies (known as the forms folder) and electronic format. Thus, for example, in the case of providing guidelines to seafarers on safe working procedures in 'enclosed spaces', in the SMS of one of the companies there was a section in the main manual describing the areas onboard considered as enclosed spaces. These included certain tanks, store rooms and void spaces. It then emphasised that entering into these spaces was dangerous as these could have oxygen-deficient atmospheres. It warned that these spaces could even have poisonous cargo fumes or engine exhausts – all of which could lead to asphyxiation. Having discussed this, it then highlighted several control measures including checking the atmosphere prior to, and at frequent intervals during, an entry; the donning of necessary personal protective equipment and the use of appropriate communication methods.

The instructions in the main manual also directed the seafarers to a specific work permit (located in the forms folder) that required filling in and signing by the leader of the team entering the space and also either by the Chief Officer or Chief Engineer before it could be submitted to the Captain for his final approval. Moreover, it pointed out that all answers in the work permit must be answered with a 'yes' unless there were legitimate reasons for a 'no' – for which a valid explanation was mandatory. The work permit used for 'enclosed space entry' in one of the organisations is shown below:

Item	Yes	No	Item		Yes	No
Space segregated by blanking off			Linkman designated and standing by			
Lock-out/tag-out in use			Officer of watch advised			
Space cleaned			Rescue harness positioned			
Thoroughly ventilated			Breathing apparatus positioned			
Oxygen and hydrocarbon readings taken			Arrange for further atmosphere checks			
Emergency escape procedures identified			Access illumination adequate			
Evacuation method agreed			Communication procedure agreed			
Oxygen %Volume			Hydrocarbon %Volume			
Toxic gas Name				PPM[50]		
Signatures (1) Team Leader (2) Chief Officer/ Engineer (3) Captain						

Table 38: Checklist for enclosed space entry in one of the organisations.

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[50] PPM (Parts per million): which is a common unit to determine the concentration of toxic gases, such as benzene.

A careful inspection of the procedures, instructions, work permits and checklists of the two companies showed that were all heavily influenced by the contents of a few standard maritime publications, such as the 'Bridge Procedures Guide' published by International Chamber of Shipping (ICS) and the 'Code of Safe Working Practices for Merchant Seamen' (CSWP) published by UK Maritime Coastguard Agency (MCA). For example, the checklists for different stages of navigation, such as 'Preparation for departure from port', 'Anchoring and Anchor Watch' and 'Navigation in heavy weather or in tropical storm areas', used in both organisations were all virtually identical to what was found in the Bridge Procedure Guides (ICS, 1998).

The most commonly referred to publication in both the SMSs was the Code of Safe Working Practices (MCA, 2006). At several places the company's instruction pointed out that the seafarers should refer to the original CSWP in order to better appreciate the complexities of the hazards associated with the task. For example, one of the SMSs stated:

> Further guidance is contained within Chapter 1 of the Code of Safe Working Practices for Merchant Seamen'.

Likewise, the instruction on how to conduct 'hot work' safely stated that:

> It is essential that all personnel who use oxygen/ acetylene cutting equipment and/ or electric arc welding equipment are fully aware of the potential risks and hazards... the Code of Safe Working Practices for Merchant Seamen details the safety precautions to be taken when using this equipment.

Analysis of the data revealed that managers in both companies focused on developing generic procedures, guidelines and checklists suitable for implementing across their entire fleets. In doing so they clearly utilised popular industry-wide publications which had been produced on the basis of existing maritime standards, experiences and developed over many generations. The utilisation of such an approach suggests that managers considered shipboard jobs as finite and repeatable tasks for which a set number of procedures based on standard risk assessments and with a specific set of risk control measures were suitable. In other words, it showed that the managers assumed considerable stability in the functions and tasks undertaken by seafarers and that they would be performed under stable conditions.

This high level of emphasis on the production of procedures and instructions based on generic risk assessment has important implications for the way in which SMSs are implemented in the maritime sector and will be explored in more detail in the following sections. As such, generic risk assessment and risk control have some limitations in the assessment of risks that are specific or peculiar to particular situations. It also has the danger of ignoring workers' experience in the mitigation of risks.

Similar practices have also been reported in land-based industries. Gadd *et al.* (2004), for example, studying a range of UK industries identified the 'use of generic risk assessments' as one of the most commonly identified pitfalls in risk assessment. The authors found that on many occasions managers used common risk assessments in different worksites (owned by the same management) without any addition or modification to them. This, they pointed out, was one of the main reasons why they were considerably ineffective.

5.1.2 Shipboard risk assessment

While the managers relied heavily on generic risk assessments, they also appreciated that there could be some variation in the working methods which required the personnel on ships to conduct their own risk assessments. In their instructions they pointed out that for certain types of jobs, checklists alone were not sufficient and required seafarers to conduct additional shipboard risk assessments or refer to previous assessments conducted and filed on the ship. In this regard the instruction in the SMS of one of the companies stated:

> Shipboard risk assessments must be conducted for which no valid risk assessment exists... Risk assessments should be archived and re-used for repetitive tasks so long as they are reviewed and updated as necessary.

To comply with the company's shipboard risk assessment procedures, the seafarers in both organisations were required to conduct onboard risk assessments by quantifying risk using a probabilistic method. It drew heavily on the risk assessment procedures laid down in the Chapter-1 of Code of Safe Working Practices (MCA, 2006) – discussed in section 2.3.1.

As per the instructions in the two companies, for each of the hazards identified, the assessor was required to determine the existing control measures and the levels of risk. In case any of the hazards showed risk level of 'moderate' or worse, the assessor was required to apply additional control measures to reduce the risk level. Only when the level of risk

was brought down to 'tolerable' the task could be started. The entire sequence is shown in the following table with a practical example from one of the ships studied.

Stage	Risk assessment sequence	Example
1	Identifying Hazard	One hazard identified as 'contact with electricity' during the job
2	Existing Control Measures	The control measure used for this particular hazard was 'electric isolation of equipment'
3	Determining Risk (by using 'severity/ likelihood table' for each hazard)	Severity: Harmful Likelihood: Unlikely Result: **Moderate level of risk**
4	Additional Control Measures (only when risk level is moderate or higher)	Use of proper Personal Protective Equipment
5	Final level of risk for this hazard	**Tolerable level of risk** for this hazard and also for all hazards identified for the task

Table 39: Onboard risk assessment structure and sequence used on one of the research ships

5.1.3 Risk assessment responsibilities

The formal procedures in both companies specified the ranks responsible for ensuring that those undertaking the particular tasks adhered to the risk control measures identified in the assessments. Overwhelmingly the senior officers, i.e. chief officers, chief engineers and second engineers were identified as the persons responsible. In addition, in a number of cases, the captain was required to authorise the tasks and accept the overall responsibility. Prior to carrying out hot-work on deck, for example, the captain in both companies was required to authorise the work after the chief officer assumed responsibility for it. For certain other jobs which were mostly related to their watch-keeping duties, however, duty officers or engineers were also given responsibilities. The following table provides an illustration of the different persons responsible for conducting the risk assessment tasks in the two companies.

Company	Job detail	Responsible/ In-charge	Authoriser
A	Working Aloft	Chief Officer/ 2nd Engineer	Captain
A	Deck preparation for departure	Duty Officer	Captain
A	Bunkering operation	Chief Engineer/ Captain	None
B	Engine Room checks port departure	Duty Engineer	None
B	Enclosed Space	Responsible Officer	Captain
B	Hot-work permit	Chief Officer/Chief or 2nd Eng.	Captain

Table 40: Examples of person(s) responsible for conducting different types of risk assessment.

Also, the SMSs specified who should be conducting the shipboard version of risk assessments. Here, however, the two SMSs differed in their approaches. Company-A SMS required that a senior officer conduct the assessments with contribution from the captain and others who were able to make a positive contribution. By contrast, the SMS of the Company-B suggested that any person who was suitably experienced in the job could conduct the necessary assessments.

Company	Main Risk Assessor	Who to consult
A	Senior Officer	Captain and anyone else with any input
B	Suitably experienced personnel	No requirement

Table 41: Person(s) responsible for conducting onboard risk assessment.

The managements also maintained surveillance over both types of risk assessments. Both companies required around one in three completed work permits and checklists to be returned in post for the managers' scrutiny. Likewise, a selection of completed shipboard risk assessments forms were to be dispatched to the management offices. The detail of the risk assessment procedures followed in the two organisations are presented in sections 4.2.4 and 4.3.4 respectively and, thus, is not repeated here.

5.1.4 Additional initiatives

The SMSs in the two organisations also pointed to the use of safety committee meetings for discussing risks associated with different jobs onboard. The requirements in the two organisations were very similar. They stated that such meetings should be conducted at least once a month and that the captain, chief engineer, safety officer and representatives from officers and ratings should attend it. They identified safety committee meetings as a platform for discussing and sharing safety related concerns and required the captains to utilise the occasion to disseminate the contents of safety bulletins and circulars issued by the companies to the rest of the seafarers. In addition, the Company-B's SMS specifically required that at least one shipboard risk assessment should be conducted for any routinely undertaken work during such meeting. Both companies required that the minutes of these meetings were documented and sent to the managers.

In addition, both companies required that an officer onboard each ship in addition to his primary responsibilities as a ship's officer serving in a particular rank also took the

responsibility of the ship's safety officer. His job as safety officer was to promote hazard identification and encourage awareness of risk assessment among fellow seafarers.

Both companies also placed noticeable emphasis on training of seafarers to identify hazards and prepare for eventualities. It was done by conducting safety drills on various operational and emergency matters and also by showing seafarers training video programmes on various safety topics aimed at improving seafarers' awareness of hazards in their day-to-day tasks. From the records it showed that seafarers in both companies regularly participated in safety drills and watched safety videos.

Furthermore, in both organisations the managers pursued various additional safety initiatives with the intention to improve shipboard safety. One such example was the 'Behaviour-based Safety Programme' followed in one of the companies. It required the onboard senior officers to observe the junior officers and ratings at work and identify their 'unsafe behaviours'. The objective of the exercise was to improve the seafarers' rule following tendencies and thus reduce workplace injuries and incidents. The managers in their interviews also acknowledged that the company took this initiative as it was a requirement set by one of the Oil Majors with whom they conducted business.

However, the review of the literature (see Bohle and Quinlan, 2000) showed that in the management of organisational safety an excessive focus on workers' rule following behaviours may take the employer's attention away from providing a safe working environment and address the OHS concern in a participative way.

From the discussion in this section it shows that the two companies developed detailed procedures for conducting risk assessments and also took additional initiative in an effort to increase safety awareness among the seafarers. The procedures also assumed free communication across the organisation with particular input from the seafarers. Having presented the overview of the risk assessment procedures, the two following sections describe how this element was operationalised in practice. While the next section looks at it from the managers' perspective the third looks at it from the seafarers' perspective.

5.2 Risk Assessment from the managers' perspective: top-down management

The managers and superintendents in the two companies felt that their understanding of the company's operating system along with their seafaring experience make them capable of handling their tasks as managers which included managing the organisation's health and safety. Nearly every interviewee in both management units pointed out that the policies, procedures, instructions, work permits and checklists used in their company's SMS were appropriate for the types and trades of the ships in the fleet. They insisted that the SMSs were adequate as they were developed after carrying out substantial research on safety and pollution prevention. The managers indicated that their SMSs were frequently upgraded to keep pace with developments in the industry, regularly updated to incorporate changes within the company and routinely improved from one version to the next through suggestions and recommendations received from various sources including the seafarers.

The managers further claimed that their SMSs were so well developed and advanced that there was limited scope for any further improvement to them. They felt so strongly about the comprehensiveness of their SMSs that they insisted that for the day-to-day jobs seafarers should simply follow what is written in them. One superintendent from one of the two companies, for example, said:

> Frankly speaking the SMS we have is very good and all types of risks are covered. If you follow it you would be safe because it provides a full cover for each and every job and each and every problem that comes from these jobs. But just as the rest, the effectiveness of the SMS varies from ship to ship which entirely depends on them (the seafarers onboard) and how they handle it [ref: 60].

As these interviews pointed out, to the managers it was imperative that seafarers followed the policies and procedures laid down in the SMSs for their own safety. From the two companies nearly every manager revealed that one of their main tasks was to ensure that seafarers and in particular captains followed the SMSs closely, as, in their understanding, incidents occurred onboard ships only when the seafarers made a departure from the stated procedures. From the interviews it showed that they believed that more the seafarers followed the instructions on the company SMSs, especially risk assessments, the safer their workplaces would become. In fact, the managers spoke of motivating the seafarers and training them more to achieve a better compliance with the procedures written in the SMSs. These, for example, were apparent from the interview of one superintendent, who stated:

> Our job here is to ensure that the seagoing staff follow our procedures and work as per the requirements in the SMS. It is a constant battle (for us) – sometimes we

even have to train them to set them on the right track. Time after time we have traced back root causes of accidents to (seafarers') non-compliance with our procedures [ref: 87].

Moreover, there was another angle to why managers required their seafaring colleagues to strictly follow companies' written policies and procedures. Some of the managers in their interviews revealed their concern with issues related to the *ever-changing workforce* onboard. Despite the difference in the employment structure[51] (as discussed in the previous chapter) the managers from both companies mentioned that unlike the managers and superintendents who were employed on a permanent basis for several years in an uninterrupted manner, the seafarers were employed in a short-term and discontinuous manner. The seafarers worked onboard and stayed ashore away from work in a cyclic process as a result of which the managers believed that the seafarers were not indoctrinated to the company's ways of working as much as they themselves were. As a result, the seafarers did not have the benefit of the continuity of knowledge. One manager, for example, explained:

> We call them (senior officers) part of the management team – but some of them are here today gone tomorrow. They come and go, we (managers and superintendents) don't... even if they return to the same ship it could be months in between... whereas we are continuously taking care of repair, dry-dock, Oil Majors [ref: 19].

Talking about ensuring compliance, a number of managers and superintendents from both case studies pointed out that the ratings were most reluctant among all seafarers. In way of justifying their claims, they highlighted how ratings refused to speak up during safety meetings, or ask questions during onboard safety training programmes, or fill in anonymous near-miss incident reports. The managers from both case studies spoke openly about their views on ratings' apathy. Such a notion was evident from the interviews of the superintendents who routinely visited the ships or conducted audits, as well as from the directors and managers who echoed the general perception within their companies. A senior manager of one of the companies described this feeling when he said:

> I don't know why they (ratings) sit quietly... it could be because they can't speak English or perhaps they don't know what's happening around them due to lack of training. Maybe it's their nature from (the countries they come from)... could be lack of motivation – who knows? [ref: 45]

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[51] Only officers in Company-B were on permanent employment, the rest were on temporary short-term contract.

Some managers further added that although safety meetings gave seafarers the opportunity to put forward their views it was futile to expect ratings to be as responsive as officers. For this reason they, along with the senior officers, needed to monitor the ratings' compliance with the company's SMSs. Nevertheless, they seemed keen that the ratings avail themselves of safety meetings and other SMS procedures to participate because they gave the opportunity for them to state their concerns and more importantly allow them to identify with the wider company philosophy.

However, because of the distance between the management office and the ships, the managers also recognised that the key to getting the ratings and junior officers to feel part of the company was mainly in the hands of the captains. As a result the managers felt compelled to rely mostly on the captains to pass their instructions to the rest of the seafarers. One manager spoke his views on this and remarked:

> We need participation from everyone and we hope to see that in safety meetings captains can convince the rest to work safely...there is only so much we can do from here... like any other activity onboard ship crew participation is also hinged on the enthusiasm of the captain [ref: 87].

The managers' interest in seafarers' compliance with the procedures and instructions written in the companies' SMSs was clearly a positive step. However, from the managers' interviews it was evident that a significant section of them had a narrow notion of seafarers' participation. To them, participation simply meant following procedures and requirements written in the SMSs and being receptive to the safety decisions that are already taken at the management level. The following interview of a superintendent, for instance, highlighted how a majority of the managers viewed seafarers' participation:

> The chief officer and chief engineer are the people who matter and are the ones who are running the ship and telling the others what to do. Let's be realistic, Bosun and below cannot and are not supposed to talk. They are supposed to be guided... captains should ensure participation from everyone onboard… take the lead, read the safety bulletins and convey to them what is right and what is wrong [ref: 24].

Such views point out how managers in the two companies followed a top-down style of management which essentially required them to pass down instructions through different levels of the company hierarchy. Because of the distance from the shore-based management units, the captains were given this additional responsibility of passing down the managers' instructions to the rest of the seafarers.

However, various scholars in the field of OHS have pointed to the weaknesses of top-down style of management of OHS. As discussed in the review of the literature, Gallagher (2000), for example, in her research on the effectiveness of OHS management systems found that top-down management approach was one of the main reasons for relatively poor OHS outcomes. By comparing the safety outcome of 20 Australian organisations with the results of an audit system[52], the author pointed out that the companies which did not allow employees to contribute in the management of OHS showed comparatively weaker results. On the other hand, the audit outcome showed that the companies which allowed employee involvement in hazard identification and control, performed comparatively better.

On the whole, the analysis of the managers' interviews showed that managers followed a top-down style of OHS management, but, at the same time were not convinced that their seafaring colleagues followed the procedures written in the SMSs. They felt that on many occasions their encouragement to comply with these requirements was not persuasive enough as seafarers routinely deviated from the procedures. While most managers criticised the seafarers for being negligent and filling in the required paperwork mechanically, some pointed out that seafarers were wilfully paying no attention to these mechanisms and even accused them of hiding the real picture by falsifying documents.

5.2.1 Distance from ships: surveillance through paperwork

As a consequence of this complexity, to the managers it was imperative that they carried out some form of surveillance and utilised measures to ensure that seafarers were complying with the procedural requirements of the companies. However, because of the distance from the ships, the shore-based office managers could not frequently avail the traditional form of physical surveillance.

There was however a difference in the ways in which the managers in the two companies perceived the subject of distance from their ships. As the ships in Company-A operated internationally the management office and the ships were on different time zones. Thus, the communications between the managers and captains were largely confined to e-mails. Also, for the same reason organising visits by superintendents to the ships in foreign ports were more complex. From the reports and interviews it showed that the superintendents visited ships only around once every six months and stayed onboard mostly for the duration

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[52] Gallagher (2000) compared with the results of Victorian SafetyMAP audit.

of the ship's stay in ports – which was typically around one or two days. Overall the managers of Company-A appeared to operate with only a sketchy picture of the daily activities on their ships. However, this did not seem to bother them as in their interviews they regarded it as 'the norm in the industry'.

The 'distance' was of lesser problem in the case of the managers of Company-B as they could keep in touch with the fleet – sailing within a few hundred miles from them – even on terrestrial mobile phones. However, despite this proximity the superintendents barely managed to comply with the requirements of the SMS on the maximum interval between visits by superintendents. They managed to visit each ship once in around three months and stay onboard at the most only for one full working day. Thus, physical surveillance even in Company-B was infrequent. The managers and superintendents from both companies, thus, found physical inspection as an inadequate means to determine whether or not seafarers were complying fully with the company's procedures and instructions.

This influenced the managers to focus on checking paperwork for verifying whether or not seafarers were complying with the company's procedures. From their interviews it showed that the managers routinely checked work permits and checklists on risk assessment as well as other paperwork such as work completion reports and onboard drills and trainings records to determine the seafarers' level of compliance with the company's procedures and instructions laid down in the SMSs. The extent to which the reliance on verification of paperwork was widespread is more apparent from the seafarers' interviews (discussed later) but even the managers' interviews revealed the veracity of the focus on paperwork verification. One superintendent, for example, said:

> We have to know what's going on there (on ships)... you know the crew (seafarers) are always having a tendency to take short-cuts and my job is to spot this. We can find that out from paperwork, reports etc... we can't get onboard on a daily basis – how else do we know – you tell? (ref: 65)

This method in which verification of paperwork was seen as an integral part of the managers' approach turned the focus on to the bureaucratic outcome of implementation of the SMSs.

5.2.2 Bureaucracy as a way of management

In fact, the reason for managers' interest in ensuring that seafarers met the bureaucratic requirements (by filling in the checklists, forms and logbooks) was not just confined to

managers' requirements. There were also commercial reasons for this documentation. The managers in their interviews pointed out that the Oil Major Inspectors routinely examined checklists, permits and logbooks as part of their inspections. Their inspection was crucial (as discussed in section 2.1.3) in deciding on the ship's suitability for commercial use. Furthermore, Port State Control inspectors (discussed in sections 1.3.1. and 2.1.3), who could potentially detain ships in foreign ports, also required similar documentary evidence. These were pointed out by several managers, one for example said:

> We are tired of this allegation that we make them (seafarers) fill in paperwork – that's not true. Everyone needs paperwork... port state control inspectors want to see records, Oil Majors ask for documents even sometimes safety officers at different terminals – all continuously ask for checklists and various logbook entries [ref: 71].

Thus it shows that 'proper and up-to-date' documentation was an essential part of ship management. It not only ensured managerial compliance but was also crucial from the commercial as well as regulatory viewpoints.

The negative impact of bureaucracy in the implementation of the ISM Code in the maritime industry has already been pointed out in the review of the literature. Anderson, for example, in his research pointed out how excessive formalisation of management procedures resulted in unnecessary paperwork (Anderson *et al.*, 2003). Such bureaucracy did not contribute to the implementation of the ISM Code. A number of industry commentators (see for example Lloyds List, 2002d; 2006b; 2007e) also identified bureaucracy as a major hindrance to effective practical operation of the ISM Code. Research in shore-based industries has also indicated that in many organisations, implementation of SMSs resulted in unnecessary bureaucratisation often taking the focus away from effective management of organisational safety (see for example Frick *et al.*, 2000).

Although in both companies bureaucracy was deeply ingrained in the ways their ships were operated, the managers also revealed concerns as to whether or not the bureaucratic systems actually fulfilled the requirements of surveillance. Interviews with managers showed that they did not always believe the seafarers' paperwork. Nearly every manager who was interviewed pointed out that most seafarers simply ticked boxes in work permits or blindly filled in checklists. In their interviews the managers commented that they believed that some of the paperwork was fabricated and merely depicted what should happen rather than what actually happened onboard. One manager, for instance, said:

> I have a hunch that this Master (captain) of Ship-X never follows procedures, but I have no means to verify that. All his paperwork looks too perfect... But there is nothing much that I can do... paperwork is important but sometimes there is too much gap between paperwork and reality [ref: 30].

Criticism over seafarers' non-compliance to the requirements of SMS and lack of trust in the veracity of the paperwork was widespread. A significant section of managers and superintendents even believed that some captains and chief engineers were routinely falsifying SMS paperwork. They felt that as a consequence the managements were unable to appreciate what went on the ships. Thus they feared that their personal standing in the company or the company's reputation could also be compromised. One manager, for instance, revealed how captains disregarded company's SMS in their day-to-day tasks; citing one case, he said:

> I had one captain who welded on deck without my permission when the ship was loaded with Naphtha[53]. His paperwork was always false… Now what can you do sitting in the office? ...we (management) can hardly control what happens on ships [ref: 12].

The views suggest an appreciation that unsafe practice and non-compliance cannot be prevented by the bureaucratic means alone, yet the system remained vital to the way in which managers understood and implemented the SMSs. The reason given for this was that by ensuring the production of paper trail, the managers had 'objective' evidence of their system working, and given the distance between the office and workplace this was perceived to be important for the reasons given above.

5.3 Risk Assessment from seafarers' perspective

In all four research voyages the senior officers (i.e. captain, chief engineer, chief officer and second engineer) were conversant with the layout and the contents of the different manuals of their company's SMS. The ratings and junior officers, on the other hand, appeared to be more familiar with the risk control measures found in the checklists. However, they possessed limited understanding of the procedures and instructions given in the SMSs – to the extent that many ratings did not even know where to locate the SMS manuals on their ships.

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[53] Naphtha: A highly explosive and volatile petroleum product routinely carried on product tankers.

During the interviews with the seafarers the most common theme that emerged on the general topic of the implementation of the Code was the voluminous paperwork accompanying risk assessment. Every officer in all four research voyages criticised that because of the elaborate procedural requirements of risk assessments they spend a significant amount of time filling in paperwork. They pointed out that such paperwork, for instance, compelled them to divert their attentions during watch-keeping and also took some of their leisure time away. They also complained that on many occasions they had to repeat the same entries in different log books, checklists and work permits for facilitating inspectors to cross-check. The following comment made by one junior officer in his interview summed up the concern with paperwork generally expressed on all four ships:

> Before arriving at this port the captain, the chief officer and I each spent around an extra six hours every day for a whole week filling in and signing forms, checking and cross checking them – all because we were expecting an Oil Major Inspection... we were clearing paperwork backlogs basically [ref: 10].

These comments on paperwork were hardly surprising as in general the maritime press has identified how seafarers have been overwhelmed by a plethora of paperwork associated with the implementation of the ISM Code (see for example Lloyds List, 2005c; 2007a). The excess of paperwork was also pointed out in the study conducted by Bailey (2006) in his ethnographic work on ships. As highlighted in the review of the literature, the author found that seafarers felt inundated with paperwork and considered paperwork associated with the implementation of the ISM Code no more than a formality. Similarly, Anderson's survey on the factors affecting the implementation of the ISM Code revealed that excessive paperwork was one of the greatest concerns of the seafarers (Anderson *et al.*, 2003).

While paperwork was considered unnecessary, the importance of being aware of workplace risks, nevertheless, was appreciated from all ranks onboard. A great majority of the seafarers when interviewed downplayed the importance of the SMSs or the formal risk assessment procedures as having relevance to their day-to-day activities. Instead, they insisted that the SMSs were only meant to take care of the 'official requirement'. In fact, almost every seafarer stated that they gained their awareness of workplace hazards almost entirely from their earlier work experiences and not from the instructions and procedures written in the SMSs. They also referred to safety posters and placards posted throughout the ships, safety training videos and safety drills conducted onboard at regular intervals as being useful in improving the overall safety on ships.

5.3.1 One size fits all SMSs: no room for experience

In the first section of this chapter the discussion pointed out how in both case studies many of the procedures and instructions of the SMSs were borrowed from standard industry sources and applied to the entire fleet. Criticising this practice a number of senior officers in their interviews pointed out that although the procedures and checklists written in the SMSs were not wrong *per se* their usefulness was limited because they failed to address the specific issues with their ships. They argued that most of the generic checklists, cautionary notes and instructions that made up their SMSs were no more than *bread and butter* information for which they did not need to 'turn the pages of the SMS manuals'. This claim was particularly evident in the interview of one of the experienced chief officers who explained that the introduction of SMSs did not alter his professional practice; he said:

> Even 15 years ago (before the implementation of the ISM Code) I used to consult the ship manuals, especially the P&A (Procedure and Arrangement) Manual[54] and of course the handing over notes (from my predecessor) on joining a ship, and the Code of Safe Working Practices when required… and I still do the same. I wonder whether anything has really changed (since the implementation of SMS) [ref: 07].

In other words the seafarers stressed the importance of the *know-how* of the operation of the specific ships they sailed on – which however was not made available to them in the company's SMSs. These SMSs were generic as the same set of operational procedures and instructions, forms, checklists and work permits was used across the entire fleet regardless of the make or model of the equipments onboard, size of the ships or the specific requirements of the trade the ships were engaged in. In Company-A, for instance, one of the ships which was around 95,000 ton DWT crude oil carrier trading in North America shared the same set of generic procedures and instructions with another ship in the fleet which was around one-tenth of its size, manned by less than half the number of seafarers, had a different set of machineries onboard and traded oil products under significantly different operating conditions in the Mediterranean Sea. While the seafarers' interviews pointed to the importance of getting acquainted with the operating procedures of each ship, what came out even more strongly was their unequivocal reliance on their own knowledge and experience for working safely.

On all four research voyages the senior and junior officers as well as ratings referred to the importance of using their professional skills for working safely. When describing their ways of working and safeguarding their and their colleagues' OHS they drew on their

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[54] P&A (Procedures and Arrangements) Manual: is a booklet found on tankers to assist the ship's officers to identify the onboard arrangements and equipments for cargo operations.

experiences from earlier occasions including those from previous ships. At no point did any of the seafarers mention that the procedures written in the company's SMS helped them perform their job better. Instead, they emphasised that their work-based experiences and professional skills were their main strengths – almost all of which they learnt through practice.

Taking the discussion further, nearly all senior officers, particularly the more experienced ones, pointed out that the company's procedures along with the work permits and checklists from the SMSs did not replace the knowledge and skill required to carry out work. What was even more interesting is that some of them indicated that the company's hazard identification and combating methods (entry-permits and checklists) were at times counter-productive. This notion was captured in several interviews. One of the senior engineers, for example, said:

> When one learns the job through experience one also learns risk assessment. You must listen to senior people who will teach you the job as well as the risk assessment. The two are one and the same. No matter how much these juniors use their theoretical knowledge they need to develop their practical skills... the checklists and the forms sometimes actually stop you from thinking or drawing on your experiences [ref: 26].

Arguing further, these senior officers also pointed out that particularly for long and complicated jobs formal risk assessments were far too simplistic to appreciate all hazards that could arise during the course of the jobs. In their argument, experience, skill, good level of communication and leadership overshadowed the benefits of simply following formal paper-based risk assessment systems. By citing the complexities involved in the practice of main-engine liner renewal, one chief engineer, for example, explained:

> One-page of company tick boxes is like the green signal to start the work. There is a lot of preparation that goes before that and a lot that goes after – both of which may only be accomplished through experience... For example, when you want to take (Main engine) liner out – you don't rely on risk assessment – you think and gather all your life experiences together... Everyone needs to switch-on as things may change very rapidly, snags may develop from nowhere and even the ship may start to roll all of a sudden... The (formal) assessment that you are talking about does not work with these crucial jobs [ref: 21].

These interviews showed how seafarers placed their experiences and skills over the formal requirements of the SMSs. They reiterated that 'capable' and 'skilled' seafarers were the most important element for working efficiently and safely, neither of which could be achieved simply by following formal procedures written in the SMSs. As a matter of fact,

these views indicated how seafarers sensed the procedures and instructions of the SMSs as an imposition on their natural ways of working. While no one in the case studies claimed that the procedures and instructions written in the SMSs were wrong, they simply failed to see how it added value to the safe working skills they developed through their work experiences.

The value of professional experience has been highlighted in other industries too. Jeffcott *et al*. (2006), for example, conducting qualitative studies from over 500 British train company employees, identified the importance of professional expertise in the safe working culture. The authors found that these railway employees placed considerable importance on learning through practical experience and on-the-job apprenticeship programmes as opposed to class-room based training or by simply complying with the employers' written procedures.

The distinction between the companies' formal risk assessment procedures and the use of workers' professional skills to identify hazards at workplaces has also been identified in various literatures. Hopkins (2005), for example, in his study of the culture of the rail organisations in Australia and the Australian Air Force aircraft maintenance units, described this distinction in terms of "workers' risk awareness". The author pointed out that formal risk assessment alone was insufficient to safeguard workers from workplace hazards. Instead, it also required risk-aware workers to complement the formal procedures by using their professional skills and experiences to identify workplace hazards and be better prepared to take actions to prevent them.

Ethnographic observation and informal discussions during the research voyages in fact revealed a high level of risk awareness among the seafarers. On most occasions the seafarers were frequently engaged in assessing risk and finding ways to work safely. Very often they brought in their experience and skills to conduct *informal* risk assessments. On several occasions I found the seafarers engaged in discussions and exchanging ideas on hazards and ways to combat them. These were regular topics of conversation among the ratings during coffee breaks or in the changing rooms. One such example written in my research diary is shown below:

> During the 10 o'clock coffee break, one of ABs brought up the topic of colour-coding the cargo pipeline segregation valves on the main deck. He pointed out that since the pipelines were painted a couple of months back the valves have not been

re-coded. The bosun agreed and narrated his previous experience on the importance of colour-coding. He said how on another ship a lack of colour-coding nearly led to an accident.

At other times such informal risk assessments were also conducted across the ship's vertical hierarchical divide. During the fieldwork there were many such instances. On one occasion I found the captain, chief officer, bosun, pump-man and an AB engaged in a discussion on the safety of a group of deck ratings who were due to start working in the pump room. The diary entry read:

> (Before the start of work) the second engineer spent 20 minutes with the crew drinking coffee and clarifying a number of issues raised by them. The Fitter, Bosun and the OS raised a lot of questions, including the sequence of dismantling the hydraulic pipes and various hazards, such as pressure in the hydraulic line. This informal discussion took place long after the formal 'permit-to-work' was filled in and signed.

Such informal procedures clearly ran in parallel with the more formalised and bureaucratic procedures embodied in the SMSs. At the very least they complemented the SMS-based procedures but at times they also stood alone in contributing to the real work of day-to-day safety. In other words, it was apparent that the seafarers used their knowledge and experience to conduct risk assessment, but, in their own way.

Indeed they went further than this and produced their own documents and procedures that operated in parallel with company's formal procedures and instructions. On one research voyage I saw that instead of using the guidelines and procedures written in the SMS, the ship's engineers were actually referring to a parallel set of guidelines and procedures developed by one Chief Engineer who had sailed on this ship previously. The following diary entry depicted this point:

> On this ship the engineers followed a special manual which was a compilation of instructions for various engine room maintenance works. It enumerated the different hazards and contained diagrams and step-by-step guidelines for each job, such as maintenance of the purifiers. Some of these schematic diagrams and sketches were drawn by hand. When I inquired about the 'special manual' with the engineers it was revealed that this manual particularly appealed to them because it was *detailed and ship specific*... something that the company's shipboard maintenance manual failed to put together.

From this it can be seen that the parallel manual filled in the void left by the company's official procedures and guidelines which were not modified for the individual workplaces.

It once again highlighted that the imposition of standardised procedures, such as the use of common risk assessment checklists across the fleet, has limitations.

Various shore-based studies have also identified similar results. A large questionnaire survey conducted by Shannon *et al.* (1996) on 718 manufacturing workplaces located in Canada, for example, found that greater worker involvement in the management of OHS in the organisations as opposed to literal compliance with management instructions resulted in fewer lost-time injuries.

Overall then the seafarers pointed to the importance of:
1. Their practical experience and general skills of working safely and efficiently
2. Their knowledge of operating the specific ship they worked on.

5.3.2 Bureaucratisation leads to focus on paperwork

A vast majority of the seafarers in their interviews also indicated a wide gap between the procedures written in the SMSs and the actual processes of safeguarding OHS. In both interviews and informal discussions, seafarers pointed out that they were convinced how, before undertaking any work, it was important to reflect on the hazards associated with the tasks. However, the practice of documenting it in the form of formal risk assessment did not carry the same weight. To many of the officers the time required to document the assessment was not justified, as, in their views, it only reduced the time for conducting the actual work. Explaining this view one chief officer, for instance, commented:

> I do the job first then I do paperwork. I don't care – tank entry checks I do first – do the job then once job is complete I do the paperwork, maybe much later. We save time like this – we can do the paperwork in the evening. We can't work in the evening, can we? [ref: 70].

In fact, documenting risk assessments *properly* was claimed to be important for reasons other than safeguarding OHS. It was considered to be necessary to take one's time over it because the paperwork had to be accurate. In the seafarers' explanations, it was paramount that these documents were filled in diligently and legibly, and filed in accordance with the SMS requirements. Most of the officers pointed out that ideally they preferred completing the paperwork leisurely, and if suitable, after the actual tasks were completed. To many of them, the main and often the only purpose to carry out paperwork on risk assessment was to adhere to the bureaucratic requirements of the company's SMS.

Similar to the managers' views, the officers also pointed out that comprehensive documentary evidence was essential not only for company's procedural compliance but also for doing well in other inspections, such as by the Oil Majors or Port State Control. From the interviews during the four research voyages, it was apparent that everyone onboard took these inspections seriously. In particular, the senior officers from both companies indicated that their reputation in the company depended on how well they performed in these inspections. They also highlighted that for each deficiency pointed out during these inspections they had to prepare explanations and be answerable to the managers – which was something that they did not want to get drawn into. A captain, for example, in his interview said:

> I have to do the paperwork because I am expected to pass Oil Major Inspections – you could say that's the bottom-line... I agree that internal audit, external audit (State Inspection) and PSC inspections and the rest are all important – but our aim is to prepare the ship for passing Oil Majors because they are the toughest... If I pass Oil Majors the managers will be happy [ref: 86].

Indeed during onboard ethnographic observations there were several occasions when it became apparent that the officers were simply filling in risk assessments forms even when the tasks were not carried out. Earlier research in the maritime sector also found similar evidence of seafarers' practice of mere paper compliance. Kahveci and Nichols (2006: 135), during their ethnographic study on the working lives of seafarers' onboard car carriers, for example, pointed out how seafarers routinely falsified logbooks and checklists and documented events that were not carried out but were filled in because they were required as per the procedures laid down in the SMSs.

In my study, interviews supported by onboard observations also suggested that some officers carried out such practice on a routine basis merely to comply with the bureaucratic requirements. During one research voyage, I wrote in the diary based on my observation and informal discussion with the chief officer:

> During the passage, the chief officer filled in a number of checklists, such as the gangway log book and pump room entry and hydro-carbon content checklists[55] when the ship was in the previous port. When on the job, he explained that these were part of standard watch keeping practices and made no sense in recording them separately, yet the SMS required it – so he was fabricating the entries.

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[55] Hydro-carbon content is checked to ensure that an explosive atmosphere is not being generated in any compartment due to an oil leak.

From these data it emerged that compliance with company's bureaucratic requirements was perceived by those onboard as separate from and running in parallel to the actual ways of working onboard. The impacts of over-bureaucratised systems have been discussed in the wider literature (see Frick *et al*., 2000). There is considerable parallel here, where it can be seen how managerial focus on meeting procedural requirements increased the notion of bureaucracy but did not necessarily contribute to safeguarding workers' OHS.

Discussing further the sensitive issue of falsifying documents the senior officers on all four ships in their interviews also revealed how they associated documentation with the fear of criminalisation. They pointed out that incomplete or wrongly documented risk assessments could indicate their non-compliance with company's procedural requirements. The officers believed that in case of any untoward event, regulatory inspectors, such as the Port State Control Inspectors would start verifying paperwork and by so doing they would determine whether procedures written in the SMS were being followed or not. Any error in the paperwork thus potentially could be taken as evidence of their professional negligence leading to their criminalisation and arrest. This was yet another reason why senior officers perceived documenting risk assessment as a significantly *important* task. One senior engineer, for example, in his interview pointed out:

> We are fighting multiple enemies every day. You do paperwork because you need to please the Oil Major, pass the PSC (Port State Control) inspector, internal auditor, external auditor and another twenty others... these are all too much work but also what many of the young chaps don't understand is that you do it most for protecting yourself from the lawyers, you know CYB? [ref: 76].

The interviews and informal conversations with the senior officers from both companies showed that their fear of criminalisation was a significant issue. By pointing to the increasing number of cases of seafarers' criminalisation in foreign ports and by highlighting the lack of protection from being prosecuted, the senior officers indicated that they were genuinely concerned about being prosecuted in foreign countries. In fact their concern was so intense that the senior officers did not consider falsifying documents, such as false logbook entries, as an offence, but believed them to be necessary evils in their professions.

As such fear of criminalisation has been widely highlighted in the maritime press (see for example Lloyds List, 2005d; 2006c; 2008b) as one of the major issues for seafarers especially captains and other senior officers. In recent times it has also been acknowledged

by various industry stakeholders as a major issue which has serious implications in the maritime sector. By criticising this practice, the industry commentators point out that it promotes unnecessary paperwork, potentially prevents proper investigation of incidents, and even derogates the merchant navy as a profession (Gard, 2005; ITF, 2005).

5.3.3 Shipboard risk assessments

With regard to the shipboard risk assessment one of the first things that became apparent was their limited number. The onboard risk assessment file on one of the ships, for example, revealed that the seafarers struggled to document the minimum number of assessments as required by the company's SMS. Over a period of seven years, this ship conducted only 49 assessments. The interviews and onboard observations also revealed that the ratings and junior officers did not know much about these onboard assessments while the senior officers had little faith in the assessments conducted by the previous officers.

Interview accounts from senior officers from both case studies revealed that they had limited understanding of the ways of calculating the severity or the likelihood of each hazard. One senior engineer, for example said:

> I don't know whether it (the hazard) can happen once every ten years or once every year[56] (for calculating the likelihood of the harm)... we just put something such that the result comes as 'moderate'. We don't want too much fuss [ref: 46].

As a matter of fact, most of these senior officers felt that for all their day-to-day tasks they were expected to come up with a risk severity of either 'moderate' or less so that they could simply 'get on with their jobs'.

Moreover, it was apparent that the seafarers had limited interest in referring back to the file of already conducted assessments – which unfortunately was the purpose behind filing the completed assessments. The analysis of their interviews revealed two separate reasons as to why they did not refer back to earlier assessments. Firstly, the seafarers did not consider that earlier assessments were conducted sincerely enough to merit a second look – as in their views they were conducted solely to satisfy the requirements of the SMSs. Secondly, the officers also pointed out that they worked under such dynamic work conditions that

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[56] Company-B provided three options for calculating the likelihood of each hazard: 1) once in 10 years, 2) once in a year, or 3) once in a month or more frequently.

previous assessments were of limited value to them. In his interview, one junior engineer, for example, said the following rather sarcastically:

> Yes, I think we have a file and it is thick too... Do you expect me to believe anything that's written in that? ...those must have been eyewash – just as we always do – filled and filed for the sake of it.... We never look up the file [ref: 09].

Furthermore, documentary analysis coupled with onboard interviews with the seafarers suggested that for as long as their assessments showed an acceptable level of risk or did not require the managements to spend time or money addressing their assessments, the managers were pleased to accept them. On the other hand, if the result of an assessment required managers to spend money or other resources, then the managers were unlikely to pay any serious attention to them. In other words, in the perceptions of these seafarers the managements lacked genuine commitment. One captain, for example, explained this during an interview on the bridge, when he said:

> I have been Master on this ship from the time she was delivered and I know her inside out. We need the echo sounder[57] display here (next to the steering wheel on the bridge[58]) and not there (in the chart room). For sure someone would be here at the wheel at all times but it would take someone to leave navigation to get to the chart room during which time we may either hit a jetty or, if not, run aground. I assessed the risk involved and asked for a technician and an extension cable – it is a doable job. But it has been nine months since and no response yet... they (managements) don't like such assessments which require them to spend money [ref: 85].

These accounts showed that these seafarers did not feel that the shipboard risk assessment system was particularly effective. Although it provided an opportunity for the seafarers to make use of their professional knowledge and actively engage with the SMSs, in practice it did not work the way it was intended for reasons discussed above. Instead, it was interpreted as another bureaucratic exercise which merely paid lip service to seafarers' knowledge and experience in assessing risk.

The managers' failure to respond to suggestions made in risk assessments by seafarers requesting additional economic support is analogous to instances found in the wider literature. Genn (1993), for example, studying 40 industrial and agricultural industries in

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[57] Echo Sounder: Instrument which shows the height of the column of water between the sea/river bed and the ship's lower most keel plate, i.e. the 'under-keel clearance'.

[58] Bridge: Place where ship navigation controls are located, such as engine speed control steering etc. On this ship it was approximately 30 feet x 15 feet while the chart room was an adjoining space at the aft of the bridge of approximate size 15 feet x 5 feet.

the UK found that managers' commitment in OHS management was limited. The author pointed out that although the managers in these organisations appreciated the employees' suggestions and the need of improving the OHS standards, they were constantly engaged in a crude cost benefit analysis before investing in safety. Such analysis turned the managers myopic and prevented them from investing in safety to reap benefits in the long-term.

5.3.4 Distance revisited

In the previous section the interviews with managers showed that the distance between the management units and their ships appeared as a concern for effective surveillance of the seafarers. The same issue of 'distance', however, took a completely different meaning from the seafarers' perspective. The interviews with senior officers and especially captains demonstrated that they actually enjoyed working at a distance from the managers. They were keen that the latter never intervened in their day-to-day working practices including the ways they managed risk. One captain even suggested that it was 'his' ship and he was able to manage shipboard concerns all by himself. He exclaimed that:

> This is not a chemical factory (ashore), where the managers instruct the operators what to do – this is *my* ship where I have to take the decisions. No matter how much good intention the office (management) has they can't control us from a distance... we need to look after ourselves [ref: 86].

The consequence of distance was also appreciated by ratings who felt that the managers were at a distance and too far away from all the hazards that they encountered on a day-to-day basis. The following quote from the interview of an AB indicates how the seafarers in general perceived the distance from their management units:

> When we fall from the gangway we drown in the water, or when we slip from the ladder we fall dead in the bottom of the tank or on to the deck from the top of the mast – but when they (managers) fall they only need to get back on their chairs [ref: 50].

Seafarers from both case studies felt equally *distant* from their managements, although interestingly as pointed out earlier, the seafarers on Company-B ships typically sailed only within a few hundred miles from the office of their management unit and could even contact their managers on terrestrial mobile phones. This common perception of the seafarers from both companies, therefore, was due to their unusual working conditions. It made them feel considerably independent and gave them a degree of self-sufficiency. During the interviews they insisted that their profession required practical experience and competence which could only be passed on from one seafarer to another and shared among

onboard colleagues. They believed that input from managers was superfluous and sometimes even counterproductive.

Moreover, the seafarers from both companies in their interviews also felt that their working (and living) conditions on ships were extraordinary and considerably different from what was experienced by their manager colleagues. They argued that they were required to endure the elements of nature, such as extreme temperatures, humidity and rough seas, and work odd hours and lead lives away from their families, while the managers and superintendents did not experience any of these conditions as they led comparatively routine and physically secure working lives.

By reflecting on these interviews one can see why the seafarers felt considerably distant from their managers and had difficulty in associating with the ways the managers required them to safeguard from workplace hazards. They did not feel that their ways of working on ships could be dictated by managers sitting at a distance. It showed that the distance gave seafarers a sense of being part of an independent community with a great degree of autonomy. As a result they refused to consider the managers *in the same boat* as them or believe that their managers faced the same concerns in their working lives as them.

In this context, the analysis of Gharardi and Nicolini (2000) is relevant. In their theoretical discussion on safety learning practice, the authors argue that safety is best viewed in terms of how it is constructed and learnt by workers in a community. They point to the importance of how a community develops its own safety culture by its actions and consequence which is achieved by collective and participatory behaviour that goes on within it. Taking their discussion further the authors also argue that within a single organisation there exist several communities, each following specific work practices and therefore possessing specific safety cultures.

5.3.5 Hierarchy: Ratings' concerns

Moving to the perspective of ratings, the analysis of their interviews and ethnographic observations revealed that onboard hierarchy was a major issue in the management of onboard safety. It placed the ratings under direct subordination to the senior officers and as a result they were heavily influenced by the operating practices followed by the senior

officers. The following interview of an AB pointed out this general feeling found in both companies:

> On every ship we have different rule. Some chief (officer) says bosun must go in the tank first, this one says bosun must stay on top and AB must go down... last captain says minimum four people for gangway securing, this one has no rules... with every captain and chief officer our cargo duties change, (maintenance) jobs change and watch-keeping rules change. We just have to follow it [ref: 33].

Yet from the interviews and observations in both case studies it was also abundantly clear that these seafarers had an overall appreciation of all the different hazards associated with different types of onboard tasks. The junior officers and ratings, especially Bosuns and Pump-men, not only possessed the necessary skills for working efficiently but were constantly engaged in safeguarding onboard OHS. In this respect their ways of applying their work experience and knowledge to safeguard OHS were no different from the ways the senior officers presented themselves as *risk aware* professionals.

In the two companies it was also apparent that while these seafarers used their professional knowledge to work safely, they were also intimidated by the senior officers. The ratings in particular were keen not to challenge the ways the senior officers worked or to show signs of disrespect or confrontation while working with them. During the interviews the ratings disclosed that it was very important to carefully weigh their knowledge of the hazards and being forthright about it. One AB, for example, said:

> With some chief mate we can discuss, with some we can't... with this one it is very good. With last one 'no' he decided and we followed. But we check our flashlight, helmet, walkie-talkie... When he speaks ok we go down (in the enclosed space). But we know the dangers and if we smell gas we come up and then tell chief... this is the practice. But normally we can talk to chief mate and we are ok... [ref: 82].

The matter of fearing the senior officers was common in both organisations but was more pronounced in Company-A. A number of ratings as well as some junior officers from this company explained how their performance appraisal system was a particularly hindering factor. These ratings were concerned that senior officers or captains who appraised their performance at the end of their contract could use the appraisal system as a tool to report their 'behaviour'. In their understanding, thus, it was important that throughout their stay onboard they remained respectful towards their senior officers. This deterred them from freely communicating their concerns in the open particularly if such behaviour could be construed as arguments or dissent. One OS, for example, explained:

> Some captains don't like argument, maybe not good for report, maybe (he will put) bad remark in confidential appraisal... so I don't speak much in the meeting or in the drill because with bad report it is very difficult to get new job as there are a lot of people waiting for my job... In my country it is important that report is good [ref: 83].

The lack of ratings' contribution was also apparent from the practice of safety meetings in the two companies, which, as per the two companies' requirements and as per the managers' views, was meant to promote participation from across the hierarchy. On one ship I observed the proceedings of one safety meeting which turned out to be far from 'a forum type of discussion'. Instead it was a *unidirectional* communication where managers' ideas and decisions were disseminated to the seafarers by the captain. The following extract from my research diary illustrates the point:

> The safety committee meeting was a formal occasion which was convened in the ship's office. It was chaired by the captain and attended by all other senior officers, 3rd officer, bosun and four other ratings. The captain read out previous meetings minutes and various safety bulletins. The meeting lasted for 15 minutes, out of which the captain spoke for over 13 minutes. While the chief officer and chief engineer spoke for a minute or two, the others did not speak at all. At the end the captain asked: 'any questions?' but no one spoke.

Yet, these ratings were aware of the concerns on work safety and discussed them among themselves. A group of ratings during an informal conversation on one research voyage spoke to me about their concern on safety-belt – which was a particular type of personal protective equipment (PPE). The ratings' decision to keep their concern to themselves came to me as a surprise as in their interviews all along they appeared to be very particular about their PPEs. Moreover, during the shipboard observation on most occasions I found them wearing PPEs diligently and also asking for replacement for their worn-out PPEs from the second engineers or chief officers.

In this particular case, however, the ratings were provided with safety-belts (worn round the waist, which has a line and a hook at the end of the line) for protecting them from falling down from a height above the deck or over the side of the ships. However, they pointed out that the line attached to the belt obstructed their movements and the belt in itself could make them fall. Also, they appeared fearful that in the event of a fall, instead of protecting them, the safety-belt could actually break their waists due to the sudden jerk associated with such falls.

Also, interestingly, they were all aware that instead of safety belt 'full body harness' (worn like a jacket with multiple restraint points having line and a hook at the end of the line[59]) offered a better protection. On inquiring how they learnt about this new type of PPE, these ratings explained that they had either used full body harnesses on their previous ships or heard about them from their colleagues or seen them on training videos. These were captured in one of the rating's interviews, who said:

> I don't wear (safety belt) because I am not comfortable, the line is actually obstructing and also it may break my back if I fall down. If I fall, I maybe hanging above the water but with a broken back. So maybe (the safety belt provides) no safety at all. Sometimes I am wearing only to show the captain... but yes I wear lifejacket... Also, you know on my last ship safety belt is not in use any more. They change to full-body harness. I hope this company changes here also [ref: 25].

However, in their interviews, these ratings also revealed that they discussed this particular concern among themselves but were not prepared to take the matter up any further. When probed they appeared fearful of inciting unnecessary interrogation from their senior officers and were worried that such suggestions could brand them as 'trouble-makers'. The following quote from an engine rating of one of the ships revealed the point:

> I can tell 2nd engineer that I don't like safety belt...but I haven't told yet... Maybe he will get angry, I don't know. Maybe they (senior officers) will think that I am the leader and the trouble-maker and I don't want to do the work as this is a difficult job and I am making excuses [ref: 53].

These interviews, informal discussions and ethnographic observations highlighted compelling reasons why the shipboard ratings failed to contribute to the risk assessment procedure although they clearly showed signs of having the knowledge and skills to augment safe working practices. It showed that on ships where hierarchical barriers were excessive to the point that ratings and junior officers deliberately kept a low profile it prevented a free flow of upward communication and acted as a barrier to their contribution to risk assessment.

In other industries too, such as in civil aviation, (see for example Tjosvold, 1990) studies have found that strong hierarchical setups result in poor communication. It prevents effective upwards risk communication which fails to assist in improving safety. Looking at

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[59] Code of Safe Working Practice also recommends use of full body harness instead of safety belt (without belt spring) for working at a height of 2 meters or more or for working over the side (MCA, 2006).

it differently, this also reiterates the importance of acknowledging the role of workers sharing their experiences and skills in contributing to the management of safety.

Summary

This chapter thus shows that the managers and seafarers in the two case studies were operating with fundamentally different understandings of their company's SMSs. The managers assumed a great degree of stability in the seafarers' work environment and believed that shipboard tasks could be carried out safely by following a set of fixed procedures. Their focus on implementing these procedures was also influenced by the ever-changing workforce at sea who did not enjoy the continuity of knowledge in the workplace. As a result of these, managers felt it necessary to take a top-down approach to managing OHS which paid emphasis on passing down instructions to the seafarers and ensuring that they complied with the company's procedures. However, the analysis also revealed that the managers' top-down approach to ensure compliance combined with the distance from the workplace resulted in bureaucratising the whole system. The purpose of following a bureaucratic system not only facilitated managerial control but also assisted in the commercial as well as regulatory modes of inspection.

On the other hand seafarers relied heavily on their experiences and skills in working safely in an active and dynamic environment on ships. They found the generic set of risk assessments too limiting and as a bureaucratic overlay. Moreover, the shipboard risk assessment which in theory provided an opportunity for seafarers to make use of their professional knowledge was in practice yet another form of bureaucratic exercise. The main reason why managers' and seafarers' perceptions were in conflict was because the level of seafarers' participation that was required under the formal procedures left no room for the seafarers to bring in their professional skills and work experiences. Yet, seafarers due to various pressures of work complied with the bureaucratic requirements which had limited connection with the actual shipboard work practices. Moreover, the distance from the management offices made the seafarers feel alienated from the managers and more specifically from their ways of managing OHS.

As a consequence, in the two organisations there was limited participation from the seafarers in the management of OHS. In the review of the literature such lack of participation, however, was found as a major impediment to effective management of

workplace safety. Authors, such as Gallagher *et al.* (2003) and Walters and Frick (2000) have discussed how workers' knowledge and expertise can offer practical help in finding hazards and in the ways to mitigate them, and can also bring in workplace democracy – all contributing to the effective management of OHS. The importance of workers' participation was also discussed from the perspective of the perception of risk. The review of the literature in section 2.2.1 also pointed out how risk was perceived differently by different groups of people. There it argued why workers should be particularly involved in the assessment of risk (Somers, 1995; McLain, 1995).

However, in the maritime context it was noted that the ISM Code made no explicit reference to the role of seafarers in the practice of risk assessment instead it placed all its focus on managerial initiatives to safeguard risk (see discussion on section 2.1.1). From these findings too it can be seen that neither of the two SMSs promoted the involvement of seafarers in risk assessment nor was it practised in the two organisations.

Moreover, the discussion in this chapter also raises question on whether the implementation of the ISM Code contributed in providing support to captains on discharging his responsibilities with regard to safety and the protection of the marine environment. The analysis of the data showed that the captains did not believe that their colleagues in the management units offered adequate support for the purpose. However, as pointed out in section 1.3.2, one of the main objectives of the Code was to create a mechanism in managing OHS that provided captains with active support from their management units.

The discussion in this chapter pointed out a number of other concerns that influenced the practice of risk assessment in the two companies. These were:

- The impediments to upward risk communication due to shipboard hierarchical arrangements
- seafarers' fear of criminalisation as a result of not fulfilling company's bureaucratic requirements
- commercial and regulatory inspectors' indirect pressure on compliance with company's bureaucratic requirements

All these themes will be discussed in chapter-8.

Chapter 6: Incident Reporting

Introduction

This chapter discusses the practice of incident (and near-miss occurrence) reporting in the two companies studied. Incident reporting, as described in the literature review (section: 2.3.2), is one of the main elements in SMSs. It requires workers to report to their managers on unintended OHS events, such as work related injuries. It provides an opportunity for managers to analyse the factors causing such events and use the analysis as a tool to improve the effectiveness of the existing policies, procedures and instructions in their companies. This element also helps managers quantify the number of these instances by, for example, comparing fatality figures over a period of time. Moreover, it also allows managers to fulfil their statutory obligation by reporting such incidents to their regulatory authorities, i.e. the flag states in the case of maritime industry.

This chapter is organised into three broad sections. First, it outlines the general requirements of incident reporting as laid out in the SMSs of the two companies. The second section focuses on the practice of incident reporting from the perspectives of managers by drawing on interview data and documentary analysis conducted at the two management offices. It points out the roles managers play in facilitating incident reporting and analysing the reports, and examines the influences affecting their practice. The third section uses documentary analysis, interviews, informal conversations and ethnographic observations on board four research voyages to analyse seafarers' practice of incident reporting and point out the factors that influence their practice. The discussion is presented by synthesising the companies' requirements and the views on the practices from the two perspectives.

6.1 Incident Reporting procedures in the two case studies

Both companies in their safety and environment policies stated that their principal objective was to provide a safe working environment. Preventing incidents, such as personal injuries and pollutions, was thus on top of their agenda. However, they also recognised that the need for setting up procedures so that they could respond to any such eventuality in a professional manner. Both companies laid down policies, procedures and instructions on how to report incidents, analyse them and learn from the analysis so as to prevent

recurrence. These instructions required captains to promptly report all such incidents to managers by using the telephone before sending in reports on incident reporting forms by facsimile or e-mail. On receiving these reports the superintendents and managers were required to take appropriate action and if required bring them to the notice of the company's senior management team.

In both organisations the importance of preventing incidents was also considered the key to successful business. At several places in the SMSs it was pointed out that company's success was heavily dependent on the fleet's standard of safety and pollution prevention. They highlighted that safety or pollution-related incidents, or deficiencies reported by Port State Control or Oil Major Inspectors were all damaging to the company's image and their business prospects. One of the two companies, for example, identified a set of Key Performance Indicators to self-evaluate the performance of each ship in its fleet and use the system to promote and market its business. Using around ten indicators, it produced a weighted score sheet in which incident frequency rates and Port State Control and Oil Major Inspection deficiency rates were given the maximum importance.

One of the two companies also took an additional initiative to reduce Loss Time Injuries (LTI) in the fleet by running a safety incentive scheme which kept count of the days since the previous LTI occurred on every ship in the fleet. It regularly promulgated this information to the entire fleet. The purpose of the exercise was to appreciate the seafarers' safe working practice. As a token, the managers also rewarded the ships with gold, silver and platinum award certificates – depending on the degree of their achievements. These certificates were required to be displayed at prominent locations in the management office and also on public notice board of the ships which received these awards.

However, informal discussions with the senior officers of this company later revealed its limited success. During the interviews they pointed out that as the incident-free award was awarded to the ship and not to the individual seafarers they did not consider it as their achievements. Moreover, the seafarers also pointed out that on most occasions every time they returned from leave they were assigned duty on different ships in the fleet. As a result, they never developed ownership of these awards.

The procedures in the two organisations also emphasised on the importance of reporting near-miss occurrence. They defined near-miss occurrence as an event that could have resulted into an incident but did not. The instructions emphasised that if properly analysed near-miss reports had the potential to reduce serious incidents such as those resulting in LTI or fatality. Thus, the SMSs stressed the need for seafarers to give near-miss occurrences the same importance as incidents.

6.1.1 Statistical Analysis

On receiving incident and near-miss occurrence reports, one of the main tasks of the managers in both companies was to get an overview of the number and type of incidents occurred in the company. The company instructions required the managers to produce statistical analysis of the incident reports received from the ships. The two companies used different methods – which have been pointed out in the sections 4.2.5 and 4.3.5 respectively and thus are not repeated here.

Generally they produced quarterly statistical analysis reports. One such example (shown below) produced the number of cases of different types of incidents every quarter.
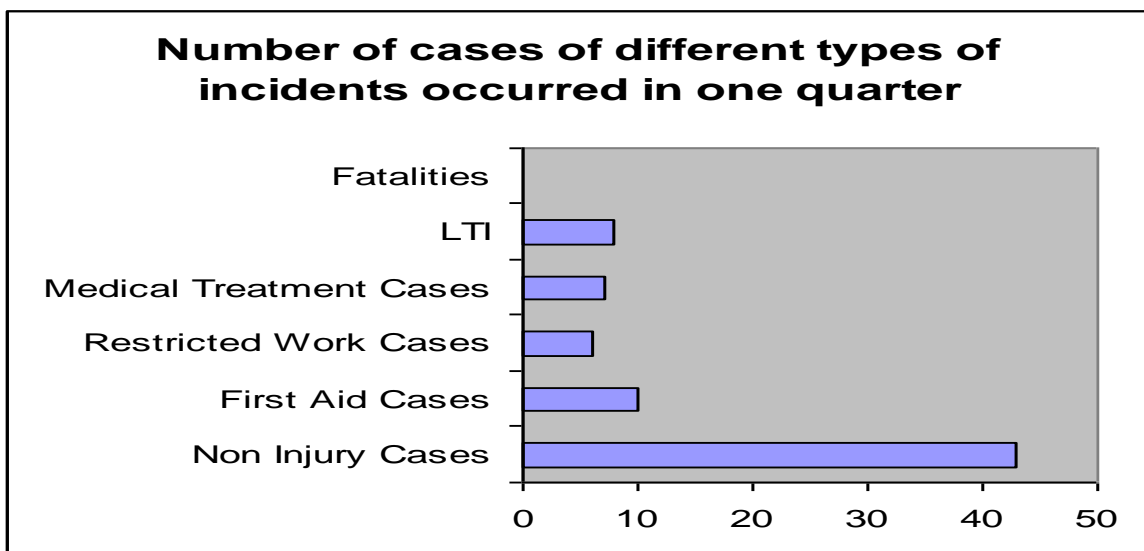
Figure 25: Statistical analyses of 'different types of incidents' in one of the organisations.

The other way in which the statistical analysis was presented was by categorising the data in three levels of severity – see an example below.
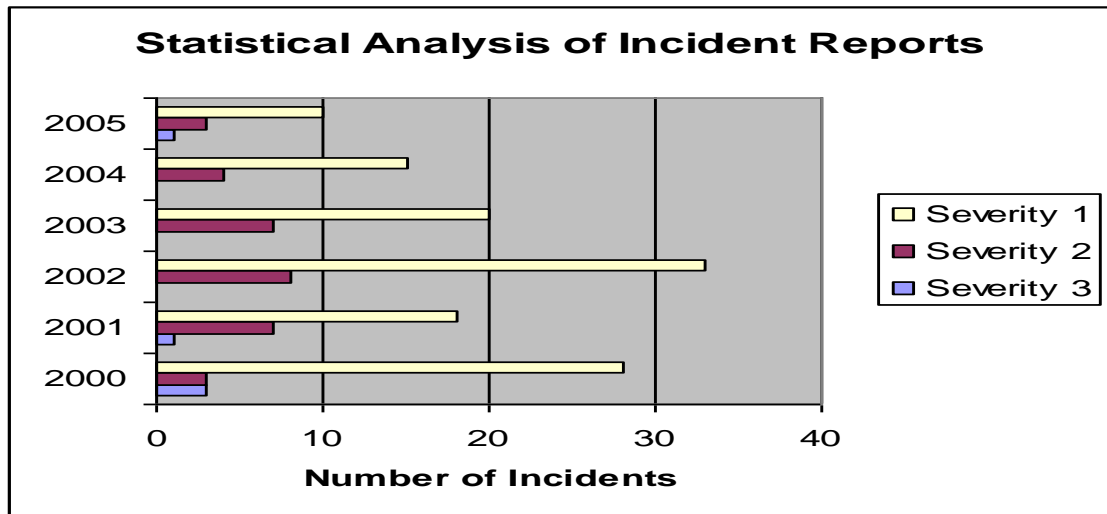
Figure 26: Statistical analyses of 'different severity of incidents' presented longitudinally in one of the companies.

6.1.2 Lessons Learnt

Both organisations in their SMSs highlighted that the purpose of reporting was not to 'blame' the seafarers but to use the reports to learn their cause. They identified them as 'valuable sources of information' which provided opportunities to learn and make their organisation safer by conducting analysis of incident to identify their direct as well as root causes. This was deemed the way forward to prevent recurrence of similar incidents or near-miss occurrence. The instructions also stated that for most cases, the reports sent by captains could be used for analysing them in the office, however, for more serious incidents the managers should carry out their own investigations by visiting ships.

The benefits of using reporting mechanism to identify the underlying concerns, or root causes, are widely discussed in the literature. Reason (1997), for example, pointed out how by analysing incident and near-miss reports, managers can identify the weaknesses in organisation's operating procedures. The causal factors generated from conducting effective analysis can provide an effective ways of preventing future incidents. The author, however, acknowledged several challenges to implement the reporting system effectively. He pointed out that in order to overcome them, the employees should, among other things, be offered confidentiality and be made immune to disciplinary proceedings.

The section on incident reporting in the two companies' SMSs also indicated certain examples of immediate and root causes prompting the managers to look out for them. The examples of the immediate causes included:

- Failure to follow rules and regulations

- Failure to use personal protective equipment

- Failure to follow repair/maintenance instructions

- Safety devices by-passed or inoperative

- Influence of drugs or alcohol

The examples of the root cause included:

- Inadequate Physical/Physiological Capability

- Inadequate Mental/Psychological Capability

- Lack of Knowledge

- Lack of skill

- Improper motivation

These examples, however, suggest that the instructions in the SMSs were skewed towards identifying the weaknesses in seafarers' performance. They show that in both organisations there was an emphasis to locate shortcomings of the seafarers' professional and personal qualities. The implication of such an approach will be revisited later in this chapter.

The instructions further required the managers to disseminate the findings to the whole fleet if they considered that there were lessons to be learnt from them. The names of the ships or the persons involved, however, were to be concealed. One of the companies, for example, stated in its SMS:

> ...in order to increase safety awareness among the company personnel, improved safe working practices on ships and prevent from recurrence of the incident, "lessons learned" if considered relevant for the fleet must be forwarded to all concerned in the form of a Circular Letter.

The examples of such circular letters showed that they included the events leading to the incident, description of the incident including its consequences, the immediate and the root causes of the incidents and the lessons learnt. Selected sections of one such example from a circular letter is reproduced below:

> On one of our company ships, one engine room rating and one junior engineer were engaged in overhauling a diesel generator. During this job the rating's right index finger got cut... the immediate cause of the incident was: incorrect use of tool... the root cause was: lack of skill... Lessons learnt was: more time to be given to assess risk and more stringent compliance with company procedures.

The instructions in the SMSs also stated that the captain was required to discuss the lesson learnt from the circular letters during safety meetings and post them on the ship's public notice boards. During the fieldwork it was revealed that nearly every seafarer including the ratings found such safety circulars letters with 'lessons learnt' useful. They considered these as valuable real-life examples which made them more aware of day-to-day hazards at work.

6.1.3 Reporting to Third Parties

Incident reports also served the purpose of reporting incidents to the flag state administration of the ship. Although every flag state had its own reporting procedures, reporting cases of seafarers' injury, incidents of pollution and damage to the ship's structure, for example, were common requirements. Both companies operating ships of several flag states were required to comply with the different reporting requirements and fill in different types of forms. The form for reporting to the Liberian authorities[60], for example, required the particulars of the ship, the names of the captain and other individuals involved, detail of the incident along with the corrective actions taken. In most cases, the managers were required to fill in the relevant reporting forms based on the information provided in the incident reports sent in by captains.

The instructions in both companies also stated that a detailed report was essential for presenting their cases to insurance companies. They pointed out that captains should provide as much information in the incident reporting forms as is possible by sending additional data such as photographs and sketches in support of the entries in the reporting forms for them to make effective claims. In one of the companies this section of the SMS also discussed some of the procedural arrangement of ship insurance. It explained how in the event of an incident, a large deductible amount could not be recovered from the insurance companies and also how the insurance premium went up after every claim. After stating these salient points, the instruction in the SMS stated:

> ...it is therefore in everyone's interest to ensure that risks are not taken, that the ship operates safely and that accidents and incidents are avoided.

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[60] Liberian Authority: One of the largest ship registering authorities in the world. At least one ship in each of the two companies was registered with this Flag State.

The requirements of incident reporting with regard to insurance claims showed that the managers demanded a detailed picture in order to fulfil the procedural obligations of the insurers. Moreover, it also indicated that managers used these instructions to forewarn seafarers about the potential economic consequences of incidents.

Thus, the discussion so far showed that both companies were keen to avoid incidents in their establishments. The instructions in the SMSs pointed out that it was vital for the companies to operate without incidents in order to maintain good reputation in the industry and for the purpose of economic benefit. They also revealed that on the one hand these reports were required by the managers – who were meant to use them to identify the weak areas and improve the standard of safety in the company, while, on the other, these could also be used to inform external entities who required considerably detailed information including the identification of the individuals involved in the incidents.

6.1.4 Reporting forms

The instructions in the main procedures folders of the two SMSs also directed the readers to fill in specific forms from the forms folders. The two companies followed different reporting structures. Company-A used two different forms for incident and near-miss occurrence reporting, while Company-B had a single form for reporting both types of events.

The incident reporting forms (excluding the near-miss occurrence reporting in Company-A) required the captains or safety officers to fill in descriptive information of the incidents. They required the names of the ship and the persons involved and the date of the incident, the description of the events, the details of the damage or injury, the list of all parties involved and the actions taken to mitigate damage. The form in Company-A in particular demanded detailed information with over 60 questions most of which required a 'yes' or 'no' answer. These included:

- Were short-cuts taken?
- Were regulations ignored to complete operation?
- Were personnel experienced in their use?
- Was the quality of PPE adequate?
- Was the person/personnel pre-occupied with other thoughts?
- Did the person misunderstand instructions?

- Identity of the person authorising the work.
- What level of supervision was provided for the job?
- Was training required for the job?
- In light of accident is additional training needed?

While the form used in Company-A was more probing, both companies nonetheless required detailed reports on incidents (and also for near-miss occurrences in case of Company-B) from the ships including details of the persons involved in the events. They not only required identifying the victims and their supervisors involved in the incidents but also placed a significant focus on locating the professional shortcomings of the seafarers involved and whether or not the seafarers deviated from the company's laid down procedures and instructions. The questions used in the forms resembled very closely with the suggested direct and root causes provided in the main manual – indicating that for the purpose of identifying the underlying causal factors of incidents, both companies placed a heavy emphasis on locating seafarers' flaws and weaknesses.

The single-page near-miss occurrence reporting form in Company-A, however, only asked for a basic description of the incident and did not ask for the names of the ship or the person(s) involved. As per the company's requirements, the form could be filled in anonymously by anyone onboard and dropped in the ship's mail box[61] for the captains to dispatch them to the managers. Its purpose, as written in the Company-A's SMS, was to 'encourage seafarers to report without being fearful of blame'. Thus, while the reporting procedure in Company-A took two extreme approaches, the common reporting requirements in Company-B followed an in-between path.

The importance of anonymous and confidential reporting has been identified by various researchers. In the aviation sector, for example, research conducted by O'Leary and Chappell (1996) showed that in order to encourage reporting from the employees it was essential to offer confidentiality and an indemnity against disciplinary proceedings among other things. The authors pointed out that without these preconditions incident or near-miss occurrence reports may be reduced to selective reporting which may result in giving a cursory glance to cases requiring serious analysis.

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[61] Ship's Mail Box: Where all outgoing personal mails are stored for dispatching from next port.

Similarly, in the area of health-care, research conducted by Stump (2000) pointed out how an anonymous paper-based incident reporting system when introduced to an American hospital was a major success. Within the first six months of bringing in this change in the reporting procedure, the number of reported cases increased by more than five times.

With this information on the two companies' requirements on incident reporting, the discussion now proceeds to locate how managers and seafarers of these companies used these procedures in practice. With the help of illustrations, their relative perspectives are discussed in the next two sections.

6.2 Incident Reporting from the Management's perspective

As with the risk assessment, the managers from both companies asserted that their procedures and instructions supported by company forms were comprehensive and adequate for their fleets. They were particularly keen to receive near-miss occurrence reports from the ships because they believed that an increase in such reports gave them a greater chance to prevent serious incidents, such as fatalities. However, the managers' interviews portrayed an overall picture of discontent with regard to the way in which the seafarers operated this system.

6.2.1 Lack of reporting: seafarers not complying with procedures

The superintendents and managers from both companies pointed out that the reporting procedures used in their companies conformed to the requirements of the ISM Code and were in use in their companies long before the Code became mandatory. They added that as a result of the implementation of the Code the reporting mechanisms were merely formalised with an added emphasis placed on the reporting of near-miss occurrences. The marine managers, who were involved in conducting the analyses of the reported incidents, in their interviews pointed out that the job of analysing the incident reports required seafaring skills as well as managerial expertise. They also stressed on how they devoted considerable time and resources to this job particularly in developing statistical analysis for monitoring their progress and identifying the areas that required special attention. One manager, for example, said:

> We have had it (reporting procedure) since the 1980s, reporting, analysing incidents, preparing statistics for the fleet and sending circulars to all ships are nothing new... it takes the required experience to analyse these reports – a lot could be at stake... you see, the system here is very mature [ref: 24].

Overall, the managers in both companies were confident about the ways in which they operationalised the incident reporting systems but showed great disappointment in the ways in which they were supported by their seafaring colleagues. In their interviews the managers emphasised that the success of this element of the SMS almost entirely depended on the seafarers. They pointed out that only after the incidents were reported by the seafarers, could they get involved. Based on this argument, the managers focused on the need to persuade the seafarers to report incidents and near-miss occurrences. Such persuasion was evident from the number of letters and fleet circulars that were sent by the managers to the captains urging them to report more incidents and in particular more near-miss occurrences. This suggested that underreporting was a major concern in the two organisations.

Every manager and superintendent however appeared most concerned that despite their robust structure and repeated encouragements, the seafarers were not fully utilising the company's reporting systems. They suspected that their seafaring colleagues were holding back most onboard near-miss occurrences and even some instances of onboard incidents. One senior manager in one of the companies, for example, pointed out:

> We do our best to implement it (incident reporting). It is fully implemented here in the office... we have the expertise to look into the reports and dig out the root cause... But we know that ship-staff don't follow everything we set rolling here [ref: 45].

Although the managers did not have any means to know the number of unreported incidents or near-miss occurrences, they were convinced that their seafaring colleagues were not reporting a considerable fraction of them. The argument of the managers in both companies was rooted in the popular theory of the accident pyramid which was discussed in section 2.3.2. One of them, for example, said:

> You're right, we are not mind readers. But we have been around long enough to know that there is a lot more going on the ships than what we are told... At one stage we used to get inverted accident triangle, now things are getting better... it looks more like a rectangle perhaps [ref: 62].

They pointed out that as per the number of serious incidents and injury reports – which the seafarers had to report due to the seriousness of the cases – the seafarers should be sending in many more reports on near-miss occurrences. In this regard the managers of Company-A

did not sound any different from their counterparts in Company-B despite the fact that the two companies used different reporting forms for reporting near-miss occurrences.

The managers' views coincided with various studies conducted in different occupational fields. Stanhope *et al.* (1999), for example, conducting a retrospective review of case notes of 500 deliveries in two London obstetric units identified 196 cases of reportable adverse incidents in accordance with the hospital's protocols. However, the study showed that only less than a quarter of these cases were reported by the staff. Moreover, the study also showed that when these cases were grouped into serious, moderate and minor events, the staff reported nearly half the serious incidents, only around quarter of the moderate events and just 15% of the minor events.

6.2.2 Selected incidents reported: the case of manipulated reporting

The managers appeared convinced that it was because of seafarers' poor participation in the company's reporting mechanism and the lack of respect towards its procedures and instructions in general, that this element of the SMS was not working effectively. In way of justifying their perception the managers pointed to seafarers' manipulative practice of reporting selected types of incidents and near-miss occurrences while suppressing others. Some managers also offered to share their understanding of why seafarers acted this way. They pointed out that the seafarers chose not to disclose those events which could be construed as their professional failures, but were happy to report personal injuries or such other untoward events arising out of technical problems or mechanical breakdowns. One senior manager in one of the companies carefully articulated the problem and said:

> Their (seafarers') favourite is the obvious ones: accidents... then they report illnesses and injuries especially for which they required doctor visit and then the machinery breakdowns and finally loads of minor concerns... I feel a large portion of in-between block of operational errors… their faults and oversights are not reported [ref: 30].

While many managers and superintendents pointed out that compared to a decade ago more reports on near-miss occurrences were being sent to them, some were sceptical about this apparent success of their campaign for more near-miss occurrence reports. This latter group of managers looked at it from another angle and emphasised that although the lower section of the accident pyramid was beginning to swell, these were actually examples of manipulated reporting. They pointed out that captains were now sending reports which were typical examples of supervisory issues. These did not require any analysis from the

managements, as they could simply be addressed on ships by disciplining the seafarers. One senior manager in one company, for example, stated:

> All near-miss reports that our ships send are like '2nd officer seen on deck without safety shoes if he had slipped he would have broken his legs'. I get like this all the time... we don't want these as these are disciplinary issues. There are more serious issues happening all the time, such as: mooring rope-parting, slips and trips, close quarter situations (in navigation)... but we never get to know them [ref: 12].

The discussion shows that although the managers succeeded in getting more near-miss occurrence reports they did not receive as many of the sort they expected. The sort of report they were interested in were instances of operational failures which required managers to analyse the underlying reasons. By probing into the matter further, it emerged that a section of the managers believed that the main reason behind seafarers' poor compliance with reporting was due to their fear of being blamed as a consequence of reporting.

This corroborates the finding of Anderson *et al.* (2003: 180-190). In the questionnaire survey of shore-based ship managers, the authors found that nearly two-thirds of the managers believed that seafarers were reluctant to report for reasons such as their fear over their jobs. The following section discusses this issue in more detail.

6.2.3 The 'no-blame' culture

When discussing this issue of lack of reporting and selected reporting, in both companies a section of the managers, who appeared most defensive about the ways their companies operated, insisted that their companies ran a 'no-blame' culture and that the seafarers were unnecessarily concerned with the fear of blame. These managers and superintendents added that even though the seafarers' identities were entered in the reporting forms these were superfluous in analysing the root cause. They emphatically added that such reports did not make any negative impact on seafarers' career or even on their promotion prospects. One superintendent, for example, claimed:

> Although reports point out seafarers' mistakes, we don't aim at that. We have a robust no-blame system. We trust it and believe in it... all we want to know from the reports is the underlying cause... which is not about the individual – it's about learning from the mistakes [ref: 65].

However, not all his colleagues were convinced about the genuineness of the presence of the 'no-blame culture' in their companies. Around one in three pointed out that they were not surprised that their colleagues at sea were sceptical about their company's 'so-called

no-blame initiative'. They revealed that seafarers' fear of being questioned about the reported incidents and subsequently being blamed was understandable. One manager, for example, explained:

> It would be a bit angelic to expect ships to produce a list of mistakes... There are some natural defence systems that take over internally... they must be thinking 'am I right or am I wrong, should I report or not, if I report what would they (managers) question'. There is always that fear in them of questioning or finger-pointing [ref: 71].

Further discussion on this subject revealed that the seafarers' fears were in fact well grounded. A number of managers and superintendents in their interviews admitted that it was impossible for them to disregard the contents of the reports when judging the professional performance of the seafarers, especially the senior officers. One of them used the example of seafarers' promotion and said:

> No matter how much I try, I cannot promote a chief officer to captain who had had more than his share of accidents. Can you? Not that we wish to spy on them through this reports, it is just that I would be uneasy... we tend to overlook it for a regular re-employment but promotion is different I must admit [ref: 34].

This presented a paradox for managers and superintendents. They were aware of the importance of exonerating seafarers from the fear of blame to promote incident and near-miss occurrence reporting. They also knew that the purpose of reporting was to learn from the mistakes by locating the underlying reasons and progressively improving the operating practices in the companies. Yet, for each incident they strongly believed in apportioning blame to individual seafarers. Driven by the philosophy that suggest that 'a significant proportion of incidents occur due to human-failure', the managers were drawn into identifying human errors that caused incidents and near-miss occurrences in their companies. In other words the practice was about identifying how seafarers deviated from the company's procedures and instructions. This paradox was well articulated by one superintendent, who said:

> As a superintendent we are fire-fighters, we need to know the cause of the problems, which is the people in most cases... (Although) we strongly recognise that we are not here to blame them, we are here to analyse the reports and learn from the root causes, but I am sorry, my first job is to find what's going wrong... perhaps someone needs some extra training... It's a catch 22 situation, I am afraid [ref: 60].

Moreover, by scrutinising the final reports of 50 incident and near-miss occurrence randomly chosen from both companies, I found that 42 instances the managers identified various forms of error on the part of the seafarers. On the eight other occasions, the reports

identified faults either due to mechanical failures or third-party mistakes. From these 50 reports, the three most common immediate causes stated in the examples were:

- seafarer's failure to follow SMS instructions
- seafarer's failure to use Personal Protective Equipment (PPE) properly
- seafarer's improper position for carrying out task

While the three most common root causes stated in the same set of 50 examples were:

- lack of seafarer's skill
- lack of seafarer's mental capacity
- inadequate leadership/ supervision

On most reports, the managers also stated that the seafarers needed further training for 'improved safety behaviour'.

The stated aim of incident reporting in the two companies was to analyse the incidents and near-miss occurrences to locate the immediate and the root causes, so that the managers and the seafarers in the company could learn from them and apply the knowledge to improve safety in their establishments. The procedures also pointed out that the purpose of incident reporting was not to blame the individuals but to analyse them and learn from the mistakes. However, the findings revealed that the practice was considerably different. The analysis of the managers' interviews as well as the documentary analysis of the companies' suggestions on immediate and root causes (discussed in section 6.1.2) and of the type of questions asked in the reporting forms (discussed in section 6.1.4) showed that the managers were disproportionately inclined to find faults and apportion blame on the seafarers. In this regard the managers' views on incident reporting and risk assessment followed a common thread. In both cases it showed that the managers placed a low level of trust on their seafaring colleagues, requiring them to follow specific work procedures and identifying faults with them in the event of an incident or near-miss occurrence.

These findings are not unique with these two case studies. Various authors studying different industries have pointed to the caveats of following this approach in which managers take a narrow view of accident investigation methodology. Carroll, (1998: 713), for example, examining the learning practice in organisations in chemical and nuclear industries pointed out that 'among other things blaming and disciplining particular

individuals, intended to encourage accountability, can create an environment in which people do not report problems'.

In the next section the discussion moves to identify the seafarers' perspective on the practice of incident and near-miss occurrence reporting procedures onboard the four research voyages.

6.3 Incident Reporting from seafarers' perspectives

The practice of incident and near-miss occurrence reporting on the four research voyages were analysed from the data collected through seafarers' interviews and informal conversations, as well as from onboard documentary analysis and ethnographic observations. Overall it showed that seafarers readily distinguished between safe and unsafe acts. They brought in their experiences of incidents and near-miss occurrences in their daily conversations and work practice and discussed it among their colleagues. However, as the analysis in this section would unfold, many of these events remained confined onboard and were not reported to the managers as required by the formal system. From the comments and views presented, the following subsections describe the main influences that affected the way in which the seafarers practised incident reporting.

6.3.1 Seafarers' fear of blame

The seafarers' fear of being blamed as a consequence of reporting incidents or near-miss occurrences was a major factor hindering the implementation of this element of the ISM Code. They were particularly apprehensive that they could be victimised by the managers and even lose their jobs. Irrespective of their ranks, the fear of blame emerged as the most common fear in the seafarers. From their interviews, it showed that every seafarer from both companies was thoroughly dismissive of their managers' 'no-blame' claim.

From the fieldwork, the two following examples demonstrate how seafarers' fear of being blamed by their managers prevented them from reporting cases of incidents or near-miss occurrences. In the first case, on one of the ships I witnessed an oil pollution incident. Subsequent informal conversation with the officer involved in the incident revealed how he was worried that reporting the incident could ruin his career. The research diary entry read:

> Last night during loading, cargo tank high level alarm went off and soon after cargo sprayed from the PV[62] valve of the tank. Around 200 litres of oil escaped from the tank of which around 20 litres went overboard... other than me, only the duty officer and AB saw it. The officer did not raise alarm, instead started a rapid cleaning-up action... a few days later... I asked the same duty officer whether or not he informed the incident to the captain or planned to report it to the managers, to which he replied: 'why should I volunteer to report such incident to the managers or anyone else for that matter…it could ruin my career or create unnecessary hassle for the ship'

In another example the captain on one of the ships narrated an instance where he chose not to report a near-miss occurrence to the managers. He believed that by reporting the particular event he would put one of his colleagues' professional reputations at stake. The captain explained that on this particular occasion, while the ship was navigating, an engineer made an error of judgement which caused disruption to the ship's power supply. Subsequently, the ship lost control and came perilously close to colliding with another ship. Recollecting this near-miss occurrence, the captain said:

> It was very dangerous and should never have happened...but I did not report because I knew that after reporting the managers would inquire and find out who that engineer was. Then they would have singled him out and spoilt his career [ref: 85].

In this respect there was no difference in the views of the seafarers of the two companies. Despite the fact that the seafarers from Company-A could use anonymous near-miss occurrence reporting procedure they were not confident that such reporting mechanism truly offered anonymity. The interviewees pointed out that firstly as the forms were dispatched to the managers along with other official documents the identity of the ship could not be concealed. Secondly, the procedures in the company's SMS required a copy of such reports consecutively numbered and filed on board. Its purpose was to demonstrate to various inspectors, such as the Oil Majors, that the seafarers complied with the company's reporting procedures and instructions. However, some of the junior officers and ratings in their interviews pointed out that it was feasible for captains or other senior officers to refer to earlier anonymous reports and identify who wrote them. A junior officer on one of the Company-A ships, for example, called this reporting form 'a trap'.

Moreover the ratings – whose main concern was how the senior officers would react to their reports – also felt that the consequence of reporting could have a much more serious

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[62] PV Valves: Pressure Vacuum Valves are fitted to cargo tanks. Their purpose is to prevent tanks from getting over/ under pressurised

outcome if the senior officers included their names in the incident or near-miss occurrence reporting forms. In their interviews this group of seafarers revealed that their future employment prospects could be at stake if the crewing managers in their home countries came to know about it. On one ship, an AB, for example, said:

> Sometime we have some problem like close-quarter situation with another ship in the channel... but better if captain doesn't report, because if he does then he may put my name as lookout man as well and may be make me sign as a witness... It is not good for my job – sometime it is bad for getting next job [ref: 41].

While the junior officers' and ratings' responsibility of reporting incidents remained confined to bringing them to the attention of the senior officers, they, nevertheless, faced a different set of concerns which will be discussed later in this section.

The senior officers, on the other hand, appeared most concerned about the consequences of reporting incidents or near-miss occurrences to the managers. They felt that because they assumed responsibility of most tasks on ships, they were more likely to be singled out and reprimand by the managers. They feared that as a consequence they could easily lose their jobs.

Although the senior officers of Company-B were employed on permanent contracts, they too appeared equally uncertain about their job security. During the interviews they revealed their fear of being made redundant. They felt that the managers could bring in replacements from other nations drawing comparatively lower wages. As a result they believed that they needed to exercise greater caution when deciding on which incidents to report. One senior engineer from Company-B, for instance, in his interview said:

> We are constantly worried as we keep seeing more and more engineers (from X nation) taking over. Although they (management) have promised not to kick us out... but who knows... now the time has come for me to stay quietly, keep a low profile and of course not draw anyone's attention by having an accident or something [ref: 31].

Such general perceptions thus impacted upon the senior officers' willingness to report incidents or near-miss occurrences. The interviews with the senior officers from both companies together with the documentary analysis showed that their fears were indeed well-founded.

After incident or near-miss reports were sent to the managers, the senior officers were subjected to a series of intimidating interrogation from their managers seeking further detail of the events. The analysis of the e-mail correspondence between the managers and senior officers showed that subsequent to the reporting and as part of the investigation, managers asked for explicit descriptions related to the events. These were clearly faultfinding exercises by which the managers established accountability for each event. During the interviews one senior engineer, for example, expressed his anxiety about being blamed by the managers for an incident for which he felt no responsibility:

> On this ship I had near death accident but it was not my fault. But they (managers) are asking for many explanations. After every reporting they keep asking why this, why that, and why like that, looking at which, I find that there is a tendency to locate the guilty person... In their analysis they blamed that I did not work as per the SMS and said that I did not have the necessary skills and leadership qualities – may be I am on their hit list ...if I can avoid I wouldn't report the next time [ref: 18].

From this discussion, seafarers' fear of being identified and subsequently reprimanded by the managers emerged as a significant barrier to the effective operation of the incident reporting systems. While some managers acknowledged this concern it was not clear that they appreciated the true extent of the problem. From the analysis it can be seen that the managers failed to ensure the basic prerequisites necessary to promote incident reporting.

These findings corroborate the industry views on seafarers' fear of being victimised as a consequence of reporting. As pointed out in section 2.3.2 the chief inspector of the Marine Accident Investigation Branch (MAIB) in one of the annual reports explicitly pointed out that the prevalent blame culture in the industry was not conducive for seafarers to report incidents or near-miss occurrences (MAIB, 2001).

The workers' fear of blame is more widely reported in the shore-based context. Adams and Hartwell (1977), for example, in their study on a number of plants in the steel industry found that fear of attribution of blame was a major factor that prevented the employees from reporting incidents and near-miss occurrences. They identified that information related to incidents were selectively filtered before they reached the higher authority in organisations.

Studies by van der Schaaf (1995), Phimister *et al*. (2003) and van der Schaaf and Kanse (2004), also supported this argument with similar finding. Van der Schaaf and Kanse's

(2004) work on locating hindrances to reporting set in the chemical industry, for example, found that workers feared that reporting of incidents or near-miss occurrences could bring them to disrepute or lead to direct or indirect disciplinary actions. They concluded that such fear was a major reason for underreporting.

The analysis of the interviews from my study also revealed that the senior officers' fear went further than just losing their jobs. It showed that they were concerned that certain types of report, such as a report on oil pollution, could lead to a more complex problem of criminalisation. During the interviews, a number of the senior officers, especially the captains, pointed out that although the reports were sent to the management offices there was no assurance that they would be read only by the managers. They felt that these reports could be read by various interested parties, such as Port State Control Officials.

This inherent tension was pointed out in the way in which the incident reporting system was arranged in the two companies (see section 6.1.3). It shows that such a system did not help seafarers report more freely. From a number of interviews disclosing the senior officers' fear of being criminalised as a consequence of reporting incidents or near-miss occurrences, the following interview with one of the captains is especially noteworthy:

> Who goes to jail? It's me, the chief engineer or chief officer... it's me for sure. Look at all the cases around the world.... Am I crazy to report and invite these lawyers from the P&I Clubs and inspectors from the Port State Control to step on board and arrest me in some foreign port... If I can hide, I'll hide – For small cases it's far more prudent to remain quiet... once you set the ball rolling you never know where you would end up [ref: 86].

The general perceptions from these interviews showed that the senior officers were not just fearful about losing their jobs, they were also greatly anxious about making themselves vulnerable to criminalisation. Their fear of criminalisation thus acted as an added hindrance in operationalising the incident reporting system in the maritime industry.

6.3.2 Filling in reporting forms: the practical constraints of reporting

The interviews and informal conversations with senior officers, especially the captains and safety officers from both companies led the discussion to incident and near-miss reporting forms used in their companies. They drew my attention to the nature of information required in the forms. In the views of all these officers, the forms were too extensive and deliberately worded to find faults with the victims. The majority of such resentful

comments came from the senior officers of Company-A ships, one of whom, for example, said:

> Have you seen the form? It's a four-hour job and requires a team of police officers to fill it in... If we start to report every small incident that happens on the ship then we would need a special man to report, with a rank of a reporting officer. So, we report what is important... may be something like the injury compensation [ref: 02].

Such comments have close parallels with the discussion in the first section of this chapter (section 6.1.4) where it showed that the forms were far too probing and skewed towards locating professional shortcomings of the seafarers.

The senior officers did not enjoy filling in the detailed information required in the incident reporting forms although the matter was most acute in the case of incident reporting form used in the Company-A. In their interviews they revealed that on most occasions the information required in the forms was not available to them, as a result of which they filled in 'whatever was safe to report' for them as well as for those whose names appeared on the reports. Some of the interviewees also pointed out that there could be no definite answers to a number of such probing questions. By way of example, one senior officer said:

> What would you answer if I asked you 'Was any part of the task forgotten about?'... It is a plain stupid question as no one can say for sure what the answer should be [ref: 70].

Such concerns were not unique in the maritime industry. Researchers investigating practice of incident or near-miss occurrence reporting have indicated the time taken to fill in incident reporting forms and the nature of detail asked in them act as hindrances to the effective operation of this system. Reason (1997: 202), for example, identified this as a problem and pointed out that one practical way to motivate reporting was to ensure that workers do not get deterred by the length of the reporting form or by the type of questions asked in them.

Similarly, Hutter (2001: 206) found how underreporting was prevalent 'across all grades of staff from all departments' in the UK railway industry. The author reported that one of the impediments to reporting was the time consumed to fill in reporting forms.

These views help in explaining why the length of the reporting forms and the probing nature of the questions contained in them failed to facilitate the operation of incident and near-miss reporting system in the two companies. However, at this point it also raises the

question that if form-filling constraint was such an important issue on the ships of Company-A, then why was the one-page near-miss occurrence reporting form on the same ships not effective either?

Nearly all officers and around half the ratings on Ships-A1 and A2 knew that near-miss reporting forms were available in the public spaces on these two ships. However, other than the captains and safety officers none of them ever filled them in. One engine room rating, for example, during an interview disclosed:

> I have been working for 25 years on ships and I never made any report... I know we can fill that (one page near-miss occurrence report) form but if I fill that in everyone can read my handwriting and someone can catch me, it is better to tell (report concerns) to second engineer or bosun and let them decide [ref: 63].

Such views did not emanate from the ratings alone. A number of officers, including one who had been sailing in this company for several years and acknowledged witnessing several near-miss occurrences, revealed that he never used the form even though he knew that it was short and could be filled in anonymously. In general, from all the interviews it reiterated the point that the seafarers of this company did not believe in the claim of anonymity made by the managers with regard to this form which is why they did not use them.

However, the interviews of the two captains also revealed that they were persuaded by the managers to report more near-miss occurrences. As a result they took the responsibility on them and periodically reported 'suitable' near-miss occurrences. This practice was described by one of them, who said:

> I fill around two (near-miss occurrence) forms per month – just to keep something going to the office... but again I make them such that they don't harm anyone (other colleagues on board) [ref: 43].

In this respect the argument presented by the captains and safety officers in the two companies was similar – all of them indicated that they knew that their managers were keen to get more near-miss reports, yet they were aware that these reports could potentially disrepute them or their colleagues. As a result the captains were involved in manipulating the reporting by carefully selecting near-miss occurrences which were important yet not serious enough to harm their colleagues' reputation. Consequently, the system was operated as little more than a bureaucratic exercise. The analysis of these views explains why some of the managers believed that the captains in their fleets were reporting more

'disciplinary issues' (see section 6.2.2) as opposed to the type of near-miss occurrence reports they were expecting to receive.

Discussion in this section showed that the length of reporting forms and the intrusive nature of the questions in them were yet another discouraging factor for seafarers and particularly for the safety officers and captains. However, while these were clearly a noticeable factor, the overpowering reason for not reporting was still the original concern of seafarers' fear of being identified, blamed and reprimanded as a consequence of reporting.

6.3.3 Ratings' constraints: additional hindrances in reporting

The discussions so far has predominantly looked into the views of the ship's senior officers. However, ethnographic observations during the research voyages showed that nearly all shipboard hazardous jobs were carried out by ratings. For example, during the study I saw ratings entering into cargo tanks for cleaning purposes, working on top of masts and even going over the ship-side to rig pilot ladders. Thus, arguably it was this group of seafarers who in the normal course of work were likely to encounter the most number of incidents and near-miss occurrences. Therefore their perceptions and views are equally important to get the complete picture of the practice of reporting in the two companies.

Overall, the ratings' interviews indicate a considerable amount of underreporting. It showed that they did not want to report events that typically indicated their personal failings or caused only minor injuries that did not require medical attention from ashore. As reported in section 6.3.1, the ratings generally feared being associated with incident or near-miss occurrence reports. They felt that it identified them as 'accident prone individuals' and to them it was a matter of considerable concern because in their views it reduced their chances of getting subsequent employment.

Moreover, a number of ratings also indicated that they were apprehensive that reporting of incidents might make them stand out from the rest of their colleagues. They, in their interviews, revealed that by reporting they would draw attention to themselves and be subjected to their colleagues' disapproving comments. One engine room rating from one of the ships narrated this concern during his interview. He said:

> I don't like to tell any problem (to officers/ engineers)... because we (ratings) always meet in the smoke room and talk. May be there someone can comment: why you report – now second (engineer) will start new system for more checking [ref: 53].

This indicates that reaction from peers played a negative role in the context of reporting particularly in an environment where reporting from ratings was not considered as the norm. These seafarers in their interviews also pointed out that during the course of their daily work they regularly encountered near-miss occurrences and minor incidents leading to cuts and bruises which only required first-aid. However, they did not consider them worth reporting to their seniors as they believed that such 'minor' incidents were part of their hazardous profession. In way of explaining this particular view, a Pump-man on one of the ships described the following situation during his interview:

> ...like yesterday I had my fingers jammed during valve overhauling – it bled from under the nails but the work had to be done so I continued. I can't tell the chief mate that I have a problem and start complaining. But if it is a bigger problem then I'll tell the chief... this is how I have been working for the last 36 years [ref: 69].

Such events did not remain restricted to minor injuries alone. The ratings' interview showed that they used their own judgement to decide which events to report. During the interviews a number of ratings kept referring to 'minor problems' as events which were clearly either near-miss occurrences or in some cases even incidents. However, they did not consider these as reportable because they believed that these cases were detected in good time and successfully recovered before they could cause any serious and immediately noticeable damage. From the interviews it showed that they considered the act of recovery as part and parcel of their job. The Bosun on one of the ships, for example, described the following when explaining how he routinely used his professional skills to recognise hazards and thus manage to recover from potentially serious impact:

> Many times I smell (hydrocarbon) gas when going inside the cargo tank. Although the chief (officer) checks with the meter, there are sometimes these areas with gas. See my nose is more sensitive than the meter. So when I smell gas I quickly run up along with others... This is regular and there is no need to report because there is no accident [ref: 61].

From the interviews and informal conversations with the ratings of both companies it showed that their reasoning to report clearly depended on their appreciation of what is safe and what is not. Such appreciation was largely based on their experience who were skilled seafarers working in circumstances in which they were familiar and in control.

The findings presented in this section therefore shows that these hindrances to report arose out of professional pride, co-workers' acceptability and the macho-culture of the profession –which are again not unique to the maritime industry. They have been highlighted by a number of other authors. Powell *et al.* (1971), for example, conducting reviews of over 2000 accidents on four different types of industry sectors found that on many occasions the employees considered incidents and near-miss occurrences that did not result into serious injuries or cause delays to the production process as part of their regular jobs. Also, Webb *et al.* (1989) investigating the filtering process in workers' injury reporting system highlighted how workplace specific prevailing norms and acceptability by co-workers were among some of the early filters in the sequence of incident reporting. Similarly, Clarke (1998) conducting research on British Railways found that those events which were considered part of the day-to-day work were less likely to be reported. By analysing data from 128 train drivers, the author showed that the most commonly occurring reasons (32%) for not reporting were those which the train-drivers considered 'a part' of their job.

Summary

The findings presented in this chapter reveals that the procedures and instructions for incident and near-miss occurrence reporting as written in the two SMSs differed considerably from what were actually practised in the two companies. It shows that although the managers were aware of the significance of reporting and also appreciated the underlying principles on how to facilitate reporting, in practice they were driven by influences which contradicted these principles. The managers believed that shipboard incidents were principally caused by seafarers' lack of skill and non-compliance with the company's procedures and instructions. Thus, driven by this notion, the managers believed that they should scrutinise the reports in order to locate the 'deviant' individuals. Making these individuals accountable was thus considered integral to the management of OHS.

Looking at it from the seafarers' perspective, the discussion showed that as a consequence of such management practice they were highly sceptical of reporting incident or near-miss occurrences. It showed how they devised ways to evade and manipulate reporting incidents and near-miss occurrences. The seafarers believed that by communicating incidents and near-miss occurrences to the managers they risked their reputation or worse their chances of re-employment in the company while standing to gain very little from it.

The discussion in the chapter in effect also demonstrated the widespread underreporting in the two companies. It clearly showed that a significant fraction of incidents and near-miss occurrences were not reported to the managers, who held the responsibility to report the pertinent cases to the responsible Flag States. As discussed earlier, underreporting is also a well documented concern in other industrial sectors. Nichols (1997), for example, reviewing the literature supported by empirical work in the UK manufacturing plants highlighted the endemic nature of underreporting. In his work he pointed out how pressures of production and fear of being held accountable were among the main reasons that prevented workers and their foremen from reporting incidents to persons higher up in the authority.

In the case of the maritime industry, the discrepancy between the number of reports received by the Flag States and the actual number occurring onboard has been highlighted by Jensen *et al.,* (2004). The authors studying self-reported occupational injuries on an international scale estimated the rate of injury to seafarers was nearly three times higher than what was officially reported to the maritime authorities.

A number of authors have argued that for incident reporting systems to be effective it is important to provide adequate protection to workers from being recriminated. Reason (1997), for example, reviewing the factors facilitating incident reporting pointed out workers' indemnity from disciplinary proceedings and their anonymity in the reports were most important. Similarly, studies have also drawn attention to the importance of using the appropriate methodology of analysing incident reports. Fahlbruch and Wilpert (1999), for example, reviewing the literature on issues related to the workplace safety pointed out that accident investigation procedures that remain confined to locating workers' faults fail to elicit the underlying causal factors of the accidents.

In this study, however, the managers of the two organisations in practice failed to provide indemnity to the seafarers from disciplinary proceedings and were clearly inclined to apportion blame on their seafaring colleagues. In addition, the data in this chapter also revealed further hindrances to the implementation of incident reporting. These included the senior officers' fear of criminalisation, the ratings' peer pressure and their tendency to accept risk as a part of their work. All these factors will be further developed in chapter-8.

Chapter 7: Audit and Review of the SMS

Introduction

The third and final finding chapter focuses on the practices of audit and review of SMS in the two case studies. As discussed in the review of the literature (section 2.3.3), both these elements have proactive qualities that aim to improve the management of health and safety in organisations. While audit helps to identify whether or not appropriate management arrangements are in place and are being followed in relation to the occupational risks encountered, review of SMS helps amend or improve the company's existing procedures and instructions based on various sources of input including the results of risk assessments and analysis of incidents (ILO, 2001b). In effect, both these elements can be used as tools to systematically investigate ways to improve the effectiveness of organisation's working procedures. Their common purpose is to provide employees and managers opportunities to amend or improve company's policies, procedures and instructions for a safer and healthier workplace.

This chapter is organised in a format different from the previous two finding chapters, as these two elements are management tools and as such the focus in these cases is primarily on the company's managers. The chapter is divided in two sections. The first section looks into the practice of audit in which I start by presenting a general overview of the procedural requirements stated in the two companies. It draws principally on the documentary analysis of the two companies' SMSs. It then analyses the perspectives of the managers and seafarers largely through interviews. The second section, which focuses on the practice of the review of the companies' SMSs, is organised in a similar way. The discussions in both sections develop from comparing and contrasting the procedures stated in the companies' SMSs and the perspectives of managers and seafarers, and identifies the main factors that influence the manner in which these processes are implemented.

7.1 Audit: procedures and instructions in the two case studies

Both companies laid down procedures and instructions in their SMSs as to how audits should be conducted. They pointed to audit as a tool to examine the implementation of the SMS and emphasised that it was not meant to assess seafarers' individual ability or to

locate technical defects on ships. The instruction in one of the two companies, for example, pointed out:

> Through audit it is important to ensure and verify that the SMS is properly implemented and is being used effectively in the company fleet... it is the system that is being examined, not individuals.

The instructions in the SMSs also placed considerable focus on checking whether or not the company's procedures and instructions were being effectively complied with. It required auditors to establish the level of compliance by examining a sample of records during audits. One of the company's SMS, for example, stated:

> It is important to ensure and verify that the company's SMS is correctly implemented for which audit must be conducted by checking for objective evidence

Although the ISM Code did not specify the frequency of audit, both companies required it conducted annually. As discussed in section 2.3.3, this coincided with industry norms and guidelines set by key stakeholders, such as Flag State administrations and Classification Societies.

As per the procedures in the SMS of Company-A, the Marine Manager was required to plan out the annual schedule of the audit and decide on who should be auditing each ship in the fleet. The audits in this company were to be conducted either by 'suitably qualified staff among the managers', such as the Marine Managers or Marine Superintendent, or by 'qualified auditors hired from 'external safety inspection companies'. In the case of Company-B, on the other hand, the responsibility for scheduling as well as conducting the audits in the entire fleet rested on the company's ISM Manager.

The instructions in both companies also pointed out that all the areas covered by the company's SMS should be subjected to audit. These not only included the areas covered by the functional requirements of the ISM Code (see section 1.3.3) such as shipboard operations, emergency preparedness and accident reporting, but also areas such as store purchasing and company insurance. They pointed out that audits were meant to verify the overall management of SMS – which besides the requirements of the ISM Code also included the requirements of the quality management systems, such as the ISO 9000 and 14000. One of the two SMSs, for example, stated:

> The audit procedure applies to verifying implementation of the Quality and Safety Management Systems and procedures.

Moreover, the audit requirements of the two SMSs also included checking effective compliance with shipboard security arrangement which was governed by a separate piece of maritime regulation: the International Ship and Port Facility Security Code (ISPS Code). Thus, the requirements stated in the companies' SMSs showed that audit had a broad application in which issues associated with OHS was only one part.

Also, both companies developed their own checklists and forms to facilitate auditors to comply with the company's procedural requirements. Although the structures of the checklists and forms in the two companies differed, their overall layouts were similar. The checklists in each of the two companies contained over one hundred questions which the auditors were required to use as cues during their shipboard audits. The following five examples are randomly selected from the SMSs of the two companies:

1. Check shipboard emergency drills are being conducted as per the SMS requirements
2. Check Captain's and Chief Engineer's standing orders are in place and are also in compliance with the SMS requirements
3. Check when last shipboard security drill was conducted
4. Check all SMS checklists and forms used onboard are the current version
5. Check that the Engine Room Alarm Testing Record is in compliance with company procedures

In both companies the auditors were required to use the audit checklists and fill in company's audit report forms. They needed to fill in narrative description of the deficiencies, and for each deficiency, identify the specific section of the SMS against which the deficiency was raised. The form also required the auditor to state the follow-up action and the due date for closing out each deficiency. The table below shows one item from one the shipboard audits.

Item No.	Items to be checked	Deficiency details	Refer to SMS Section violated	Required Follow-up Action	Due date for closing out	Rectified by & completion date
1	Emergency Stop prior to cargo discharge checked	No record of check prior to X Port (dated)	SMS Vol.: 3 Section 12.4	Follow SMS procedure	3 months	(to be filled)

Table 42: Audit Report form used in one of the case-studies

In both companies the auditors were required to discuss the audit findings with the ship's captains and also send the findings to the marine superintendent in charge for overseeing

the ship. The captain and superintendent were required to coordinate with each other and rectify and close out the deficiencies. The requirements in the company's SMS also stated that if serious deficiencies were pointed out, then the Marine Manager or even the Managing Director should be informed.

Having presented the overview of the procedural requirements of audit in the two companies, the discussion now looks into the details of their practices drawing mainly on the interviews of the managers and senior officers.

7.1.1 The practice of Audit: focus on checking compliance

A detailed look at the procedures and instructions on conducting audit indicated that the two companies appreciated the purpose of audit only partially. They interpreted audit as a task merely to measure the level of implementation of the existing procedures and instructions. They required the auditors to find out the seafarers' level of compliance with the management procedures but failed to make use of audit as a tool to inquire the overall adequacy of the risk assessment and control measures that were in place. In other words, the instructions in both companies placed considerable emphasis on using audit merely as a surveillance tool.

The discussions in the review of the literature (section 2.1.1), however, showed that audits should not be limited to checking workers' compliance with existing policies or procedures but also used for verifying their appropriateness for protecting workers from workplace risks. The ILO guideline on OHS management (ILO, 2001b: 15), for example, stated that the auditor should 'determine whether the OHS management system and its elements were in place, adequate, and effective in protecting the safety and health of workers and preventing incidents'. It is the two latter elements that, unfortunately, did not feature in the procedures and instructions of the SMSs of either of the two companies.

In general, the managers' interviews clearly reflected what was stated in the company's procedural requirements. They believed that audits were management tools which were to be used to establish whether or not their seafaring colleagues were complying with the company's procedures and instructions written in the SMSs. Every superintendent and manager who was interviewed stated that the objective of audit was to measure the extent

to which the seafarers deviated from them. One superintendent, who had recently concluded an audit, during his interview, indicated his method of auditing. He said:

> I have this checklist to follow... What I do is try to find out how much they (seafarers) deviate from the SMS procedures, are they working correctly? Did they do things right... this is the purpose of audit [ref: 30].

These views were not just perceived by the persons directly involved in conducting the audit but were also generally shared by the senior management teams of the two companies. One senior manager in one of the companies, for example, said:

> We consider the SMS as the bible and what the auditors do is find out how much you deviate from it [ref: 65].

Moreover, none of the superintendents or managers believed that the auditors could pass any judgement on the adequacy of any of the elements of the SMS or on its effectiveness in safeguarding work-related risks. When asked, the interviewees explicitly pointed out that audits were meant to check that the SMS was being complied with properly. One of them, for example, said:

> How can they (auditors) tell that if risk assessment system is not good? That is not what it (audit) is about... this is about checking whether the system is being followed correctly [ref: 62].

As discussed in the review of the literature (section 2.1.1) a number of studies have evaluated the operation of audit. Vinten (1991) and Hawkes and Adams (1994) reviewing the practice of audit in a number of shore-based industries pointed out that audits on OHS management have mostly been associated with the narrow meaning of financial audits. The auditors largely confine themselves in appraising systems, checking whether there is compliance with the existing controls and highlighting deviations. They fail to look at the bigger picture on whether the SMSs used in the organisations are actually contributing to safeguarding OHS. Latzko (1994) and Stazyk (1992) also presented similar criticisms. They argued that this type of auditing does not suit operational management setting as it encourages auditors to use the existing system written in the SMS as the starting point. The auditors, thus, merely remain focussed on improving the existing practices.

7.1.2 Verifying paperwork: the test of bureaucratisation

The fieldwork also revealed the way audit was put into practice in the two companies. It showed that in both companies the auditors focused almost entirely on checking shipboard paperwork, such as log-books, checklists, entry-permits and several other forms of written

records. The instructions to the auditors categorically required them to scrutinise entries in the ship's documents and also to crosscheck them with one another in order to detect deficiencies. The instructions in one of the SMSs, for example, stated:

> When conducting an audit, samples of evidence will be sighted. These may include the likes of logbooks, checklists, work permits etc. The auditor will closely examine the entries made and may cross-check against other documentation where required to determine whether SMS have been effectively implemented.

The focus on checking paperwork was also evident from the way audits were actually practised in the two companies. During onboard fieldwork, I analysed ten recently concluded audit reports – five from each company – and found that nearly all the deficiencies entered in them were identified by checking shipboard documents. One deficiency from each of the ten reports is shown below.

	Deficiency (action plan for rectifying each deficiency)	Source of Evidence
1	Work permits checklists for working aloft not consecutively numbered (must be numbered as per instruction on the checklist)	Checklist file
2	Deck Log book entry not containing sea water temperature entry (all columns of deck log book must be filled in)	Deck Log book
3	No evidence of testing of crane (to be tested in consultation with technical superintendent)	Ship certificate file
4	One item raised in the safety meeting has not been addressed by superintendent – item overdue by over 3 months	Correspondence file between ship & office
5	Life boat emergency drill launched but not recorded as per SMS (record as per the Emergency response plan)	Drill record file
6	Captain not reviewing Chief Officer's handover notes (Captain to read and review deck officers' hand over notes and sign)	File of handing over reports
7	Damage Stability calculation not carried out prior to departure (must be conducted and recorded as per the SMS)	Records of Damage Stability calculation
8	No record of calibration of hand-held alcohol content meter (date of calibration must be entered on the instrument)	Entry on calibration tag on instrument
9	One security deficiency identified during previous audit not closed out in the allowed time (deficiencies must be closed out on time)	Audit file
10	Intervals between successive shipboard risk assessment exceed the maximum six week limit	Shipboard risk assessment file

Table 43: Ten audit deficiencies randomly selected from recent records in the two companies

Moreover, the interviews of managers and seafarers also showed that in both setups, audits were clearly construed as a paperwork verification exercise. The superintendents in

Company-A and the ISM Manager in Company-B (who routinely carried out audits) stressed that their most important task as auditors was to look into different types of logbooks and checklists to identify deficiencies. They revealed that although during audits they occasionally found out certain deficiencies by holding informal discussions with seafarers, they could not refer to any such finding as deficiencies unless they had objective evidence to support their claim. One of the superintendents, for example, during his interview articulated his perception of conducting audit and said:

> Checking documentation is in fact the only thing I do. I say is 'are you following our policies? If so, please show me the piece of paper'. I start by cross checking checklists... check the dates, check the names, they should all be same – a bit of detective work... For example, by asking for hot-work permit and enclosed space permit together I can relate one paper-work with the other as a means of cross checking... I need evidence everywhere because in my report I can't write 'I think there is a problem', I have to have hard evidence and attach the photocopy of that faulty checklist as objective evidence [ref: 60].

The senior management teams of both companies offered similar views. Although they were not involved in auditing, in their interviews they placed an unequivocal importance to checking paperwork as the only method of conducting audits.

The seafarers too portrayed a very similar picture on ways audits were conducted on the ships they sailed on. The senior officers in their interviews were particularly forthright in describing the way the auditors placed a significant emphasis on verifying the ship's paperwork for the purpose of conducting audits. They also revealed that as verification of paperwork was central to the auditing mechanism, they too focused on matching the demands of the auditors. As a result they produced *properly* filled in logbooks and ticked checklists even when such entries did not depict the reality.

Some of the senior officers in their interviews also complained that the audit mechanism in their companies was meant to identify faults with the seafarers. They described the auditors' task as 'a fault-finding exercise'. In one such interview a senior officer remarked:

> Audits focus fully on paperwork checking... Most come down just to check the files and somehow raise around ten deficiencies... but they will always find faults with us: this is not done as per procedure such and such. It keeps them in the clear, you see. We try to make sure that all our checklist, permits and logbooks are correct – just fill them in, you know [ref: 07].

Interestingly, however, the officers from both companies did not consider audit inspections demanding especially in comparison to the Port State Control or Oil Major Inspections.

They in their interviews revealed that the latter types of inspection were much more rigorous and required a much higher level of onboard preparation. In their views it was also far more important to do well in the Port State Control or Oil Major Inspection than the audits. One of the officers, for example, mentioned:

> Every year we have around eight Oil Major Inspections and on an average roughly around four PSC (Port State Control) Inspections and one internal audit... so you can see the difference... there's nothing harder than Oil Major Inspections and we need to pass them... the same goes with the PSCs – we just have to pass them [ref: 13].

As a matter of fact the association between paperwork and audit and its importance compared to the Oil Major Inspections were so evident that they were also apparent even to the ratings on ships. One of them, for example, in his interview remarked:

> During the last internal audit we (ratings) did not have to do anything... it is only with captain and officers. The whole day he (auditor) checked many files and left by evening. It (the audit) was very easy compared to inspections by Oil Majors for which the chief (officer) tells us to prepare this and prepare that, but we did not have to spend any time preparing for that one (audit) [ref: 75].

From the discussion this far it shows that both companies placed considerable focus on the audit process and on using audits to establish seafarers' level of compliance with the company's procedures and instructions. The audit system was not designed to tease out how well seafarers were safeguarded from workplace hazards or, for instance, whether or not the risk identification or risk control measures used in the organisations were effective. In effect, the practice of audit in the two companies provided very little opportunity for auditors to contribute towards improving from what was already written down in the company's SMS. The whole mechanism was designed to *preserve* the SMS as it was, and, by using it as a point of reference, judge seafarers' compliance and performance. In other words, the audit process as it was practised in the two companies did not lend itself to its principle of cyclic self-improvement.

Instead, the managers used it as a tool to conduct surveillance of the seafarers' activities and in the process reinforced managerial control over their employees. In the process, both companies institutionalised auditing as a paperwork verification exercise which encouraged seafarers to focus on getting their paperwork right. It thus increased the prominence of paperwork and promoted bureaucratisation in the two organisations.

A number of authors conducting studies on the management of OHS have also revealed the weaknesses of companies' auditing mechanism. Gallagher *et al.* (2003: 75-77), for example, by reviewing the literature and conducting interviews in an Australian study highlighted how audits were not used to identify the effectiveness of the SMSs or find out whether or not the workers were being safeguarded from workplace hazards. Instead, they followed a tick-box approach to audit which merely assisted in detecting workers' compliance with procedural requirements. Such an approach, the authors pointed out, has the danger of ignoring the 'softer preconditions' affecting the effectiveness of SMSs, such as the level of manager's commitment and the extent of effective worker participation in the management of OHS. In other words, the authors cautioned of the danger of paying too much attention to the audit process and too little to use audit in identifying the presence of the prerequisites for effective implementation of regulated self-regulation.

7.2 SMS Review: procedures and instructions in the two case studies

Having discussed the practices of audit, this section focuses on the practice of review of SMS. In both organisations the instruction on SMS Review emphasised the importance of input from the ship's officers. In particular it highlighted that the captain and other senior officers should advise the managers on how to improve the company's policies and operating procedures. In one of the companies, for example, it stated:

> One of the most important methods of improving the SMS used in the company is by receiving feedback from the actual users of the system; i.e. the ship's staff. It is important that the ship masters review the company SMS...

The instruction in the two companies identified that the company managers should also avail a number of other sources to supplement the SMS review. It enumerated a list of such supplementary sources which included:

1. Customer requirements, feedback and satisfaction and changes to market strategies
2. Findings of audit
3. Findings of Flag State audit and Port State Control and Oil Majors inspections
4. Analysis of accidents, incidents and near misses
5. Recurring / repetitive claims from charterers
6. Reports on ships' security measures

Due to the differences in the management structures of the two companies the procedural requirements for reviewing SMSs were different (refer to sections 4.2.4 and 4.3.4). As with the requirements for preparing the company-wide statistical analysis report, the procedures for reviewing the SMS in Company-A also involved the Head Office of the group of companies. The mechanism involved three stages: ship, management office and Head Office of the group of companies.
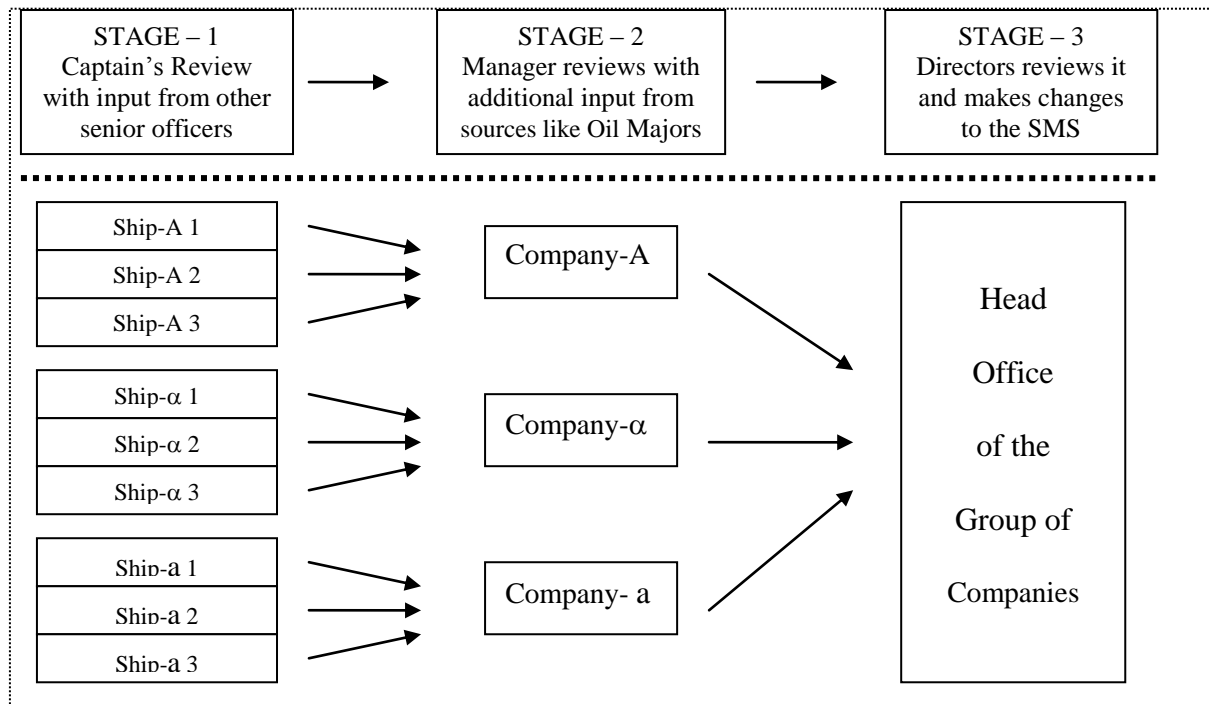
(Companies α and a are part of the group of companies having similar functions to Company-A)

Figure 27: Company-A's SMS Review sequence within the wider organisational setup.

In the first stage (see diagram above), the ship's captain with input from the senior officers was required to conduct reviews of the SMS and send it to the management office. After obtaining reviews from the whole fleet, at the second stage, the superintendents and managers were required to identify the relevant reports. At this stage they were also expected to include various supplementary sources of input, such as the Oil Major Inspection reports. After consulting with the Managing Director they were then required to consolidate the review reports and forward them to the company's Head Office. At this third stage the company directors at the Head Office were required to scrutinise the reviews received from all the management units and execute changes to the company's policies, procedures and instructions as deemed necessary. The requirements of Company-A also stated that annually two audit reports should be sent from each ship and specified that once a year the company's SMS should be reviewed.

The procedure in Company-B on the other hand was comparatively straightforward. There were only two stages of SMS review: the ship stage and the management office stage. For the ship stage, the SMS Review instruction required captains and chief engineers to carry out review of the SMS at the end of their tours of duty, i.e. once in every six to eight weeks, and send them to the ISM Manager of the company. It also urged the management staff and other seafarers to contribute to the company's review system. The ISM Manager, in consultation with the marine and technical managers, was required to put in place a review of the SMS. In addition to the captain's review reports he was also required to take into consideration the various supplementary sources of input.

Overall, the procedural requirements of the review of the SMS in the two companies showed that they were detailed and well planned out. It gave opportunity to the seafarers to contribute in the improvement of the policies, procedures and instructions of the company's SMS. The requirements were also consistent with the popular guidance on the review of SMSs, such as the UK Health and Safety Executive Guidance (HSE, 1997) and the ILO guideline on occupational safety and health management (ILO, 2001b).

7.2.1 Hindrances to conducting shipboard SMS Review

However, the managers' and seafarers' interviews pointed to a number of hindrances in conducting reviews of the SMSs in the two companies. In their views the mechanism to review SMSs was the least effective among all the different elements of SMSs. The managers pointed to the lack of good quality reviews from captains and claimed that it was because of this reason the effectiveness of this element was considerably weak. One manager, for example, in his interview, mentioned:

> We have around thirty captains at any time – their reviews don't really suggest anything, they couldn't care less about SMS reviews... the burden is totally on us [ref: 45].

A number of managers and superintendents also supplemented their critical comments by pointing to recent examples of reviews received from ships. One of them in his interview, for example, said:

> Look at this review, it says 'on (x) manual page: 32, line: 10 a comma is missing'. They point out such silly mistakes and typos. Is that the job of a captain? But that's all we get from the ships round the year [ref: 12].

The captains and other senior officers from both companies also acknowledged that they were not keen to spend their time and effort on reviewing SMSs. In their interviews, they pointed to 'lack of time' as the most apparent factor that prevented them from reviewing SMSs. The senior officers from both companies in their interviews mentioned that the review of the SMSs was very low in their priority as they had a long list of mandatory paperwork to attend to first. One chief officer, for example, said:

> I have deck logbook, oil record books, garbage record book, pump-room log book, arrival, departure, tank cleaning, entry permit, loading plan and many, many more checklists to fill in. When will I get time to review the (SMS) manuals or even read them? [ref: 70].

Elaborating further on the lack of time, captains and chief engineers from both companies in their interviews indicated that reviewing SMS was a formidable task particularly because the company policies, procedures and instructions have been around for several years and that suggesting changes to them would require strong arguments. They pointed out that although there were occasions when they wanted to share their views with the managers, they felt intimidated to do so. On inquiring further, these officers argued that reviewing the SMSs was also a high time consuming task and was thus not rewarding enough.

Nonetheless, the captains (and also the chief engineers in the case of Company-B) knew that reviewing the company's SMS was one of their duties and thus felt compelled to send in reports on a routine basis. As a result these reports had few original comments or suggestions and largely comprised of superficial observations, such as typographical errors. This, in fact, has close parallels with the discussion in section 6.3.2 on the type of near-miss occurrences and the reasons for reporting them. One captain, for example, from one of the companies in his interview explained:

> The SMS has been around for many years now, so why challenge it? Although I know some areas can be changed and many others can be improved, where is the time to describe the point and fill in the forms?... that's why most times I don't write about serious issues... just show small points... or end up writing 'no comments' [ref: 43].

The concern with excessive burden of filling in paperwork in the two organisations has already been discussed (see section 5.3). They are also widely reported in the industry as a major concern to seafarers. Smith *et al.* (2007), for example, in their research on seafarers' fatigue revealed the extent of the concern. By using completed survey questionnaire from 1857 seafarers and around 200 self reported diary entries the authors found that the burden

of paperwork filling was one of the major factors for seafarers' fatigue and was thus counterproductive to shipboard safety.

While managers from both companies were generally critical in their interviews about the lack of reviews from ships, a small number of them also acknowledged that one of the problems was due to the high workload on ships sailing on coastal trade. They pointed out that due to the quick turnaround of such ships the captains and chief engineers onboard were less likely to find the time to review the company's SMS. They also suggested that younger captains and chief engineers were more likely to contribute compared to their senior colleagues. One manager from one of the companies, for example, said:

> Always more reviews come from ships which have comparatively longer voyages.... and the interesting ones generally come from the newer generation. They have a lot of hot blood and tend to review very interesting things... squat calculation was a recent example, where this young captain turned around and showed us the procedure we recently adopted (on the form) was not in accordance with our instruction on the SMS. So then we amended the SMS... but these are very rare [ref: 12].

A documentary analysis of the reviews of the SMSs in the two companies corroborated the first of the two issues. It showed that the suggestions in the review of the SMSs from ships on coastal voyages mostly contained typographical errors or comments such as 'all found in order' or 'no comments'. While the majority of the reviews which were considered by the managers came from their counterparts sailing on deep sea voyages. The following table highlights the point which was drawn from the reports received by the two management companies over a one-year period:

	No. of review reports dispatched	No. of suggestions accepted by managers from the reports	% of reports accepted
Coastal trade	170	4	2
Deep Sea trade	28	11	39

Table 44: SMS Review received from ships on different types of trade.

This particular issue, however, affected Company-B more acutely as nearly all its ships were engaged in coastal trade. The impact of seafarers' excessive busy schedule in the coastal trade has been pointed out in earlier studies. Allen *et al.* (2005), for example, in their research on fatigue in commercial shipping on coastal trade pointed out the distinctive features of high workload on coastal ships. The authors revealed how seafarers on ships

engaged in coastal trade worked excessive hours and were fatigued particularly due to ship's quick port turnarounds and frequent port calls.

Although my research did not include the age factor in its analysis, the views presented by the managers has close parallels with what Anderson found in his survey (Anderson *et al.*, 2003). His survey on the effectiveness of ISM Code identified a difference between the older and younger seafarers with regard to compliance with the requirements of the ISM Code. The author indicated[63] that younger seafarers were more likely to accept and be more open to follow the requirements of the different elements of the SMSs.

The analysis in this section showed that overall the senior officers' lack of time was the main hindrance preventing them to contribute in the SMS review process. Although the captains and other senior officers appreciated the importance of SMS review and knew that their contribution could be important, they had more pressing jobs to deal with first. Yet, they filled in the SMS review forms simply for the purpose of complying with the company's requirements. Such suggestions, however, contributed very little to the purpose of continuous improvement of SMSs. The practice of reviewing SMS in the two companies, thus, showed that the compliance with company's bureaucratic procedures was entrenched and considered essential regardless of its relevance.

7.2.2 Other inputs to SMS Review: the presence of Oil Majors

From the discussion in the last section it showed that in both companies, reviews conducted from ships were largely ineffective. However, interviews from managers also indicated that from the list of supplementary sources of input the inspection reports of the Oil Majors and PSC were the two most important sources. One manager from one of the companies, for example, said:

> If you look at the records, you will find that most of the sources (for the SMS review) were Oil Majors – either through inspection reports or their direct instructions to us... PSC Inspection reports were also important... but mostly it's the Oil Majors [ref: 03].

As discussed in the review of the literature (section 2.1.3) and in the analysis of findings in sections 5.2.2 and 5.3.2, the Oil Majors routinely inspected their fleets as a standard

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[63] Anderson *et al.*'s (2003: 200) study did not inquire about the age of the respondents. The authors could only assume their age from the nature of the comments made in the descriptive section of the questionnaire survey.

practice to evaluate suitability of their hire. Passing such inspections successfully was of great significance as this was the gateway for ships to earn competitive freight rates. Moreover, the managers also revealed how a single negative result of an Oil Major Inspection could potentially have a significant knock-on effect on the entire fleet. It could, for instance, jeopardise the ship's chances of getting hired by other Oil Majors or even by second-tiered charterers and also dent the company's chances of securing business with the same Oil Major in the future. One of the managers in his interview, for example, said:

> One non-acceptance and we've had it. Alarm bell starts ringing everywhere… you could say passing Oil Major Inspections is the unwritten motto of this company [ref: 87].

By way of explaining the seriousness of the Oil Majors' influence on the operation of the two companies, the managers from both companies offered to describe how the Oil Majors conducted their inspections[64]. They in their interviews revealed that the Oil Majors' inspections were extremely rigorous and much harder than any other form of inspection. They also acknowledged that most of the deficiencies spotted by the inspectors were of great significance to OHS and prevention of pollution. Although most of the examples of deficiencies were related to mechanical defects or operational errors on the ships, some also demanded more fundamental changes to the ways the ships were managed. One superintendent from one of the companies, for example, said:

> These inspectors make a number of observations – they are very thorough and I must say that they are very professional... Any defects they point out and we have to attend to them swiftly, sometimes it involves sending technicians or spare parts, at other times it even means placing extra officers or whatever it takes to please them [ref: 19].

From the interviews it also showed that the Oil Majors looked beyond issues that emerged from the physical inspections of ships. They routinely intervened in various managerial aspects in the two companies. Interviews with managers in both companies revealed that the recent introduction of Tanker Management and Self Assessment (TMSA)[65] – initiated by the Oil Majors – required ship managers to self-evaluate their performance against the industry's best practice. As a result of which, in the views of the managers, the Oil Majors

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[64] Oil Major Inspections were conducted on every ship of both fleets. Managers estimated that on an average each ship was inspected around eight times in a year.

[65] TMSA has been designed by the OCIMF to provide ship operators with a tool to measure and improve their management systems through their own internal self-assessment against best practice key performance indicators provided in the guide.

were getting more and more involved with the management of ship's operation than ever before.

A number of managers also revealed how Oil Majors were involved even in the management of those areas which are usually considered 'the managers' prerogative'. In way of providing examples, a manager from the personnel department of one company highlighted how in the last two years the Oil Majors influenced their crew recruitment policy. In his interview, the manager said:

> Oil Majors go to the extent of telling us which crew selection software (criteria considered in the selection process) we should use and even what score we should accept as minimum acceptable... In many ways they (Oil Majors) run the company for us [ref: 14].

Equally, another manager from the other company in his interview revealed:

> The behavioural safety programme that we run in the company or some of the safety videos that we show on ships were all prescribed by X (Oil Major Company). They require us to do this and various other training programmes on our ships [ref: 87].

The most convincing example of how Oil Majors intervened in the management of the two companies came to light from the interview of a senior manager of one of the companies. In his interview, the manager described how an Oil Major found the 'navigation' section of the company's SMS inadequate and directed the managers to review it thoroughly. He said:

> Normally we don't have to review so frequently... one month ago one of the Oil Majors pointed out that as managers we should explicitly instruct the captains the minimum distance to maintain when passing certain landmarks... May be it is good I can't say but that's not the point… the point is that the Oil Majors made us put together an emergency review... we inserted a whole new section in the navigation manual (of the SMS) because they wanted the new 'minimum distance off salient points table' in our SMS [ref: 30].

Thus, from the interviews with the managers of the two companies it was apparent that the Oil Majors did not limit themselves in detecting only the mechanical, structures or operational matters in the two fleets. They evaluated different aspects of management of the two companies. It showed that through a robust inspection procedure and by exerting their economic leverage on the managers of two companies, the Oil Majors were a major source of influence in the companies' operation and in particular in the practice of the review of SMSs.

The interviews, however, also showed that the users of the system, i.e. the seafarers, had a limited role to play in the review of the SMSs in the two companies. Their contribution was symbolic which merely satisfied the bureaucratic requirements. Nonetheless, the seafarers also acknowledged that the Oil Majors' initiatives had far reaching consequences. They pointed out that the rigour of the Oil Majors' inspections and their pivotal position in the industry contributed immensely to the safety of the ships. One captain, for example, in his interview said:

> Because of the Oil Major these ships are safer – it's more work on these ships, more inspections yet I would say that Oil Majors are good for us. The inspectors find out everything from ships while their bosses get things done influencing the office (management unit) [ref: 51].

The benefits of the Oil Majors' inspections were also acknowledged by the managers. Although they viewed it as intrusions to their managerial prerogatives, they also unanimously acknowledged that such pressures from Oil Majors contributed to the safety of the ships. One manager, for example, mentioned:

> But it is also true that Oil Majors actually make ships safer – their inspection keeps us on our toes. To be honest compared to the bulk carriers, the tankers are far safer which is only because of the Oil Majors [ref: 45].

The discussion in the review of the literature (section 2.1.3) also highlighted that the underlying economic interest was one of the main reasons why the Oil Majors were keen on tanker safety. A number of articles in the maritime press (such as Lloyds List, 2004c) and by other industry practitioner (see for example Oldham, 1997) showed how Oil Majors' role in the tanker sector of the maritime industry influenced in making it one of the safest sectors in the industry.

The influence of the head of supply chain in augmenting the safety of an industry is also well documented in various land-based studies. Gunningham (1998a), for example, in his discussion on ways of improving self-regulation drew attention to the roles that the entities controlling the supply chain can play. He argued that alongside the more traditional ways of managing workplace safety, pressure from the head of the supply-chain is an effective complimentary way of improving workplace health and safety.

In another study, James *et al.* (2007), discussing the impacts of organisational restructuring in the context of UK health and safety, pointed out how organisational restructuring and the change in the employment structure over the last two decades have negatively affected

workers' OHS. In their discussion the authors explored the consequences of entrusting regulatory roles to the head of supply chains. They pointed out the way in which such innovative measures add a new dimension to traditional State-based regulation system and argued how it was an important way OHS could be managed better in organisations which were economically dependent on the heads of supply chains.

There are empirical works too in support of this notion. Walters *et al.* (2005), for example, in their studies on chemical and construction industries in the UK found that organisations at the head of supply chains played an important role in the management of OHS in the smaller organisations connected to the business. Discussing the example of one particular case study in the construction industry, the authors showed that the top managers of smaller organisations were aware that they were required to demonstrate commitment towards a good standard of OHS in their organisations in order to win and retain contracts with the heads of the supply chains.

Summary

This chapter discussed the practice of audit and review of the SMS in the two case studies. It revealed that both companies espoused a narrow meaning of the purpose of audit. They used it merely to monitor seafarers' compliance with the company's existing procedures and instructions. In effect managers made use of audit as a tool to reinforce managerial controls over seafarers. Looking at it in light of what has already been presented in the two previous chapters, the managers' interpretation of the purpose of audit is not surprising. The use of audit as a feedback loop to check seafarers' compliance with the company's existing control blended well with the earlier findings that revealed how the managers followed a top-down style of management in the two organisations.

Such practice gave no opportunity to the managers to be self-critical on the current procedures and instructions followed in the two companies which prevented them from using it as a tool to reflect on the effectiveness of different elements of the SMSs or the adequacy of the existing risk control measures. In other words, the practice of audit in the two companies failed to look at the bigger picture: whether the seafarers were being effectively safeguarded from workplace hazards. It showed that, instead, the managers in the two companies were preoccupied to make sure that the seafarers were complying with the companies' procedural requirements. The audit was used as a means simply to establish

it. The procedures that were followed in the two companies, however, directed the emphasis of audit towards locating verifiable objective evidence which further strengthened the bureaucratic dependencies in the two companies.

The practices of audit and review of the SMSs in the two companies also revealed the limited role played by the seafarers in the operations of these two elements. While in the first case, the seafarers were simply subjected to auditors' scrutiny and were not required to assume any active role, in the second, although there were provisions for them to contribute, in practice in most cases they merely complied with the companies' bureaucratic requirements.

Finally, the Oil Majors' influence in the practice of SMS review brought in a new dimension to the discussion. It showed that the two companies, in spite of having considerably different operating focus, were both heavily influenced by the Oil Majors. It revealed how these economic players, despite having no mandate to regulate organisations, played a persuasive role in the ways the two companies managed their OHS. The discussion showed that the Oil Majors' authoritative influence on the management of OHS was largely regarded by managers as well as seafarer as a step in the positive direction.

All these themes identified in this and in the previous two chapters will be further developed in the following discussion chapter.

Chapter 8: Discussion

Introduction

The thesis explored the impact of the ISM Code on the management of Occupational Health and Safety (OHS) in the maritime industry. In so doing it identified three components common to Safety Management Systems (SMSs) and examined their operations in two shipping companies. The results of this analysis were presented in the three preceding chapters. It was apparent that there is a considerable gap between the documented expectations of the ISM Code and the features of its operations observed in the two case studies. It also showed how the views of managers and seafarers differed significantly on the management of OHS in their companies. In order to understand why these differences existed, this chapter explores the sociological underpinnings and the wider socio-economic factors that shaped the practices in the two companies.

The discussion in the three previous chapters showed that the two companies developed detailed procedural requirements for managing OHS. The procedures and instructions, which were developed to meet the regulatory requirements of the ISM Code, were largely focused on enumerating ways to safeguard ships and seafarers from risks that have already been identified. It showed that in developing the procedures and instructions in the SMSs the companies closely followed a number of popular marine publications and guidelines. This approach was largely a reflection of the requirements stated in the ISM Code where the duty holders, i.e. the managers, were not explicitly asked to develop procedures to identify hazards or assess risk. Instead, they were required to ensure that risk assessments and risk mitigating steps identified (in the standard industry guidelines) were taken into account when developing their own SMSs.

The analysis in chapter-5 revealed that in the view of the managers the company's procedures and instructions were most suitable for the purpose of managing OHS in their organisations. They therefore felt that a strict implementation with these was essential to operate their fleets safely. However, the managers in both organisations were also of the opinion that their seafaring colleagues generally did not share the same view. They indicated that most seafarers in their organisation were indifferent or even averse to abiding by the company's policies and procedures. This posed a major concern for the managers.

As a consequence of this perception, the managers felt that they had to find suitable ways to address this concern.

Another reason why managers relied so heavily on the company's written procedures and instructions was because of the lack of continuity of knowledge onboard. The analysis in section 5.2 showed that due to the nature of the profession, the seafarers spent between six weeks at the least to nine months at the most onboard before their replacements took over from them. Such change of onboard workforce was a recurring and ongoing process. As a result, the managers felt that onboard workforce was merely transitory and argued that they should take even greater responsibility to ensure that seafarers complied with the pre-existing operating structure laid out in the company's instructions and procedures.

The managers as a result directed their main focus on carrying out surveillance of seafarers' onboard practices. However, due to the physical distance between the shore-based management and ships, regular physical surveillance was difficult. Therefore conducting surveillance by checking paperwork was seen as a crucial alternative. In both companies therefore the managers required the seafarers to fill in various logbooks, forms and checklists as an integral part of the company's formal safety management system. They believed that these documents would act as evidence to show whether or not the seafarers followed the SMS. In both organisations it was generally recognised that properly filled in logbooks and checklists were reflections of such compliance. The extent to which the managers relied on checking such paperwork was also evident from the stance they took in conducting shipboard audits. The analysis in Chapter-7 showed that the audit programme was centred on scrutinising archived logbooks, forms and checklists on ships. The auditors' main task was to determine the level of seafarers' compliance with the company's policies and procedures by looking at the accuracy of shipboard documentation. However, such an approach disclosed little about how effectively the policies and procedures written in the SMSs safeguarded seafarers' OHS, instead it merely revealed whether or not the seafarers filled in a set of paperwork. In effect, it reinforced the importance of accurate documentation among the seafarers and gave the managers an added tool to operate the ISM Code in an authoritarian manner.

The three preceding chapters also revealed that one of the underlying reasons for the managers' interest in *correct* documentation was the pressure from Oil Majors and Port

State Control Inspectors. Successful inspection by these commercial and regulatory inspectors was considered essential to maintain the trading ability of the ships. As part of their inspection practice, they routinely scrutinised ships' logbooks and checklists to establish whether or not the ships were following safe operational practices. Negative remarks made by them had far-reaching consequences which as revealed by the managers could not only affect the earning from the individual ship but also spoil the reputation of the whole company. In fact, the managers' need to impress Oil Majors in particular was felt strongly in the practices of all three elements of the SMSs. It was most striking in the ways the Oil Majors were routinely involved in contributing to the development and review of the operating procedures of both companies. These practices demonstrated the power of Oil Majors to use their economic leverage as the heads of supply chain in the oil sector.

The seafarers however interpreted the situation differently. Analysis from the three previous chapters indicated that they were aware of workplace risks and the ways to mitigate them through their professional skills and experiences. The analysis in chapter-5 showed the seafarers strongly believed that their skills and knowledge were a product of what they learnt on ships from their colleagues and seniors as well as what they acquired on ships through their day-to-day practical exposures. They did not consider that in this regard the policies and procedures written in the SMSs had anything new to offer. They also believed that by practising what they learnt and by sharing their knowledge with their colleagues were an important part of their professional identity. This helped the seafarers form and maintain an identity of shipboard community. They also considered it as a part of the job to share their knowledge and expertise and pass them on from one generation to the next. Within this community the seafarers worked as teams and used their professional skills also to identify hazards and determine the levels of risk. It was, in other words, a representation of a strong community of practice which took into account practising and learning shipboard work and in the process safeguarding their own OHS. The analyses also pointed out that the shipboard community in this context was particularly strong because of its isolation from other influences. The seafarers felt that because of the special nature of their workplace, they could acquire the skills only through practical training that they got onboard. It was also shown that the managers failed to integrate the virtues of the seafarers' community of practice into the operation of the formal system of the management of OHS in their organisation.

Thus the managers and seafarers had fundamental differences in their views on the purpose of the policies and procedures written in the SMSs. The analysis also showed how the conflict in their understanding emerged primarily because the company's formal system allowed no room for seafarers to bring in their professional skills and experiences. It merely required the seafarers to comply with a set of rigid procedures. Yet the seafarers did not openly disagree with the company's procedural requirements written in the SMS. In fact, whether or not they followed the company's procedures and instructions, they filled in the forms and checklists to register their compliance on paper.

The analysis, particularly in section 6.3.1, further revealed that the main reason behind this attitude from the seafarers was rooted in their fear of losing their job. For this reason they believed that it was vital that they should fulfil the company's written requirements in order to present themselves as compliant individuals. The seafarers felt that the failure to do so could identify themselves as deviants, and they could be seen by the managers as the ones causing shipboard accidents. They feared that as a consequence the managers could take various measures including terminating their current employment or not employing them in the future. The seafarers in both organisations, therefore, appeared guarded and notably manipulative in practising incident reporting which resulted in significant underreporting. The way the managers operated the incident reporting system showed that the seafarers' fear was not unfounded. The analysis in section 6.2.3 showed that although the stated aim of the incident reporting system in the two organisations was to identify the underlying concerns and rectify them for future improvement of the company's OHS, in practice, however, the managers generally used the system to identify the weaknesses among the seafarers' working practice. This was established from the managers' interviews as well as from the company's accident analysis archived reports.

The analysis further revealed how the managers took additional initiative to promote seafarers' compliance with company's procedures and instructions. These included showing regular training videos, conducting safety meetings and running behaviour-based safety programmes. While some of these additional programmes were considered by seafarers as valuable, they nonetheless reflected the managers' firmly held belief that the management of safety can be more effective if seafarers could be turned into safer workers and obliged to follow company's procedures and instructions. The managers' efforts were thus largely focused on identifying the *unsafe* individuals and training them and turning

them into individuals who would comply better with company's procedures and instructions. However, the findings showed that all these efforts had minimal impacts in altering this situation.

The seafarers in the two companies also experienced the impacts of power relations in the onboard hierarchy which prevented those at the bottom of the hierarchical structure from expressing their concerns on safe working practices. These seafarers, who were mostly ratings, were fearful of being regarded as outspoken and demanding individuals – the qualities that they felt could be viewed negatively by the senior officers onboard or by the managers ashore. The seafarers were particularly vulnerable because they felt that by voicing their concerns they could even lose their jobs to others waiting in the wings. The ratings' perception, however, varied from one ship to another and largely depended on the social relationships with their senior officers.

The impact of all these practices was reflected in the way the seafarers from the two case studies participated in the implementation of the ISM Code. The discussions in the three preceding chapters consistently pointed out seafarers' limited opportunity to contribute to the management of OHS. Their roles in identifying hazards at work or utilising their experiences in safeguarding themselves from such hazards were systematically ignored. Equally, their interest in reporting incidents to managers or contributing in the SMS review process was conspicuously low due to their vulnerable employment conditions.

These are the main overriding issues that influenced the practice of the management of OHS in the two companies studied. They are manifestations of much deeper concerns lying underneath these managerial weaknesses. The purpose of this chapter is to present an understanding of these issues by looking into the nature of social and economic relations affecting the practice of management of OHS in the two companies. The explanation draws on literature on management, regulation, nature and structure of the maritime industry, occupational health and safety in the maritime industry and occupational health and safety management more generally.

8.1 Key social relations emerged from the study

There are several underlying issues of social relationships which appear to affect the way the ISM Code is perceived and operationalised in shipboard activities. They include the

prevalent fear of job loss among seafarers, relations of trust between seafarers of various ranks and their managers, power relations onboard ships and between seafarers and managers and barriers to seafarers' participation and communication in the management of OHS. All these issues are discussed in the following subsections.

8.1.1 Seafarers' fear of job security

Seafarers' fear about their job security was one of the most apparent themes that emerged from the analysis. It showed that this fear had a major influence on the way they operated the ISM Code. The extent of job insecurity emerged from the discussions throughout the three preceding chapters, which, however, was most evident in the discussion in chapter-6 (see section 6.3.1). The way the incident and near-miss occurrence reporting was operated from the ships clearly indicated that because of their fear they manipulated reporting and generally underreported the unpleasant shipboard events. They feared that by reporting incidents and near-miss occurrences they could harm their careers or even lose their jobs. Irrespective of their ranks, the seafarers essentially did not want to be associated with any such reports because they felt that by reading the reports their managers would identify them and subsequently blame them for 'causing' the incidents. Looking at the practice from the managers' perspective, it showed that it was indeed the norm to use the incident reports to identify and reprimand the individual seafarers 'responsible' for the incidents. The following interview with one of the senior officers during the fieldwork summarises the point:

> Yesterday when I reported the pollution (hydraulic oil leak on deck) and pointed out that it occurred because of a defective valve to Mr. X (the superintendent) the first thing the guy said was 'who was in charge of the operation and who had done the maintenance? How can you have so many problems despite having qualified engineers?'... The first and last question is 'who is at fault?' [ref: 18].

While the seafarers' fear of losing their jobs in the practice of incident reporting was most apparent, an undertone of the fear was also noticeable in the way they practised risk assessment. In the discussion on the practice of risk assessment from the perspective of the seafarers (see section 5.3.2) it showed that they registered their compliance on paper despite having limited faith in the formal system. It showed how on several occasions the seafarers filled in logbooks, forms and checklists as required by the company's procedures only to present themselves as compliant employees to their managers.

The analysis in the three preceding chapters also revealed how the seafarers' fear of losing their jobs was largely associated with the type of their employment contract. It showed that the temporariness in their employment made them feel significantly vulnerable. Although every rank onboard appeared fearful of losing their jobs, the ratings from both companies appeared as the most susceptible group. The following interview of one of the ratings is an example depicting how the nature of seafarers' employment contracts generally made them feel vulnerable:

> I have wife plus two children who go to university, which is very expensive (I still need to support them)... for sure I need job... I'd do anything to keep job... Talking too much is not good because it may show on appraisal report and any bad remark will mean big problem for next contract... (no matter for how many contracts I have already worked) each time I have to go through character check where crewing manager checks my past record – any extra remark is not good for job... like others (ratings on this ship) I am always worried about next job [ref: 64].

The description of the two case studies in chapter-4 presented the structure of employment of the seafarers. There it showed that apart from the senior officers of Company-B, the rest were employed under short-term temporary contracts. While the officers' contracts were for between four and six months, the ratings' contracts were usually for nine months. As with temporary contracts, they were paid only during their periods of employment and prior to each employment they were required to sign a fresh contract even if it was with the same employer as the previous one. In the two organisations the officers indicated that it was relatively easier to find such temporary contracts, while the ratings felt that it was a lot harder. They complained that it was common for them to wait for several months before the crewing agent offered them fresh assignments. These findings corroborate the BIMCO/ISF Manpower Study (2005) which showed that globally there is a steady shortage of marine officers but a persistent surplus of ratings. The study showed that in 2005 there were around 135,000 ratings in surplus, i.e. 18.8% more than the number required. These provide some explanation why the ratings in the two organisations were most anxious about their jobs among all seafarers.

The seafarers' engagement on fixed short-term contracts was not an exclusive feature of the two case studies. A survey of 4,525 seafarers conducted by the International Labour Organisation revealed that the 'majority of seafarers worked on contracts covering a single voyage or tour of duty'. The length of which was typically between five and 12 months but some were for even longer (ILO, 2001a: 64). In another study conducted by Kahveci and Nichols (2006) into car carriers also reported that a very high percentage of seafarers were

engaged in fixed short-term contracts which lasted between six and 12 months. From a survey data of 627 seafarers working on car carriers, the authors found that a staggering 96% were employed on temporary short-term contracts. By citing the 1998 Work Employment Relations Survey, the authors showed that in contrast only 1% of the shore-based car industry workers in the UK were employed under temporary short-term contracts. This indicates that the practice of short-term contractual employment in the maritime industry is extremely severe which deprives the seafarers from assured future employability and steady income.

A number of authors have demonstrated how this form of employment contract affects working conditions including workers' health and safety. Quinlan (1999), for example, in his argument based on a review of a wide body of literature pointed to a global growth in contractual and other forms of precarious employment. The author showed that in the last 30 years there has been a general shift from permanent form of employment to various forms of precarious employment, such as part-time employment, short-term contracts and jobs on shift-work. He pointed out that such change in the employment structure has generally made the workforce feel concerned about the lack of continuous income and develop uncertainty in their future employment. The author further argued that under these conditions – as workers prioritise ways to keep their jobs and secure future employments – their overall working conditions deteriorate. Among other consequences, the workers' focus on 'keeping job' generally discourages them to take any initiative on OHS. They are thus coerced to accept inferior working conditions and adopt unsafe work practices. In other words, the author brought to light how precarious employment potentially deprives workers from having a safe standard of working conditions.

The findings from this study also revealed how the senior officers of Company-B, who were paid round the year and worked on a permanent basis, were also suffering from the fear of losing their jobs. The discussion showed that despite being offered permanent employment they did not feel that their jobs were secure. As a result their involvement in the implementation of the company's formal health and safety management system was not any different from their counterparts in Company-A. In fact, the discussion in section 6.3.1 specifically highlighted how senior officers from Company-B showed signs of fear of losing job in the same way as the rest of the seafarers did. All eight senior officers from Company-B in their interviews indicated this fear. One captain, for instance, said:

> We can't be too adventurous when dealing with the managers. We can't ask for any more hands (on this ship). If I make hullabaloo may be tomorrow I will be replaced by a Master from X nation... Permanent or not they (the managers) can make us redundant any time... so I should rather keep quiet [ref: 85].

This small group of officers who came from Western European countries saw how their compatriots in the same organisation were being replaced by seafarers from comparatively newer labour supply nations and felt concerned that they too might be made redundant. This impacted upon these senior officers' willingness to make suggestions relating to shipboard operations or to put forward any creative or confident proposal to the managers with regard to the management of OHS. In other words, the Company-B's senior officers' fear of losing job although had a different origin but resulted in a similar impact. The BIMCO/ISF Manpower Study (2005) which presented the global seafaring labour distribution provided an explanation to this. It showed how ship-owners globally have been shifting away from employing seafarers from Western Europe, North America and Japan to seafarers from countries in the Far East, Indian sub-continent and Eastern Europe.

The senior officers' fear of redundancy can be seen as a part of a wider development. As Blanchflower and Shadforth (2009) found in the case of the UK (like most Western industrialised nations), there is a growing fear among the employees of losing jobs to foreign workers. They fear that their jobs may be taken over by workers from other labour supply nations or lost due to work outsourcing. In this respect, studies such as by Turnbull and Waas (2000) have particularly identified that it is the workers from the non-unionised sectors who suffer from this fear the most. They determined the lack of trade union support is one of the major reasons why workers feel vulnerable and fear that they have no protection against management's decision on redundancy.

In the case of the maritime industry the underlying reason for both the forms of fear of losing job can be better understood by looking into the wider context of the labour market and the labour market restructuring in the industry. As pointed out in the review of the literature (section 1.2.2), in the 1970s and 80s the maritime industry went through significant changes. With the increasing number of ships transferred to the FOC, it caused void in the regulatory structure in the industry which particularly affected the seafarers' employment practice and their working conditions. The sourcing of seafarers from newer labour supply nations also made the conditions harder for trade unions to provide support to the seafarers particularly for bargaining with their managers (discussed in more detail in

section 8.2.2). Thus a weak maritime regulatory infrastructure and a declining influence of trade unions in the industry offered very little to counter the seafarers' vulnerability towards loss of their jobs. This offers some explanation to the reasons why the seafarers' employment conditions especially their short-term temporary employment contracts was a major impediment in the shipboard operation of the ISM Code.

8.1.2 Trust between Managers and Seafarers

The other and equally pervasive theme that emerged from this study was the level of trust between the managers and seafarers. Slovic (1999: 697), in his work on factors affecting social construction of risk, pointed out that trust-building is one of the most fragile elements of human relationship 'which is typically created rather slowly but can be destroyed in an instant'. However, as discussed in section 5.2, the seafarers' work and leave system did not facilitate seafarers to maintain an unbroken employment over a long period of time. It showed that seafarers served for six weeks to nine months at a stretch (depending on the rank) before they were replaced by others. Moreover, seafarers' short-term contracts (discussed in the previous section) were an impediment for developing a sense of permanency with any one ship-manager. Before each assignment seafarers were required to sign a fresh contract even if it was with the managers they worked for on the previous occasion. The pattern of seafarers' intermittent engagement and the employment practices thus prevented the managers and seafarers from developing an unbroken relationship. Furthermore, the physical distance between management offices and ships (discussed in section 5.2.1) limited the scope of face to face interaction between the two groups. On an average managers or superintendents visited ships once between three to six months which for most of the seafarers was the only occasion when they interacted with the managers. This prevented the managers from getting to know the seafarers and vice-versa, which was yet another hindrance to developing trust between them.

Authors discussing issues of trust in work organisations pointed out how trust can be viewed in terms of social and economic relationships. The discussion in the review of the literature (chapter-2) showed that the level of trust between the employers and workers was an important element in the social relationships that affected the implementation of the ISM Code. In particular, Fox's (1974) important contribution in relation to the outcome of trust in workplaces showed that workers' involvement and contribution were largely reflections of the amount of trust employers place on the workers. A high-level of trust

from employers encouraged workers to use their discretion at work and commit to the goals of the organisation, whereas a low-level of trust from the employers in an organisation led to a low-trust relationship centred on the idea of economic exchange.

The attributes of low-level of institutionalised trust, such as low-discretionary roles given to workers, were closely associated with what was found in the two case studies. In various places in the three preceding chapters, the managers showed that they were not prepared to give seafarers much leeway on how to manage shipboard work. Throughout the analysis it showed that the managers considered that their main task was to ensure that seafarers followed a narrowly defined path in order to conform to the companies' procedural requirements. The managers' practice of risk assessment, incident reporting and audit showed that in both companies all the three elements were interpreted, designed and followed to facilitate the working procedures rooted in a low level of institutionalised trust.

Blau's (1964) theory of social exchange as discussed in the review of the literature (section: 2.2.2) assists in understanding why the seafarers in the two companies exhibited limited trust in their managers in most aspects of the management of OHS. It pointed out that in situations where employees are required to work in an environment of low-level of institutionalised trust they too tend to reciprocate with a degree of suspicion and distrust. In fact, what emerged strongly from the seafarers' perspective was a strong sense of scepticism. The most obvious example came from the practice of incident and near miss occurrence reporting (described in Chapter-6). The discussion showed that the seafarers were anxious about managers' hidden agendas. They appeared convinced that the managers used the reporting system in a deceitful manner to find their faults. As a consequence of the erosion of trust and ingress of scepticism in their relationships, the seafarers resorted to underreporting.

Throughout the study seafarers' distrust and scepticism towards their managers was tangible. The following interview from one of the captains in the case studies portrays one such example, in which he said:

> They (managers) use the system (SMS) to their advantage. A few days ago I filled in and sent a deviation report form (used to report technical defects) for malfunctioning of an instrument – the superintendent called me on the phone and asked me to cancel the entry. They don't want this type of entries, it puts them in trouble. They want us to follow the SMS, but only as long as they can have things their way... for example, they would like to receive near-miss reports, monthly

maintenance reports, SMS checklists... I don't like to talk to them on the phone to take instructions, I like to use e-mails – I need records... Suddenly one day they may turn around and ask 'who asked you to do that, is it as per the SMS, or why didn't you report?' [ref: 86].

Such sceptical feelings have been analysed in a number of studies. Poortinga and Pidgeon (2003), for example, using quantitative survey of over 1500 people conducted in parts of the UK, determined the public perception of the British government's policy on sensitive issues such as climate change, mobile phone radiation and radio-active waste. The authors found a high degree of public scepticism on the government's policies on such issues affecting the general public. It showed that although the public showed signs of relying on government's competence they were sceptical about the government's hidden agenda and felt unsafe about some of these decisions taken by the government. The public perceived that the government's decisions were being driven by wider economic pressures which were not particularly in the interest of the public. While this and several other studies (such as Taylor-Gooby, 2006; Frewer *et al.*, 1996) were rooted in locating public's trust in government and industry, they nonetheless bring out issues related to individual's trust on entities in the position of power and authority.

The senior officers in the two companies also had limited trust in their managers because of the low-level of welfare offered by the managers. An earlier discussion on complying with risk assessment and incident reporting showed that seafarers did not consider the managers trustworthy for protecting them from criminal proceedings. Although criminalisation cases were few and were carried out by the state authorities, from the seafarers' perspective it was a case of managers' failure in looking after their welfare needs. A number of authors have demonstrated that taking care of an individual's welfare is an important way of developing trust. Renn and Levine (1991) and Kasperson *et al.* (1992), for example, reviewing the literature on factors associated with trust highlighted that a major element of trust depended on the individual's or group's perception of the level of welfare that the other (trusted) person or organisation was willing to support and take care of.

The discussion thus shows that a high-level of trust between the managers and workers generally is crucial for an effective management of OHS. However, the social relationship between the managers and seafarers in the two organisations was based on low-trust. Arguably, a high-trust work environment is of particular relevance in this industry because of the lack of other forms of support, such as from the trade union, available to the

seafarers. As a result, the seafarers largely driven by their fear of job loss failed to communicate and participate in the management of OHS in their organisation.

8.1.3 Communication and participatory management

The combination of seafarers' fear of job security and a low-trust work environment made it challenging for the seafarers in the two organisations to engage in effective upward risk communication. The analysis in the three preceding chapters showed that the senior officers generally felt intimidated by communications from managers. Nearly every one of them felt that the company's managers communicated to them using phone calls or e-mails merely to pass on orders, or to investigate operational issues or worse cast doubt on their professional judgements. They also did not feel that there was much opportunity for them to share their expertise and experiences with the managers as the overall social relationships was generally not conducive to a good working condition. The following interview of one captain is as an example of the nature of communication generally exchanged between him and his managers. He said:

> It is best we didn't get any e-mail from them (managers). An e-mail from marine manager or superintendent means trouble... it is either inquiring why we need that store, or why we cannot sort out the (mechanical) problem ourselves, or why such and such inspector pointed out deficiencies... what for should I call them? There is absolutely no informal exchange, only question by them and answers by me [ref: 51].

Although the managers assigned a low-discretionary role to their seafaring colleagues in the operation of the ISM Code, they nonetheless demanded a great deal of information from the ships. Such information was required by the managers to facilitate a top-down style of management in their organisations. The detailed information in the incident reporting form (discussed in section 6.1.4), for example, required a high degree of institutionalised trust which was clearly absent in both organisations. It thus resulted in a tension which prompted the seafarers to communicate only the favourable information to the managers and suppressing those they believed made them more vulnerable. This, as Read (1962) and O'Reilly (1978) discussed in their works, was a typical response from workers in low-trust environment. These authors on their studies on industrial communication pointed out that workers in a low-trust environment filter the favourable and possibly irrelevant cases and withhold the unfavourable yet potentially important information in the upward communication.

In the review of the literature (chapter-2) it was discussed how effective communication between workers and managers was a prerequisite for a participatory style of organisational management. It showed that among other things, free and effective upward risk communication was vital. Gallagher *et al.*'s (2003: 71) study, for example, which attempted to identify barriers to successful OHS management pointed out that one of the recurring themes that stood out as central to OHS management was the need for effective organisational communication. It pointed out that effective upward communication is essential for promoting worker participation in the management of OHS. Similarly, Walters *et al.* (2005) in their study in the UK construction and chemical industries found how safety representatives encourage workers' communication and promote a participatory style of management in organisations. The authors showed that the performance of health and safety management was comparatively better in those establishments which practised a participatory style of OHS management.

The practice in the two case studies, however, did not indicate signs of participatory management of health and safety. Overall, the analysis from the three preceding chapters showed that the communications initiated by the managers were examples of managerial control which mostly included orders and instructions, while the communications in the upward direction were largely filtered and manipulated which the seafarers felt was important to conform to the bureaucratic requirements of the SMSs. This form of organisational communication did not allow seafarers to participate in the OHS decision making process. It limited them to comply with their predetermined roles and to follow decisions that were already taken by the managers.

Arguably, the managers' authoritarian form of communication is a reflection of the kind of participation that they demanded from their seafaring colleagues. Their style of communication merely coerced the seafarers to attune to the managerial views and facilitate a top-down style of management and did not contribute to participatory style of management of OHS. This, as discussed by Walters and Frick (2000: 54-57), is an example of direct form of participation that does not promote participatory style of OHS management in organisations (see section 2.1.2).

Looking at participation from the perspective of organisational communication, authors such as Stohl (1995) have also highlighted how the nature of communication within an

organisation serves as an indicator of the type of participation that takes place in organisations. The type of communication, both formal and informal, between managers and workers and the support provided in facilitating such communication in practice demonstrate both the intended style of worker participation and the extent to which it has been achieved. For workers' participation to be effective it requires a management system that particularly recognises the importance of upward communication.

Burns and Stalker's (1961) description of 'mechanistic' versus 'organic' organisational models also described the critical difference between two types of organisational communication. It helped explain how the nature of communication in the two case studies resembled an extreme version of the former model in which it merely flowed from superior to subordinate. These communications largely contained instructions and directives of the decisions taken at the top with limited or no consultation with the seafarers. In view of the discussion on the level of trust (in the previous section) between the managers and seafarers in the two case studies, it is not surprising to find the practice of such rudimentary level of communication in the two organisations.

While effective organisational communication is seen as fundamental to effective management of OHS generally, arguably the matter in the maritime industry is even more crucial. One of the unique features of the industry is the distance between the shore-based management office and its ships. This prevents managers from conducting regular physical surveillance of their fleets (see section 5.2.1) which is why for the managers the most important way and at times the only channel of learning what goes on the ships is from the seafarers' communications. The effectiveness of the operationalisation of the ISM Code, in other words, is critically reliant on the upward risk communication and effective participation from the seafarers. However, as discussed earlier, the approach of OHS management taken by the managers in the two organisations clearly did not consider this as important. The low-trust environment in the two organisations and the employment conditions in the industry which made the seafarers fearful of losing their jobs were major impediments in promoting effective communication essential for a participatory style of OHS management.

8.2 Influences from the Industry

Having identified the main social relations and the socio-economic elements that affect the implementation of the ISM Code, the discussion in this section looks into some of the main features of the maritime industry that further exacerbate the conditions that limit its operation. It identifies and discusses three main industry-specific factors that have considerable impact on the way the ISM Code was practised in the two organisations and builds upon the effects of the issues that have been discussed in the previous section. First, the discussion highlights how onboard hierarchical structure and social arrangement on ships influence the opportunity of participatory styles of management on board ships. Second, it looks into how the lack of trade union support in the maritime industry plays a significant role in the way the ISM Code is implemented. Finally, it looks into the shipboard subculture and discusses how lack of integration between the dominant managerial culture and the shipboard subculture within organisations introduces a major obstacle to the implementation of the ISM Code. These features of the industry add new perspectives to the understanding of the way in which the Code is implemented.

8.2.1 Shipboard hierarchy and communication

The previous section among other factors identified how risk communication between seafarers and managers was affected by the insecure nature of seafarers' employment and the lack of trust between the managers and seafarers. In this section the nature of the hierarchical structure of the shipboard management and how it affects upward risk communication within ships, as analysed in section 5.3.5, is further explored.

In chapter-4 (section 4.2.3) the description of the two case studies showed that a shipboard community is extremely hierarchical in structure with a distinct superior-subordinate relationship between any two seafarers onboard. They also belonged to one of the three departments on the ship: the deck, engine or catering, with clear job responsibilities. Within each department there were precise lines of communication and reporting procedures. Thus, there existed parallel strings of hierarchy, and the rank of each seafarer signified his precise location in them.

The impact of strong hierarchical structure onboard ships was evident from the analysis of the ethnographical fieldwork. It not only affected the seafarers' work-related practices but also the way in which they interacted socially. It showed, for instance, that on most

occasions the ratings kept to their peers during their spare time. They watched videos and played cards and interacted among themselves in the recreation room which was for the exclusive use of ratings. The officers too largely socialised only among themselves – they had their meals in officers' mess-rooms and engaged in recreations involving only the officers in the officers' saloon. Social interaction between the senior and junior officers was also not very common. The size and location of the seafarers' cabins were commensurate to the seafarers' ranks. The senior officers generally had larger cabins with separate living and bed rooms which were located on the upper decks of the ship's accommodation block. The ratings' and junior officers' cabins were comparatively smaller, while the ratings' cabins were the smallest and located on the lowermost levels of the accommodation block.

The ethnographic observations on the four research voyages indicated that both officers and ratings were largely contented with this arrangement. Their interviews indicated that 'socialising' as per one's rank was clearly the accepted norm and as such did not pose any difficulty in the day-to-day running of the ships. The following diary entry on the fourth and final research voyage on Ship-B2, in which I reflected on the impact of shipboard hierarchy from the four research voyages, depicted this picture:

> Strong hierarchical presence was evident on all four research voyages. Regardless of the number or nationality of the seafarers, the type of trade the ships were engaged in or the size of the ships, I found shipboard hierarchy was a constant feature and the accepted norm. It was not only apparent in the way work was organised on the ships but also how meetings were held, meals were taken and seafarers organised their recreations.

The presence of strong hierarchical features onboard cargo ships has been depicted in earlier studies. Roger (1983), for example, in his description of how Norwegian sailors on board the *Hoegh Mallard* worked and lived revealed significant hierarchical tension on the ship. This ethnographic study showed that seafarers on that ship lived and worked in a noticeable hierarchical atmosphere despite the managers' attempt to increase socialising between the officers and ratings through the introduction of common mess room (for officers and ratings) and several other features. The detailed account revealed that in work related issues the senior officers consulted very little with the ratings, and generally passed down instructions to them. There was limited evidence of participative style of management on the ship. Roger's (1983: 70-71) description of the way the safety meetings were conducted onboard the *Hoegh Mallard* matched closely with my finding. In particular

the author's use of the simile of 'a stern schoolmaster' in describing the role assumed by the captain during safety meetings was very similar to what I observed in my own work (described in section 5.3.5). The description also showed that even outside the working hours the seafarers largely continued to maintain the original hierarchical positions. The ratings appeared more comfortable in spending time with their peers while the officers did not appear particularly keen on cutting down the hierarchical divide. Although the officers and ratings showed signs of considerable cooperation and cohesion at work, the impacts of hierarchy continued to remain evident on the ship.

However, such hierarchical shipboard environment also had major consequences in the way the shipboard communication was practised. The analysis in the three preceding chapters especially in section 5.3.5 showed that the ratings largely found such hierarchical divide as a barrier to communicate with their senior officers. As a result they often refrained from informing their superiors on issues such as workplace hazards even when it endangered their own lives. They also carried out certain tasks merely because they did not want to be seen as a disobedient group of seafarers. It was evident, for example, from the way the ratings presented themselves as mere listeners during the shipboard safety meetings. Equally it could be seen the way the ratings of Company-A expressed their anxiousness with regard to the confidential appraisal system used in the organisation. In this case they were particularly careful to ensure that their ways of behaving or communicating were not construed by the senior officers as instances of challenging their authority. The following quote in one of the ratings' interview sums up the seafarers' feelings:

> It is better to listen and not talk too much because if you talk, make suggestion or ask question or may be find out fault then chief engineer or captain may not like it.... because of talking I may be known as the trouble maker... because also they (crewing managers in home country) want to employ seamen with clean record – a remark like trouble maker is no good for new employment [ref: 39].

Bailey (2006: 67), too, identified in his study on risk perception in the global maritime industry such rigid shipboard hierarchical structure as a major hindering factor for upward communication. His work among other findings revealed that ratings and apprentices onboard felt intimidated by their senior officers and as a result appeared reluctant to communicate their views and concerns to the senior officers. The author also stressed that in the maritime industry a strong hierarchical environment is considerably more damaging because the captain of the ship remains the only gateway of communication between the

ship and the management office. As a result, intimidating hierarchical setups on ships gives little opportunity for the ratings to communicate their concerns or grievances to their managers.

Although this affected the ratings' upward communications generally, the analysis showed that its intensity varied from one case to another which largely depended on their social relationship with the senior officers. It pointed out that in the perception of the ratings the central element which affected their ability to communicate with the senior officers was the latter's behaviour towards them. One such example of the ratings' perception from an interview is presented below:

> It (how much we communicate) depends on the chief mate or the captain really. Some captains are free and you can talk in meetings, they don't mind and they don't feel bad (offended). Sometimes some chief mates are very friendly – it's easier to talk then. But like with the last captain we didn't talk at all because he was not open – he was always shouting and ordering. He did not want to believe us. If we told him something he said it's your fault, you should check it first [ref: 33].

This perception was also apparent from what I observed on the four ships. The following diary entry illustrates the point, where it indicates how the levels of communication from the ratings in two departments on the same ship were significantly different. The diary entry read:

> On this ship there is a sharp contrast in the way the second engineer and chief officer operate. The second engineer is one of the most disliked persons on board. All the engineers and the engine rating consider him as a rude person and don't communicate with him anymore than what is required. One the other hand, the chief officer is the most popular person on this ship. He organises games and parties for the whole ship and is especially liked by the deck ratings. The difference was reflected especially from the ratings' interviews which showed that the deck ratings were generally contented and much more communicative than their engine room colleagues.

Discussions on leadership behaviour have pointed out that supervisors and line managers as leaders in factory settings play major roles in promoting communication from the workers. They show that among other features different facets of leadership style has an important influence. Zohar (2000), for example, identified that one of the elements that the workers in an organisation look for in their leaders is their relative emphasis on safety and production. Besides the importance of safety-specific behaviour of the leader, authors such as Mattila *et al.* (1994) have identified how general leadership quality of the supervisor has an equally important impact on how supervisors and subordinates communicate in an organisation.

The authors pointed out that when supervisors engage in a participatory style of communication with their subordinates and spend more time on the site and among other things talk on non-work-related issues, it promotes an environment for better communication in the organisation and thus leads to its better safety performance. Hofmann and Morgeson (2004: 169) reviewing a number of studies on the role of leadership in organisational safety have pointed out that the two modes of leadership are complementary; while workers look for safety-specific qualities in their leaders, they also depend on general leadership qualities which emphasise on factors such as employee wellbeing.

This provides an explanation as to why the ratings' upward risk communication was heavily reliant on the senior officers' general leadership qualities. The analysis showed that to the ratings the senior officers' general leadership qualities was essentially the starting point. Only when the ratings were convinced that the senior officers were approachable and receptive to their concerns, did they develop some confidence to communicate freely. In other words, the ratings needed trustworthy leaders, for instance, to report incidents or near-miss occurrences or to generally raise their concerns on workplace hazards. A high-level of trust, thus, was important to redress the balance in an environment that was evidently highly hierarchical and generally non-supportive of upward communication.

The description in this section thus provided a new perspective to the understanding of the lack of ratings' participation in the management of OHS. It showed that the hierarchical setup on ships was a further cause for ratings' vulnerability. As a consequence they felt intimidated and found it considerably harder to engage in effective communication with the senior officers. It added to their fear of loss of job which was largely due to the precarious nature of their employment (discussed in the previous section). However, from the discussion above it showed that senior officers' leadership quality had a major impact on the ratings' willingness to communicate. Such quality helped them in developing 'trust' on their senior officers and was thus a mitigating factor for upward shipboard communication. In section 8.1.2 the discussion already pointed out how trust between the manager and senior officer is an important factor that influenced the communication between them. Here, the discussion reiterated the significance of trust at another level. It thus shows that social relationship of 'trust' is a vital ingredient for upward communication at all organisational levels.

Having identified shipboard hierarchy as a major factor, the following section looks at other important issues on maritime industry which also affect seafarers' communication. It looks into the features of labour organisation and the role of trade union in the maritime industry and points out how this particular feature of the maritime industry also played a major role in the outcome of the organisation of labour critically influencing the implementation of the Code in the two organisations.

8.2.2 Organised Labour and Trade Unions

The discussion in the three preceding chapters consistently indicated a void in the support for the seafarers (at all levels) to engage in upward risk communication. It showed that one of the main underlying reasons was their fear of losing their job. This, however, was the case despite seafarers' knowledge of the hazards associated with their jobs and their capability of safeguarding themselves from such hazards. For an explanation of this contradiction the discussion now turns to the organisation of labour and the wider context of industrial relations.

Although the main focus of the thesis was not to examine the industrial relations issues or to evaluate the critical roles of the trade unions in the two case studies, the discussion in section 2.1.2 firmly established the significant role that trade unions and trade union organisations play in supporting participative management. There, drawing on several studies (such as Walters, 2006), the discussion showed that trade unions play a vital role in supporting worker participation at three different levels: workplace, management and regulatory.

However, the findings in this study do not show any evidence of trade unions' support either at the workplace level or for conducting collective bargaining with the employers at the management level. From the analysis it showed that at both organisations the concept of 'an external entity' intervening in the company's 'internal matters' at either of these two levels was inconceivable. The crewing manager of one of the organisations, for example, expressed the following which demonstrated how seafarers and managers usually viewed the purpose of the trade unions. He said:

> There is a bit of presence of X Union (of a particular country) where they only discuss the wage scale... I can't imagine that they have any other role to be honest... on ships, we sometimes get the ITF Inspectors – but that's about it [ref: 34].

Similar views on the trade unions were also evident from the seafarers' perspective. In one typical response, a junior officer from one of the case studies mentioned:

> We don't know who they (the trade unions) are. Our union dues are deducted from our salaries and we receive a magazine in return... I personally have never met anyone, they never come on board [ref: 49].

A number of authors have pointed out how certain features of the maritime industry make it difficult for trade unions to play an effective role. Kahveci and Nichols (2006), for example, in their study on car carriers, pointed out that the nature of the industry and the isolation of ship in particular act as barriers for union organisations to support seafarers at the workplace level. In their discussion the authors also pointed out that for this reason even during the period when traditional maritime nations employed domestic seafarers and ships regularly touched ports of the home countries, trade unions' support for improving onboard working conditions was rudimentary. They added that the advent of globalisation further weakened the scope for union participation. With little connection between the country of registration of ships, their trading pattern and the nationality of the seafarers, it became even harder for trade unions to provide any support at the workplace level. In other words, as discussed by Lillie (2006) in his work on the effectiveness of global union in the maritime industry, the changes to the structure of the labour market and the fragmentation of relationship between the ship-owners and seafarers contributed to the lack of organised labour in the maritime industry. It considerably weakened seafarers' ability to present their views to the managers in a representative manner and also made it harder for the trade union organisations to operate in the maritime industry generally.

The economic globalisation in the maritime industry not only limits the scope for trade unions to address issues at the workplace level, the fragmentation of the relationship between the ship-owners and seafarers in particular that resulted as a consequence also weakened the potential for the trade unions to engage in any form of collective bargaining with the employers. With widespread flagging out along with the increase in the employment of seafarers from the new labour supply countries (see section 1.2), the maritime labour, capital and regulatory source were all geographically dispersed. As a consequence, the nationally based seafarers' unions became ineffective. Thus it became increasingly beyond the reach of trade unions to participate in improving general labour

conditions or address issues specific to the seafarers' OHS through bargaining with the ship-owners.

However, while the role of trade unions at the workplace level and at the level of negotiating with employers has been weak, its impact at the global industry level was significantly different. Authors such as Lille (2005) in his research on global maritime unions' activity showed how maritime unions working at the trans-national level successfully bargained for seafarers' wages by negotiating with seafaring unions in traditional maritime nations and in new labour supply nations. It showed how the global association of national unions under the banner of International Transport Workers Federation (ITF) developed a high degree of inter-union consensus and successfully bargained for better pay and working conditions for seafarers sailing on ships under the Flags of Convenience (FOC). The political and industrial strength of the ITF can be seen in its increasing prominence. Since the start of the ITF campaign in early 1970s the number of ships operating under the ITF contract has gone up to approximately quarter of the world FOC fleet amounting to over 123,000 seafarers[66] (ITF, 2008). The ITF through commitment to its affiliates, growth of its inspectors and by the threat of industrial actions particularly by involving dock labour unions globally, made noticeable contribution to redress the balance of the impacts of globalisation on the seafarers' labour conditions.

Lille's (2005) study also pointed out how the ITF has also taken their campaign at the global regulatory level. At the International Labour Organisation (ILO) the ITF has represented the seafarers on several labour issues since the middle of the last century. The role of the ITF in the recent introduction of the Maritime Labour Convention (ILO, 2006) by the ILO shows the continuing influence of the ITF on the regulatory front at the global level. This convention consolidated and updated more than 65 international labour standards related to seafarers adopted over the last 80 years. It sets out seafarers' rights to decent conditions of work on a wide range of subjects, such as seafarers' length of contract or tours of duty, maximum hours of work, and qualities of food and accommodation welfare, health protection, medical care and social security protection.

Nevertheless, although the ITF plays a significant role at the global level – engaging in the regulatory process and also through inspection and threat of industrial action – the lack of

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[66] Globally it is estimated that there are approximately 1.2 million seafarers

trade unions' support at the workplace level and at the level of negotiation with the ship-owners has left considerable void in supporting seafarers in safeguarding OHS. This reiterates the point made by Walters (2006) that trade unions have roles to play at more than one level. However in the maritime industry the trade unions' role at the workplace representation is seriously underdeveloped.

In the review of the literature (section 2.1.2) it was pointed out that strong legislative provisions for facilitating workers' representative participation and employers' commitment for a better risk communication and overall contribution to the management of OHS were essential to support employee participation. However, the discussion there also showed that the ISM Code failed to make any regulatory provision for promoting seafarers' representative participation. It, unlike the European Union Directive (EEC, 1989), made no reference to stimulate or support the selection of worker representation, allow representatives time off with pay to carry out their functions and receive training, or enable them to take part in consultations with employers over OHS matters. The ISM Code had no provision laid out that even suggested that seafarers should be provided with basic floor of rights on which with the support of the employers and the trade unions they could stand and make their cases.

Although the ISM Code did not specify the need for developing work procedures for representative participation, the two organisations incorporated them in their SMSs. They required every ship to have onboard safety representatives and a safety officer, and conduct safety meetings. The discussion in section 5.1.4, for example, pointed out how the managers from both organisations expected the safety representatives to bring out seafarers' OHS related concerns, the safety officers to take extra initiative and discuss them during the safety meetings in a forum type of discussion[67]. The managers felt (see section 5.2) that safety meetings were especially designed to address the concerns of the ratings, as it gave them an opportunity to present their grievances directly to the managers. However, as the analyses in sections 5.2 and 5.3.5 showed, in practice the outcome was markedly different. They revealed how the safety representatives and the safety meetings generally failed to stimulate upward communication and in particular made little impact to elicit communication for the ratings.

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[67] The requirements of safety representation and safety meeting in the two SMSs closely resembled the requirements laid out in the Code of Safe Working Practices – which as pointed out in section 5.1.1 of the thesis played a considerable influential role in the operationalising of the ISM Code.

In view of the findings in the shore-based studies the observations from the two case studies are hardly surprising. Walters and Gourley's (1990) and Walters and Nichols' (2007) research on the implementation and the effectiveness of safety representation of the 1977 Safety Representatives and Safety Committees (SRSC) Regulation in the UK, for example, pointed out that the effectiveness of safety committee and safety representative administered by the employers without the presence of strong union membership or without being supported by trained trade union representatives met with limited success. It illustrates why despite the commendable effort of the managers in the two organisations in promoting seafarers' participation through implementation of the safety committee and safety representative, the outcome was noticeably unproductive.

The discussion in this section thus presented a deeper understanding of the way OHS was practised in the industry. It provided an explanation from a particular angle on why seafarers failed to make upward communication or participate effectively in the management of OHS in their organisations. Along with the seafarers' fear of job insecurity and their lack of trust in their managers, the discussion in this section demonstrated how the lack of trade union support made it even harder for them to participate. It showed that despite the noticeable involvement of maritime trade unions working at the global level striving for better labour conditions and pay, and also despite the employers' effort in setting up procedures for safety meeting and seafarers' representative participation, in practice it was evident that these provisions provided little assistance in promoting seafarers' participation in the management of OHS.

8.2.3 Communities of Practice

The final sub-section of this chapter discusses the role of shipboard subcultures in the implementation of the ISM Code. It points out why this particular industry-specific feature is an important determinant in the way in which OHS was managed at the shipboard level and influenced the operationalisation of the ISM Code in the two case studies. It points out how such practice had a major influence in the way in which social relations were developed at the shipboard level.

The analysis in chapter-5 revealed the way the seafarers worked onboard was largely an example of members of community of practice. They relied considerably on learning from

peers how to carry out their tasks and develop their working skills through work practice. It showed that on ships there was a great deal of emphasis on developing and utilising practical knowledge and in knowledge sharing when conducting shipboard tasks. The importance of using hands-on professional knowledge was evident from across the hierarchy. Moreover, with regard to workplace safety, the analysis in section 5.3.1 also pointed out how seafarers firmly believed that learning about safety and learning to carry out their work efficiently was one and the same thing. Thus the seafarers' reliance on their and their fellow-workers' professional skills and experiences for safeguarding from workplace hazards emerged as one of the most important aspects of shipboard working life. The following interview of one of the senior officers serves as an example of this prevalent perception among the seafarers on all four research voyages. He said:

> Just as the way there is a limit to what can be taught in the classroom there is also a limit to what can be written in these (pointing to the SMS volumes). Not everything can be written down. In our profession we need a lot of creativity – these books (volumes of SMS) don't teach you that, they in a way restrict you. Your experience is what counts – what you learn at work – how you experience real-life situations... that's what makes ships safe [ref: 86].

From the discussions in chapter-5 it also emerged that both the experienced seafarers and their junior colleagues recognised that shipboard work was best learnt through practical experience. The two groups also appreciated the importance of the time taken for one to acquire the practical knowledge for operating ships. During the interviews the senior officers openly expressed how essential it was to pass on 'the tricks of the trade' to the new generation for working efficiently and safely. Equally, the junior officers and ratings (especially in the rank of OS) too showed equal keenness to acquire seafaring skills through practical experiences by understudying their seniors and acquiring the valuable tacit knowledge of shipboard work. This feature of gaining hands-on-knowledge was clearly articulated by one junior engineer in his interview, in which he said:

> I have 2nd engineer's license (certificate) but I have many things to learn, this chief is good, he teaches me. Just because I have the license I can't be sailing as a 2nd. It's not an easy job... there is a lot of responsibility. May be after two or three more ships after I get experience to work on more types of engines (main propulsion system) and other machineries and have more experience I shall ask for promotion [ref: 80].

In other words, the process of learning and developing skills, practising it in the shipboard community and passing on the skills to the future generations worked in a self-reinforcing cyclic manner. In this way the seafarers not only passed on how to work efficiently but also shared their knowledge on how to ensure workplace safety. From the analysis the

importance of utilising practical knowledge thus emerged as a significantly important element in the day-to-day OHS management at the shipboard level.

A number of researchers have also highlighted the significance of workplace learning and how that plays an important role in a person's identity with a profession. In discussing the process of learning and apprenticeship within organisations Lave and Wenger (1991) brought to light how learning at workplace has a distinct social undertone. The authors argued that learning is a complex process which does not follow a linear transmission of factual knowledge or pass information from one person to another. It also takes into account the context in which a person acquires the working knowledge. Learning, thus, involves a process of participation which allows newcomers in particular to gradually increase their involvement from periphery to the core of the organisational activities. It is especially applicable in well-bounded communities of practice where learning to work is seen as a collaborative exercise.

In this context Hutchins' (1996) description on the apprenticeship of quartermaster[68] in the American Navy, which has close parallel with the subject of this thesis, further assists in understanding how shipboard learning through experience was of critical importance to building professional knowledge. It described how trainee quartermasters gradually learnt increasingly important elements of their jobs and moved in from the periphery of the organisation to the centre but only after successfully passing their apprenticeships. The author's work in particular highlighted how the new entrants *learned the ropes* by gaining practical knowledge from the senior members of the community.

The seafarers' view on how learning to be safe at work was dependent on learning to work itself – corroborated a number of studies on land-based organisations. Research on organisational safety cultures showed that communities of practice and organisational learning played a major part in the outcome of safety in organisations. Martin (1992) and Gherardi and Nicolini (2000: 7-8), for example, reviewing a large body of literature on organisational influences on safety cultures found that safety was a product of collective working practice in an organisation. The authors pointed out that learning to work safely is a virtue that is inculcated in the members of organisations by doing and by being part of an

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[68] Quartermasters are junior members of the ships' navigation team who are in charge of steering and watch-keeping duties. Their task may also include maintenance, correction, and preparation of nautical charts and navigation publications.

organisation. The two are not unconnected developments. The safety culture in any organisation thus becomes a reflection of organisational practices and is deeply rooted in the ways workers carry out their tasks in a shared manner and learn from each other and through practical experiences.

Wenger's (1998) work on community of practice further shows that such communities which are essentially developed through the creation and refinement of knowledge and expertise assume a high level of participation and communication among the members. It points out that the membership to such community is largely based on the participation from the individual members and not by merely registering physical presence in the communities. Building on this discussion, Wenger also pointed out that for such communities to develop and function effectively they require internal leadership. He highlighted that the effective leaders in the community need to show a range of leadership qualities largely depending on the context of the community. It, for instance, needs leaders to execute the day-to-day operation of the community, or focus on the interpersonal issues among the member of the community.

By drawing on the above discussion, it can be seen why shipboard communication and participation from the ratings are so vital. They are the two building blocks for the shipboard community of practice to be effective. Although, the analyses in sections 5.3.1 and 5.3.4 show that generally there was a strong presence of shipboard community of practice on the four research ships, Wenger's (1998) argument goes some way in explaining why a strong hierarchical divide onboard ships in which senior officers lack of leadership qualities impede effective upward communication (discussed in section 8.2.1) was detrimental to its functioning.

The analysis (mostly in sections 5.3.1 and 5.3.4), however, also pointed out that this particularly strong feature of workgroup safety culture was not incorporated in the formal systems operated by the shore managers. The analysis showed that the managers failed to pay importance to the expertise and skills the seafarers brought with them in organising their day-to-day work onboard ships and safeguarding their and their colleagues from workplace hazards. The instructions and procedures operated by them were robustly structured aimed at operating a comprehensive top-driven management system. The managers aimed at engendering a common organisational safety culture, but in that they

left very little room for seafarers to incorporate their expertise and skills. As a consequence of this conflict there existed a wide gap between the procedures that the managers wanted their seafaring colleagues to follow and the actual practice conducted by the seafarers. In effect the gap was so wide that the managers very often viewed the seafarers' ways of working as apathy or even insubordination, while the seafarers construed the managers' requirements and instructions on safeguarding OHS as undue impositions.

This tension and its consequence in the management of safety were also highlighted in other studies. Vaughan (1990) and Gherardi *et al.* (1998), for example, in their empirical studies in the US National Aeronautics and Space Administration (NASA) and in an Italian construction industry respectively pointed out how there were more than one communities of practice within a single organisation and how it affected the day-to-day activities of the organisations. Gherardi and his colleagues' study, for instance, revealed how engineers and site foremen in the building site of the same organisation adopted different and at times conflicting methods to safeguard from workplace hazards. Although they worked for the same organisation, the variance in their practices reflected the existence of different safety cultures at work. Each of the units within a single organisation brought with it the reflections of its own community of practice. The final outcome of safety of the organisation, however, became a complex matter of interrelation between these communities depending, for example, on the power relations between the different communities in the same organisation.

The discussion thus assists in understanding why seafarers relied so heavily on their skills in protecting themselves from workplace hazards and why they kept emphasising that safe working practice could only be learnt through work experiences. It lends itself to explain why the one-track top-down implementation of the safety management system in the two organisations had limited impact in the way the ISM Code was implemented at the shipboard level. This as the discussion showed was due to the presence of a strong subculture developed as a consequence of a strong community of practice at the shipboard level.

Finally, the discussion in chapter-5 pointed to some of the features of the industry which showed how ships are special places of work. Their physical remoteness from land-based influence as well as the type of knowledge and skill required for the seafarers to work and

survive in such workplaces makes practical shipboard experience particularly vital for this profession. However, the seafarers did not consider that shore-based training or instructions and procedures written in the company's SMS were capable of delivering this. Thus, the special nature of the industry demanded the presence of a strong community of practice onboard ships. While communities of practice can be found in most work settings, from reasons discussed above it can be argued that in the shipboard context it is particularly pronounced.

Summary

The analysis of the findings of this study showed that the managers of the two shipping companies and the seafarers serving on their ships had major differences in their perceptions on the purpose of the ISM Code and its implementation process. The discussion in this chapter began by locating the underlying reasons for the difference in their perceptions. It found that both the social relations on ships and those between the seafarers and managers of the organisation as well as socioeconomic conditions and employment relations of the seafarers in the two organisations were the underlying factors that influenced these perceptions.

The discussion revealed that the main underpinning social factors were the dependency on job security, trust-relationships and communication and participation in the organisations. It showed how the seafarers' fear of job loss and their concern for future employability was a major underlying factor that affected the way they operated the ISM Code on ships. The temporary nature of the seafarers' employment contracts was found as one of the main causal factors for their fear.

The discussion also revealed how the social relationship between the managers and seafarers was based on a low level of trust. This was evident from the way the managers required the seafarers to conform to the company's narrow set of procedures in the implementation of the different elements of the ISM Code. It was also reflected in the sceptical attitude of seafarers towards their managers. Such social relationship did not make the atmosphere conducive to effective management of OHS. It also pointed out that as a consequence of the seafarers' fear of job security and the environment of low-trust there was a lack of effective upward communication.

Such organisational atmosphere resulted in the OHS in the two organisations being managed without effective participation from the seafarers. In this way my research demonstrated that the social conditions which are widely acknowledged in the land-based research literature as prerequisites for effective management of OHS were largely absent in the maritime industry.

Moreover, it also argued how some of the special features of the maritime industry exacerbated this situation. It highlighted how the presence of a strong onboard hierarchical structure affected the participatory style of management of OHS and pointed out how it acted as a major impediment to onboard communication especially from the ratings to senior officers. The discussion also showed how lack of trade union at the workplace level failed to alleviate the seafarers' fear of job security or provide support to their participation in the management of OHS. Finally, the discussion revealed how on ships there was a strong shipboard community of practice which was regarded by the seafarers as the most effective way to acquire both working knowledge as well as safety skills. Onboard practices such as work experience sharing and getting on-the-job training were considered its central elements. However, my research showed that the managers' way of operating the SMS did not take into account of the powerful subculture that the shipboard community of practice produced. This resulted in a wide gap in the way the managers conceived the implementation of the ISM Code in the organisations studied and in the way the seafarers operated them at the shipboard level.

Conclusion

This concluding chapter summarises the key findings from the study and highlights how this research contributes to the understanding of the practice of the management of OHS in the maritime industry. It discusses the way in which the thesis answered the research question and acknowledges some of the limitations of the research process. It also identifies a number of supplementary findings that emerged from the study which have indirect yet important influence on the effective management of shipboard OHS. The final section draws out the policy implications of the research and suggests how further research is essential for a better understanding of the subject.

The ISM Code was introduced to the maritime industry in 1998 because it was felt that the earlier prescriptive regulatory framework for safeguarding OHS in this global industry was no longer tenable. In response the industry adopted a process based system which increased the focus on organisations to manage OHS. In many ways this shift reflected a recognisable trend in the industrialised nations. However, despite this change of approach to the management of OHS, there has continued to be a wide range of criticisms of the standards of safety management in the industry calling into question the effectiveness of the ISM Code. Within the industry it has been suggested that the introduction of the Code has resulted in a needless bureaucratisation at best and an opportunity to conceal the failings of the management of OHS at worst. While a small number of studies have attempted to systematically investigate the effectiveness of the ISM Code, they have had limited success due to the methodological approaches adopted. In particular there have been no sustained studies that have attempted to examine in-depth the underlying factors influencing the implementation of the ISM Code.

Against this backdrop this research was set out to examine the underlying issues with the practice of OHS management in the maritime industry. Thus this thesis has sought to address the following question: *What is the impact of the ISM Code on the management of OHS in the maritime industry?* The literature review, drawing mainly on studies conducted on the management of OHS in various shore-based industries, revealed how commitment from managers and participation from employees were important prerequisites for effective management of workplace health and safety. It further highlighted that these prerequisites were in fact dependant on the social relations between the managers and employees in an organisation and the prevalent socio-economic conditions in the wider industry affecting

the general employment relations. Thus, the arguments in the extant literature steered this study to investigate the existence and role of these prerequisites in the maritime context. The study further investigated the deeper social and economic factors affecting the seafarers, such as their employment relations and their social relationships with their managers.

To answer the research question I took a case study approach using research techniques such as semi-structured interview, observation and documentary analysis. As described in section 3.1.3, my research studied the implementation of the ISM Code in practice in two companies involving fieldwork onboard two ships and the shore-based management office of the organisation in each case. In all I conducted interviews with 20 managers and 67 seafarers spread over 59 days of fieldwork. This research method yielded a rich source of data that enabled me to understand the practice of implementation of the ISM Code in the two organisations. By analysing the data it then engaged in a more theoretical discussion on the underlying social factors underpinning such practice.

Key findings

In this section I present the main findings from my study. First, it points out the way in which the managers and seafarers in the two companies studied perceived the purpose of the ISM Code differently. Then, it shows how their perceptions were the major influence to the way in which the Code was implemented in practice. Third, it identifies the presence of the two prerequisites of the management of OHS by locating the findings in relation to the managers' commitment and the employees' participation. Finally, it shows how this study went further and elucidated the way in which a range of underlying social factors had a major influence in the operation of the ISM Code.

Perceptions of the managers and seafarers

A number of key findings have emerged from this research, but perhaps most significantly it has clearly shown that the managers and seafarers have very different understandings of the way in which the ISM Code contributes to shipboard occupational health and safety, which in turn impacts upon how they implement it. While the managers believed that the Code was a managerial tool which for the benefit of workplace health and safety in their organisations requires to be imposed on the seafarers, the seafarers considered it as a mere

regulatory exercise and a bureaucratic overlay which is of little benefit to safeguarding OHS onboard ships.

The conflicting perspectives of management and shipboard workers were reflected in the way in which the managers found it difficult to get the seafarers to abide by the company's procedures and instructions in implementing the Code. During the discussion on the practice of risk assessment (section 5.2), for instance, it was shown that the managers were of the opinion that seafarers possessed an inherent tendency to 'take short-cuts' from the company's stated procedure and believed that it was mainly for this reason that there were injuries and accidents in their organisations. The implementation of the audit process in which the auditors' emphasis on scrutinising shipboard documentation with the intention to identify whether or not the seafarers were complying with the work procedures (section 7.1) reflected the same perception of the managers. The same viewpoint was also evident in relation to managers understanding of the practice of incident reporting (section 6.2). It showed how the managers felt that the seafarers chose not to effectively contribute in the incident reporting element of the company's SMS.

On the other hand the seafarers in the two organisations felt that they were generally capable of protecting themselves and their colleagues from workplace hazards. In their views, their knowledge about safe ways of working was entirely acquired from their work-based skills which they learnt through experiences and also from hands-on training given to them by their senior colleagues. They categorically pointed out that the company's written procedures and instructions did not contribute to their understanding of workplace hazards. As a result they felt that the implementation of the ISM Code made little impact on the management of safety in their day-to-day lives onboard and complained that the formal system made no room to accommodate these virtues.

The significance of this key finding is further elucidated and developed through the further findings of the study.

Operation of the ISM Code in practice

Importantly, it was found that the differences in understanding described above translate into differences in practices in the implementation of the Code. It showed that despite having a particular understanding of the function of the ISM Code, the seafarers did not

convey this to their managers. Workers filled in the paperwork as per the company's requirements and presented themselves as compliant and rule abiding employees.

My findings showed, importantly, that the reason for this disjunction between the seafarers' views and actions was largely due to their fear of losing their jobs. The analysis in section 5.3 on the practice of risk assessment, for instance, showed that the seafarers generally took special care in ensuring that the risk assessments were 'correctly' documented – as it helped them demonstrate to the managers and regulators that they were following the company's regulations. They felt that a lack of accuracy or an omission in record-keeping could make them vulnerable to losing their jobs and in extreme cases even lead to their criminalisation. As a result, accurate documentation by the seafarers in the two companies was considered as an unnecessary task for managing their health and safety yet important for their own protection.

With regard to incident reporting, however, the seafarers used their discretion on which incidents or near-miss occurrences to report. The analysis in section 6.3 showed that the seafarers, driven largely by the same fear, reported those which were clearly apparent or which were not likely to harm their or their colleagues' reputation. They felt that an honest implementation of this element of the Code could make them exceedingly susceptible to recriminations from the managers as well as regulators. They were thus particularly keen to hide the incident and near-miss occurrences which could indicate their professional shortcomings.

What was even more striking in my study (see section 5.2.2) was that in both companies the managers were largely conscious of the futility of this bureaucratic exercise as they were aware that the paper entries which reached them from ships did not reflect the onboard practice. Yet, these managers persisted with using this method of operating the ISM Code. The findings also brought to light that one of the reasons why accurate shipboard documentation was deemed essential was to meet the demands of certain key industry stakeholders. The analysis showed that among managers and seafarers it was generally believed that regulators, such as the PSC Inspectors and commercial players, such as Oil Major Inspectors, also place importance on checking documentation on ships to determine whether or not a ship has been compliant with the maritime rules and regulations and with the implementation of the ISM Code particularly.

From the analysis it is apparent that the operation of the ISM Code in the two organisations studied was mainly driven by auditing requirements which emphasised the need for a paper trail. The success or failure of the effectiveness of the implementation of the Code was judged by the level of documented evidence that could be produced. From the two case studies it emerged that the maintenance of the SMS was in a large part seen as a way of satisfying the various inspectors, including those from regulatory and commercial organisations as evidence of safe procedure followed on ships. These findings mirror those from other industries (see for example Frick *et al.*, 2000) that found managers to be over concerned with ensuring that the OHS management systems were in place, but paid insufficient attention to whether these systems were being implemented in a systematic manner.

While a central element of implementing a management system approach was continual improvement of the safety standard in the company, the evidence from my study suggests that the way in which this was operationalised failed to achieve the intended aim. The discussion in section 5.3.2 showed that it resulted in excessive bureaucratisation which, in particular, increased the workload on seafarers in terms of their having to prove their compliance with the system. More importantly, the intimate detail that the managers required from the seafarers especially in the implementation of the incident reporting system it produced an increased notion of vulnerability among them due to their fear of job insecurity and criminalisation.

My findings thus largely indicate that there are significant differences between the way the ISM Code was meant to operate and the way it was understood and operated in practice. The following section presents my main findings relating to the nature and role of the key prerequisites to effective OHS as practised in the maritime sector, namely management commitment and worker participation.

Managers' commitment and workers' participation

The three empirical chapters demonstrate that the managers in the organisations studied implemented detailed work procedures and also introduced various additional measures to supplement them. However, it was also shown that they operated a highly structured top-down management system in their organisations in which it was only they who took the

safety decisions and required the seafarers merely to abide by them. It was found that managers clearly operated from the assumption that they needed to lay down the procedures and instructions as the seafarers were neither keen nor capable of ensuring shipboard safety. As a consequence, a major element in the managers' approach to the management of OHS involved identifying ways to get seafarers to comply with the procedural requirements.

The managers, driven by this line of thinking, placed a significant focus on improving workers' personal qualities so that they could be turned into safe persons. Similar findings have been recorded in the research literature from studies conducted in shore based industries (see for example Nichols' (1997: 61-68) critical argument). The managers largely subscribed to the human error theory which assumes irrational worker behaviour, workers' lack of motivation and law breaking attitude and misapplication of a good rule as the main reasons for workplace injuries and accidents. As a result – being committed managers – they also took a number of measures to address these perceived failings. The behavioural based programme used in one of the companies is a reflection of this line of thinking. However, this also shifted the managers' priorities with regard to the management of OHS. It was evident from the study that they placed great emphasis on tackling the seafarers' behavioural attributes, at the expense of engaging in a participative form of OHS management in their organisations – identified in the research literature as a prerequisite for the management of workplace health and safety.

Arguably, it is not that the managers in the organisations studied did not show signs of commitment, but this particular version of their commitment did not engender the precondition for effective management of OHS. The only meaning that was attached to worker participation in the formal system was mere execution of the managers' instructions and orders on the shipboard work procedures. Perhaps not surprisingly, it was found that this led the seafarers to experience the implementation of the ISM Code as an imposition on them and thus they did not develop a sense of ownership of the management of shipboard OHS. This also had a major repercussion on how the seafarers could contribute in the management of OHS in the formal safety management system. As a result employee participation in the two companies was largely absent in its strict interpretation.

However, the discussion in section 8.2.3 revealed that the seafarers in the two organisations studied engaged in participative practices onboard. It showed how they engaged in communicating with each other at work and vicariously learning about their work from others' experience and generally sharing experiences on how to work efficiently and safely. Such onboard participatory practice however largely stayed within the confines of the ships – as though the seafarers as members of a community of practice operated their own safety management system. This was mainly because the formal system was structured in a way that made no room to utilise the significant potential of the seafarers' experience. Thus, the outcome of the discussion on whether the seafarers effectively participated in the management of OHS is paradoxical. While on the one hand there is evidence to show a significant participation from the seafarers in the day-to-day operation onboard ships, on the other, such participation in the two organisations did not form a part of the formal system that operated for managing workplace health and safety.

Underlying social determinants influencing the operation of the ISM Code

My study went further and revealed how the difference in the perceptions between the managers and seafarers and the operation of the ISM Code in the two organisations was dependant on a number of social determinants. It demonstrated that a sense of job security among seafarers, a high trust-relationships and free upward communication with their managers were the main underpinnings for effective management of OHS. It also revealed how social relations determined by organisational factors as well as relations of employment were important underpinnings for a participative style of management that was essential for the effective implementation of the ISM Code.

However, my findings showed that these social factors were largely absent in the two organisations. The discussion brought to light how the seafarers' fear of losing job impeded effective communication both from the ratings to senior officers (section 5.3.5) and from the senior officers to managers (section 6.3.1). They felt that their communication could expose their weaknesses and jeopardise their chances of keeping their employments. Based on this analysis the discussion in sections 8.1.1 and 8.2.2 revealed that the underlying factor contributing to this fear was the fact that workers were embedded in weak employment relationships. It showed that the seafarers' short-term temporary employment

was a major causal factor as it provoked fear in them with regard to their future employability.

It was argued that the seafarers' sense of vulnerability could be understood in the context of an unorganised workforce, i.e. they lacked any form of collective support, such as that provided by trade unions. My study drew on widely acknowledged academic sources (see for example Reilly *et al*., 1995) highlighting the roles played by trade union organisations and argued why the lack of trade union support in the maritime context failed to provide employment security to the seafarers. It identified that the absence of any regulatory steer to provide trade union support to the seafarers was the fundamental weakness in the industry. Drawing on the discussion on flagging out, it showed that effective functioning of trade unions in the maritime industry was challenging under the current regulatory and employment structure of the maritime industry.

The limited discretionary roles offered to the seafarers in the operation of the ISM Code and the nature of the communication between the managers and seafarers in the two organisations also reflected a low level of trust between them. The discussions in section 8.1.3 showed that the seafarers felt that the managers communicated mainly to pass orders and to find faults with the seafarers with the purpose of exposing their operational errors. The consequence of the low trust environment created by the managers was also reflected in the way the seafarers responded. The discussion in section 8.1.2 showed that the seafarers in the two organisations generally did not consider their managers as trustworthy and were deeply sceptical of some of the managers' ways of working. On the whole the environment in the two organisations resembled what Blau (1964) identified as a mere economic exchange process and in general not supportive of a participative management of OHS.

By placing this study in the wider context it shows that implementation of OHS management systems in industries which lack the sociological underpinnings poses danger of running into a self-defeating frivolous exercise. As cautioned by several scholars such as Frick *et al*. (2000) and Nichols and Tucker (2000), my study also shows that it needs to be borne in mind that a management systems approach – such as the one practised in the two companies in the implementation of the ISM Code – is merely the tool to execute the management of OHS, the success of which only partially lies in the effective

implementation of the system but mainly rely on the underlying social factors discussed above. While the intention to introduce the ISM Code and to implement it effectively are not wrong, there is a clear danger that the maritime community or indeed workers, managers and others in similar situation in other industries too may fail to achieve its purpose by placing too much emphasis on the detail of the implementation process and too little on the wider social issues such as industrial and employment relations factors.

While these are the key findings from this study, the following section points out how two further issues proved to have considerable influences in the way in which the Code was implemented in the two organisations. As these were not central to the focus of this thesis they are presented separately.

Supplementary Findings

The influences of management system

The findings from the study showed that the practice of the ISM Code in the two organisations followed a top-down approach in which the managers used various elements of the Code to increase managerial control over the seafarers. The increased focus on managerialism is not surprising as the Code heavily focused on the *management* of safety requiring the duty holders to better manage their workplaces and applying a considerably light touch to regulatory involvement and largely ignoring employee participation. The functional requirements of the Code, for instance, showed that its focus clearly pointed to increasing the power of the managers and making them more efficient in the act of managing safety in their organisations. These developments in the maritime industry has close analogy with the increasing importance placed on the use of management systems approach in various industries generally, in which it is seen as a panacea of solving an otherwise impenetrable problem of deregulation. The parallel influences of increased emphasis on *managerialism* and of the use of 'systems' approach in the safeguarding of workers' OHS made a considerable impact in the way the ISM Code was developed and operationalised in the maritime industry. It is thus apparent that the development of the Code is a reflection of this wider global influence.

However the weaknesses of implementing such narrow perspective of quality management systems are well established in the research literature. Drawing on a large body of international evidence Gunningham and Johnstone (1999: 46-53), for example, pointed out

how quality management systems could be potentially ineffective or even counter-productive in organisations in which it lacked management commitment and employee participation. In such cases operating quality management systems may result in bureaucratic dependencies and potentially shift the balance of power to the managers as these systems do very little to support employee participation in a way that the employees' voices can be heard by their managers. The net result thus gives managers added control, but, does not necessarily create conditions for providing with a safe working environment. These observations have close parallels with the findings from this study and go some way in explaining the limitation of developing a safety management system based on the principles of quality management system without taking into consideration the prerequisites of effective management of OHS.

While the implementation of the ISM Code mainly emphasised the management of safety by bringing the role of the managers to the forefront, it did not dismiss the role of the regulators altogether. Although the thesis has already discussed the drawbacks of the weak regulatory control in the industry, the following section revisits the discussion and identifies how withdrawal of the State control has affected the implementation of the Code in more than one way.

Oil Majors as surrogate regulators

Although the thesis did not investigate the effectiveness of the regulatory bodies in the maritime industry, the analysis in the three findings chapters provided several evidences on how the different regulatory involvement shaped the practice of management of health and safety in the two organisations.

As pointed out in sections 1.3.1, 1.3.3 and 2.1.3, the maritime States retained an element of regulatory control in the implementation of the ISM Code. The certification and verification process involving the Flag States and the Port State Control (PSC) were integral to the operationalisation of the ISM Code. With regard to the certification process the Flag States had to determine whether the policies and procedures developed by the managers were suitable for the purpose and also conduct subsequent routine verification of the standard of implementation. The PSC on the other hand had the authority to conduct unannounced inspection of ships on the level of compliance of the ISM Code.

However, the evidence from this study (sections 5.3.2, 7.1.2 and 7.2.2) showed that the Flag State and Port States safety inspections were far more rudimentary compared to how the Oil Majors practised their inspection and control over the two organisations. In spite of being commercial players and having no mandate on regulation their inspection standard was deemed by the seafarers as well as the managers as significantly more stringent than the standard of the State regulatory inspection. Moreover, their influence went beyond the ship inspection and surveillance. They influenced the implementation of various elements of the companies' SMSs including sensitive organisational matters such as the crew selection policy and the review of the company's SMS (see section 7.2.2).

While the Oil Majors had to increase their interest in the regulation to protect their public image (see discussion in section 2.1.3), arguably, they needed to do so because they could not rely on the inadequate and ineffective State regulatory control. It created a void and left the field open for other players to emerge as regulators. The Oil Majors thus stepped in to exercise a higher level of control than what the regulators in the oil tanker sector of the maritime industry were capable of offering. Such development in the tanker sector of the maritime industry is not entirely uncommon. As James *et al.* (2007) argued, with the shift in the balance of power as a consequence of economic globalisation it is feasible for the heads of supply chain to assume some of the statutory provisions on OHS regulation.

In summary, this study has generated a number of important findings, and in so doing has answered the research question. It has shown that managers and workers have very different understandings of the role of the ISM code, which in turn influences the ways in which they relate to it. Through detailed, in-depth analysis it has further been shown that these differences in understanding and practice in the implementation of the Code need in turn to be understood in the context of broader socio-economic and organisational factors. Importantly the findings, while emerging from the study of two specific companies, do not relate *per se* to the organisational arrangements of the companies themselves, but the wider context in which OHS in the maritime sector is practised. By bringing to light and discussing the broad underlying socio-economic factors affecting the operation of the ISM Code, this thesis has expanded the boundaries of research previously conducted on the subject in the maritime industry in a way that both contributes to academic knowledge and has significance for those in the industry.

Limitations of this study

As discussed in the methodology chapter (section 3.1.3), like most other doctoral theses this research was not free from limitations. It had the drawbacks of limited time and financial resources that was available for this project as well as of the limitations of conducting the study single-handedly. Some of the most apparent weak points of this study are highlighted below.

In all I spent 49 days on fieldwork on the four research voyages, averaging around 12 days on each ship. Although it produced a large amount of rich qualitative data, a longer period of time on each ship could have generated more in-depth data. In particular it could have given me the opportunity to conduct more onboard observations and allow some of the reluctant and shy seafarers to get familiar with me and possibly open up better during interviews.

In answering the research question it would have been useful to include some of the other players from the industry, such as representatives from trade union organisations and managers from crewing agencies. The former could have contributed in the understanding of the challenges faced by trade union organisations in influencing the management of OHS in this globalised environment. Similarly, the interviews with the crewing managers especially in the major labour supply nations could have been very useful in understanding the issues affecting the employment relations of seafarers.

Also, during my association with the maritime industry for 15 years I have worked in various capacities including being a tanker captain and a manager in the shore-based management office particularly involved in the operation of the ISM Code. From the beginning of this research I have been acutely aware of my special position and have made conscious effort to keep an open mind about the analysis and not bring in my prior knowledge into the research. Nonetheless, it is possible that on a few occasions my familiarity with the topic may have influenced the interpretation of the data. However, I am confident that the rigorous analysis method used in the study has not allowed that to compromise the authenticity of this study.

Finally, it is important to acknowledge the impacts of the limitations of the case study methodology used in this research. Based on the principles of case study selection, this research was conducted on two organisations. While it was never the intention to locate representative cases, evidences from my study suggest that the two organisations nonetheless were examples of the better end of the maritime industry. Besides being tanker operating companies, which are widely acknowledged as one of the safest sectors in the maritime industry, the analysis of the companies' PSC inspection records against the industry-wide average indicated their above-average safety standard. Moreover, these two organisations were well established, financially robust and engaged in business with Oil Majors which required high operating standards. Also, the fact that the managers of the two companies offered me unrestricted access to their archived documents and files, permitted me to interview their shore-based staff as well as seafarers and allowed me to sail onboard their ships for several days, indicated that they did not have anything to hide from an outsider closely observing their day-to-day activities.

Therefore, it is likely that the findings from this study have demonstrated the general factors affecting the management of OHS but it is possible that other companies may be facing additional challenges which were not captured in this study. Although this research is not a representative study of the wider industry, the deep theoretical understanding of the issues on OHS management that emerged from it outweighs the acknowledged limitations of the representativeness of the case study approach.

Recommendations

This study clearly points to the need of further work in this area. While it has contributed to the understanding of what influences the operation of the ISM Code, it is by no means exhaustive. As the weaknesses discussed in the previous section pointed out it is necessary to investigate the operation of the ISM Code on other sectors of the industry. It would be important to investigate such practices on ships trading other types of cargoes, such as bulk cargoes and containers, as there could be trade commodity specific issues influencing the way health and safety is managed on those ships. It is also important to expand the scope of any such study by looking into the views of other stakeholders, such as the trade union organisations, Flag State officials and crewing agents to appreciate their perspectives on the underlying issues that affect the implementation of the Code.

The finding from this study shows that the conceptual difference between the managers and seafarers on the operation of the ISM Code was largely caused by the weaknesses in employment relations of the seafarers. The conditions of temporary employment contract and the way in which the demographic features affected the stability in their employment is an important finding. However, more research needs to be conducted in this area to appreciate how employment relations in an organisation and demographic background of the seafarers influence their participation by looking at how other shipping companies may have able to circumvent this problem.

Authors such as Walters and Nichols (2007) pointed out that the presence of workplace trade union organisation is an important prerequisite for effective participatory style of management of OHS. Its absence in the maritime industry thus limits the opportunity for seafarers to engage in such participation. Moreover, the study also shows that the lack of trade union organisations' influence at the workplace level is not effectively replaced by any other form of support. This kind of situation requires further investigation. It would be useful to be able to determine whether alternative forms of worker engagement are or could be practised in the industry.

During the course of this study the long-awaited Maritime Labour Convention (ILO, 2006) was introduced at the ILO. While it is a significant step in addressing the core issues of seafarers' working conditions, its effectiveness needs to be assessed once it is implemented.

In light of what emerged from the study with respect to the weaknesses in the employment relations of seafarers and industrial relations generally, it indicates that due consideration be given to the appreciation of the underlying concerns of employment relations of seafarers and industrial relations generally. The study revealed that the managers in the two shipping companies were not formally trained in the management of OHS instead they were generally qualified either as a ship's chief engineer or captain. Studies from the OHS literature, however, draw attention to the importance of OHS training for managers and safety practitioners involved in the management of organisation's health and safety (see for example Booth *et al.*, 1991). Especially in view of the absence of trade union organisations in the maritime industry it is recommended that a training programme is included in the STCW convention for managers in shipping companies with direct responsibility for the

implementation of the ISM Code. It should include, among other elements, an overall appreciation of the prerequisites for OHS management which should provide an insight into how personal leadership qualities and a participatory style of management are important for an effective implementation of the ISM Code.

Last, it is recommended that the IMO gives due consideration to the wording of the ISM Code. Given the absence in the current text of the Code of a clear direction in relation to a participatory approach, greater emphasis should be placed on the contribution of seafarers to the management of health and safety. Such a textual adjustment would be in line with well-established regulations and voluntary models of systematic occupational health and safety management, such as those found in the EU Directive 89/391 (EEC, 1989) and the ILO guideline on occupational safety and health management systems (ILO, 2001b). This would also provide the maritime community with the clear focus that is needed to promote both a systematic and participatory approach to the management of OHS.

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Appendix – A: [The ISM Code]

International Safety Management (ISM) Code 2002

Preamble

1 The purpose of this Code is to provide an international standard for the safe management and operation of ships and for pollution prevention.

2 The Assembly adopted resolution A.443(XI), by which it invited all Governments to take the necessary steps to safeguard the shipmaster in the proper discharge of his responsibilities with regard to maritime safety and the protection of the marine environment.

3 The Assembly also adopted resolution A.680(17), by which it further recognized the need for appropriate organization of management to enable it to respond to the need of those on board ships to achieve and maintain high standards of safety and environmental protection.

4 Recognizing that no two shipping companies or shipowners are the same, and that ships operate under a wide range of different conditions, the Code is based on general principles and objectives.

5 The Code is expressed in broad terms so that it can have a widespread application. Clearly, different levels of management, whether shore-based or at sea, will require varying levels of knowledge and awareness of the items outlined.

6 The cornerstone of good safety management is commitment from the top. In matters of safety and pollution prevention it is the commitment, competence, attitudes and motivation of individuals at all levels that determines the end result.

PART A – IMPLEMENTATION

1 GENERAL

1.1 Definitions
The following definitions apply to parts A and B of this Code.
1.1.1 "International Safety Management (ISM) Code" means the International Management Code for the Safe Operation of Ships and for Pollution Prevention as adopted by the Assembly, as may be amended by the Organization.
1.1.2 "Company" means the owner of the ship or any other organization or person such as the manager, or the bareboat charterer, who has assumed the

responsibility for operation of the ship from the shipowner and who, on assuming such responsibility, has agreed to take over all duties and responsibility imposed by the Code.

1.1.3 "Administration" means the Government of the State whose flag the ship is entitled to fly.

1.1.4 "Safety management system" means a structured and documented system enabling Company personnel to implement effectively the Company safety and environmental protection policy.

1.1.5 "Document of Compliance" means a document issued to a Company which complies with the requirements of this Code.

1.1.6 "Safety Management Certificate" means a document issued to a ship which signifies that the Company and its shipboard management operate in accordance with the approved safety management system.

1.1.7 "Objective evidence" means quantitative or qualitative information, records or statements of fact pertaining to safety or to the existence and implementation of a safety management system element, which is based on observation, measurement or test and which can be verified.

1.1.8 "Observation" means a statement of fact made during a safety management audit and substantiated by objective evidence.

1.1.9 "Non-conformity" means an observed situation where objective evidence indicates the non-fulfilment of a specified requirement.

1.1.10 "Major non-conformity" means an identifiable deviation that poses a serious threat to the safety of personnel or the ship or a serious risk to the environment that requires immediate corrective action and includes the lack of effective and systematic implementation of a requirement of this Code.

1.1.11 "Anniversary date" means the day and month of each year that corresponds to the date of expiry of the relevant document or certificate.

1.1.12 "Convention" means the International Convention for the Safety of Life at Sea, 1974, as amended.

1.2 Objectives

1.2.1 The objectives of the Code are to ensure safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment, in particular to the marine environment and to property.

1.2.2 Safety management objectives of the Company should, inter alia:

.1 provide for safe practices in ship operation and a safe working environment;

.2 establish safeguards against all identified risks; and

.3 continuously improve safety management skills of personnel ashore and

aboard ships, including preparing for emergencies related both to safety and environmental protection.

1.2.3 The safety management system should ensure:

.1 compliance with mandatory rules and regulations; and
.2 that applicable codes, guidelines and standards recommended by the Organization, Administrations, classification societies and maritime industry organizations are taken into account.

1.3 Application

The requirements of this Code may be applied to all ships.

1.4 Functional requirements for a safety management system
Every Company should develop, implement and maintain a safety management system which includes the following functional requirements:

.1 a safety and environmental-protection policy;
.2 instructions and procedures to ensure safe operation of ships and protection of the environment in compliance with relevant international and flag State legislation;
.3 defined levels of authority and lines of communication between, and amongst, shore and shipboard personnel;
.4 procedures for reporting accidents and non-conformities with the provisions of this Code;
.5 procedures to prepare for and respond to emergency situations; and
.6 procedures for internal audits and management reviews.

2 SAFETY AND ENVIRONMENTAL-PROTECTION POLICY

2.1 The Company should establish a safety and environmental-protection policy which describes how the objectives given in paragraph 1.2 will be achieved.
2.2 The Company should ensure that the policy is implemented and maintained at all levels of the organization, both ship-based and shore-based.

3 COMPANY RESPONSIBILITIES AND AUTHORITY

3.1 If the entity who is responsible for the operation of the ship is other than the owner, the owner must report the full name and details of such entity to the Administration.
3.2 The Company should define and document the responsibility, authority

and interrelation of all personnel who manage, perform and verify work relating to and affecting safety and pollution prevention.

3.3 The Company is responsible for ensuring that adequate resources and shore-based support are provided to enable the designated person or persons to carry out their functions.

4 DESIGNATED PERSON(S)

To ensure the safe operation of each ship and to provide a link between the Company and those on board, every Company, as appropriate, should designate a person or persons ashore having direct access to the highest level of management. The responsibility and authority of the designated person or persons should include monitoring the safety and pollution-prevention aspects of the operation of each ship and ensuring that adequate resources and shore-based support are applied, as required.

5 MASTER'S RESPONSIBILITY AND AUTHORITY

5.1 The Company should clearly define and document the master's responsibility with regard to:

.1 implementing the safety and environmental-protection policy of the Company;
.2 motivating the crew in the observation of that policy;
.3 issuing appropriate orders and instructions in a clear and simple manner;
.4 verifying that specified requirements are observed; and
.5 reviewing the safety management system and reporting its deficiencies to the shore-based management.

5.2 The Company should ensure that the safety management system operating on board the ship contains a clear statement emphasizing the master's authority. The Company should establish in the safety management system that the master has the overriding authority and the responsibility to make decisions with respect to safety and pollution prevention and to request the Company's assistance as may be necessary.

6 RESOURCES AND PERSONNEL

6.1 The Company should ensure that the master is:

.1 properly qualified for command;
.2 fully conversant with the Company's safety management system; and

.3 given the necessary support so that the master's duties can be safely performed.

6.2 The Company should ensure that each ship is manned with qualified, certificated and medically fit seafarers in accordance with national and international requirements.

6.3 The Company should establish procedures to ensure that new personnel and personnel transferred to new assignments related to safety and protection of the environment are given proper familiarization with their duties. Instructions which are essential to be provided prior to sailing should be identified, documented and given.

6.4 The Company should ensure that all personnel involved in the Company's safety management system have an adequate understanding of relevant rules, regulations, codes and guidelines.

6.5 The Company should establish and maintain procedures for identifying any training which may be required in support of the safety management system and ensure that such training is provided for all personnel concerned.

6.6 The Company should establish procedures by which the ship's personnel receive relevant information on the safety management system in a working language or languages understood by them.

6.7 The Company should ensure that the ship's personnel are able to communicate effectively in the execution of their duties related to the safety management system.

7 DEVELOPMENT OF PLANS FOR SHIPBOARD OPERATIONS

The Company should establish procedures for the preparation of plans and instructions, including checklists as appropriate, for key shipboard operations concerning the safety of the ship and the prevention of pollution. The various tasks involved should be defined and assigned to qualified personnel.

8 EMERGENCY PREPAREDNESS

8.1 The Company should establish procedures to identify, describe and respond to potential emergency shipboard situations.

8.2 The Company should establish programmes for drills and exercises to prepare for emergency actions.

8.3 The safety management system should provide for measures ensuring that the Company's organization can respond at any time to hazards, accidents and emergency situations involving its ships.

9 REPORTS AND ANALYSIS OF NON-CONFORMITIES, ACCIDENTS AND HAZARDOUS OCCURRENCES

9.1 The safety management system should include procedures ensuring that non-conformities, accidents and hazardous situations are reported to the Company, investigated and analysed with the objective of improving safety and pollution prevention.

9.2 The Company should establish procedures for the implementation of corrective action.

10 MAINTENANCE OF THE SHIP AND EQUIPMENT

10.1 The Company should establish procedures to ensure that the ship is maintained in conformity with the provisions of the relevant rules and regulations and with any additional requirements which may be established by the Company.

10.2 In meeting these requirements the Company should ensure that:

.1 inspections are held at appropriate intervals;

.2 any non-conformity is reported, with its possible cause, if known;

.3 appropriate corrective action is taken; and

.4 records of these activities are maintained.

10.3 The Company should establish procedures in its safety management system to identify equipment and technical systems the sudden operational failure of which may result in hazardous situations. The safety management system should provide for specific measures aimed at promoting the reliability of such equipment or systems. These measures should include the regular testing of stand-by arrangements and equipment or technical systems that are not in continuous use.

10.4 The inspections mentioned in 10.2 as well as the measures referred to in 10.3 should be integrated into the ship's operational maintenance routine.

11 DOCUMENTATION

11.1 The Company should establish and maintain procedures to control all documents and data which are relevant to the safety management system.

11.2 The Company should ensure that:

.1 valid documents are available at all relevant locations;

.2 changes to documents are reviewed and approved by authorized personnel;

and

.3 obsolete documents are promptly removed.

11.3 The documents used to describe and implement the safety management system may be referred to as the Safety Management Manual. Documentation should be kept in a form that the Company considers most effective. Each ship should carry on board all documentation relevant to that ship.

12 COMPANY VERIFICATION, REVIEW AND EVALUATION

12.1 The Company should carry out internal safety audits to verify whether safety and pollution-prevention activities comply with the safety management system.
12.2 The Company should periodically evaluate the efficiency of and, when needed, review the safety management system in accordance with procedures established by the Company.
12.3 The audits and possible corrective actions should be carried out in accordance with documented procedures.
12.4 Personnel carrying out audits should be independent of the areas being audited unless this is impracticable due to the size and the nature of the Company.
12.5 The results of the audits and reviews should be brought to the attention of all personnel having responsibility in the area involved.
12.6 The management personnel responsible for the area involved should take timely corrective action on deficiencies found.

PART B – CERTIFICATION AND VERIFICATION

13 CERTIFICATION AND PERIODICAL VERIFICATION

13.1 The ship should be operated by a Company which has been issued with a Document of Compliance or with an Interim Document of Compliance in accordance with paragraph 14.1, relevant to that ship.
13.2 The Document of Compliance should be issued by the Administration, by an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government to the Convention to any Company complying with the requirements of this Code for a period specified by the Administration which should not exceed five years. Such a document should be accepted as evidence that the Company is capable of complying with the requirements of this Code.
13.3 The Document of Compliance is only valid for the ship types explicitly indicated in the document. Such indication should be based on the types of ships on which the initial verification was based. Other ship

types should only be added after verification of the Company's capability to comply with the requirements of this Code applicable to such ship types. In this context, ship types are those referred to in regulation IX/1 of the Convention.

13.4 The validity of a Document of Compliance should be subject to annual verification by the Administration or by an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government within three months before or after the anniversary date.

13.5 The Document of Compliance should be withdrawn by the Administration or, at its request, by the Contracting Government which issued the Document when the annual verification required in paragraph 13.4 is not requested or if there is evidence of major non-conformities with this Code.

13.5.1 All associated Safety Management Certificates and/or Interim Safety Management Certificates should also be withdrawn if the Document of Compliance is withdrawn.

13.6 A copy of the Document of Compliance should be placed on board in order that the master of the ship, if so requested, may produce it for verification by the Administration or by an organization recognized by the Administration or for the purposes of the control referred to in regulation IX/6.2 of the Convention. The copy of the Document is not required to be authenticated or certified.

13.7 The Safety Management Certificate should be issued to a ship for a period which should not exceed five years by the Administration or an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government. The Safety Management Certificate should be issued after verifying that the Company and its shipboard management operate in accordance with the approved safety management system. Such a Certificate should be accepted as evidence that the ship is complying with the requirements of this Code.

13.8 The validity of the Safety Management Certificate should be subject to at least one intermediate verification by the Administration or an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government. If only one intermediate verification is to be carried out and the period of validity of the Safety Management Certificate is five years, it should take place between the second and third anniversary dates of the Safety Management Certificate.

13.9 In addition to the requirements of paragraph 13.5.1, the Safety Management Certificate should be withdrawn by the Administration or, at the request of the Administration, by the Contracting Government which has

issued it when the intermediate verification required in paragraph 13.8 is not requested or if there is evidence of major non-conformity with this Code.

13.10 ,Notwithstanding the requirements of paragraphs 13.2 and 13.7, when the renewal verification is completed within three months before the expiry date of the existing Document of Compliance or Safety Management Certificate, the new Document of Compliance or the new Safety Management Certificate should be valid from the date of completion of the renewal verification for a period not exceeding five years from the date of expiry of the existing Document of Compliance or Safety Management Certificate.

13.11 ,When the renewal verification is completed more than three months before the expiry date of the existing Document of Compliance or Safety Management Certificate, the new Document of Compliance or the new Safety Management Certificate should be valid from the date of completion of the renewal verification for a period not exceeding five years from the date of completion of the renewal verification."

14 INTERIM CERTIFICATION

14.1 An Interim Document of Compliance may be issued to facilitate initial implementation of this Code when:

.1 a Company is newly established; or
.2 new ship types are to be added to an existing Document of Compliance,

following verification that the Company has a safety management system that meets the objectives of paragraph 1.2.3 of this Code, provided the Company demonstrates plans to implement a safety management system meeting the full requirements of this Code within the period of validity of the Interim Document of Compliance. Such an Interim Document of Compliance should be issued for a period not exceeding 12 months by the Administration or by an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government. A copy of the Interim Document of Compliance should be placed on board in order that the master of the ship, if so requested, may produce it for verification by the Administration or by an organization recognized by the Administration or for the purposes of the control referred to in regulation IX/6.2 of the Convention. The copy of the Document is not required to be authenticated or certified.

14.2 An Interim Safety Management Certificate may be issued:

.1 to new ships on delivery;
.2 when a Company takes on responsibility for the operation of a ship which is new to the Company; or
.3 when a ship changes flag.

Such an Interim Safety Management Certificate should be issued for a period not exceeding 6 months by the Administration or an organization recognized by the Administration or, at the request of the Administration, by another Contracting Government.

14.3 An Administration or, at the request of the Administration, another Contracting Government may, in special cases, extend the validity of an Interim Safety Management Certificate for a further period which should not exceed 6 months from the date of expiry.
14.4 An Interim Safety Management Certificate may be issued following verification that:

.1 the Document of Compliance, or the Interim Document of Compliance, is relevant to the ship concerned;
.2 the safety management system provided by the Company for the ship concerned includes key elements of this Code and has been assessed during the audit for issuance of the Document of Compliance or demonstrated for issuance of the Interim Document of Compliance;
.3 the Company has planned the audit of the ship within three months;
.4 the master and officers are familiar with the safety management system and the planned arrangements for its implementation;
.5 instructions, which have been identified as being essential, are provided prior to sailing; and
.6 relevant information on the safety management system has been given in a working language or languages understood by the ship's personnel.

15 VERIFICATION

15.1 All verifications required by the provisions of this Code should be carried out in accordance with procedures acceptable to the Administration, taking into account the guidelines developed by the Organization.

16 FORMS OF CERTIFICATES

16.1 The Document of Compliance, the Safety Management Certificate, the Interim Document of Compliance and the Interim Safety Management Certificate should be drawn up in a form corresponding to the models given

in the appendix to this Code. If the language used is neither English nor French, the text should include a translation into one of these languages.

16.2 In addition to the requirements of paragraph 13.3, the ship types indicated on the Document of Compliance and the Interim Document of Compliance may be endorsed to reflect any limitations in the operations of the ships described in the safety management system.

<div align="right">Source: IMO Website</div>

Appendix – B: [Fieldwork Access Letter]

Syamantak Bhattacharya
C/o The Seafarers' International Research Centre
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E-mail: bhattacharyas1@cf.ac.uk
Website: www.sirc.cf.ac.uk

To,

Mr. ....

Director ....

.... Shipping Company

Request for a meeting

Dear Sir,

I am a PhD student at the Seafarers International Research Centre (SIRC), Cardiff University, undertaking research into the operation of the International Safety Management (ISM) Code with special reference to risk management, accident reporting and safety management review. My study requires the participation of two leading shipping companies. In each of the companies the research will involve a series of confidential and anonymous interviews across the hierarchy within the company focussed on the operation of the ISM Code.

I have studied details of a number of shipping companies and their ships in the Lloyds Fairplay Directory (2005–2006) and the publicly available 'equasis' website. In choosing the companies for this research, I have paid particular attention to the type and size of the companies and the types and sizes of their ships. After a careful assessment, I found your company profile ideally suited to my research.

As you will note from my enclosed *curriculum vitae* I have extensive experience within the industry. Starting from a deck cadet I progressed to become ship master and subsequently a manager. During the 15 years I have been in the industry I have experienced a wide diversity of safety practices both in management and onboard operation. This has motivated me to study occupational health and safety in the industry from an academic viewpoint in the hope of gaining a deeper understanding of the subject. My aim is to produce research that will add to the understanding of the practice and operation of the ISM Code in a way that will be of value to companies, maritime administrators and policy makers.

I appreciate that you and your colleagues are extremely busy and I would be very grateful if you could spare some time to meet with me in order to discuss the possibility of your Company taking part in this research. I eagerly await your kind response and take this opportunity to wish you a Happy Easter.

Yours sincerely

Capt S Bhattacharya
Dated: XX April 2006

The operation of the ISM Code in the maritime industry

A PhD project by:
Capt. Syamantak Bhattacharya

c/o Seafarers International Research Centre (SIRC), Cardiff University

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The operation of the ISM Code in the maritime industry

Aim

This research aims to understand the effectiveness of self-regulated occupational health and safety (OHS) management systems by focussing on the example of the shipping industry.

It will study the operation of the ISM Code and analyse its ability to improve OHS matters in the industry keeping in mind the changing trends in shipping and working lives of seafarers.

Confidentiality

The research is an independent academic venture towards my PhD at the Cardiff University.

The data and the findings will be completely confidential; names of personnel, companies and the ships will not be identified in my thesis or in any future publication.

Method

The research would be split between company office and two company vessels at sea.

Office-based research: will include confidential and anonymous interviews with the Safety Managers and Technical Managers who are in charge of day-to-day ship operation and the study of some Company Safety Management System files. The participation of the office staff will only be undertaken on a voluntary basis.

Onboard research: will involve confidential and anonymous interviews with seafarers of different ranks and the observation of some of their regular activities. All such observation will be conducted overtly and with relevant onboard permission. In the course of the study every effort will be made not to interfere with the daily running of the ship. On average voyages will be of five days duration. The participation of seafarers will only be undertaken on a voluntary basis.

Appendix – C: [Research Informed Consent Form]

RESEARCH   INFORMED   CONSENT   FORM

I, …………………………………………………….................................. (Name)

of ……………………………………………….............................. (Company), have
agreed to participate in this research project on the operation of International Safety
Management (ISM) Code voluntarily which is being conducted by Capt. Syamantak
Bhattacharya.

I have / have not* agreed to a voice recording of this interview between me and the
researcher.

The objectives and purpose of the exercise have been clearly explained to me and I have been
assured of the confidentiality and anonymity of the interviews. I therefore give permission
for any appropriate use of the information I give in any subsequent writings and publications.

Signed ………………………………….

Dated …………………………………..

---

* please delete as appropriate

Appendix – D: [Ethical Committee Approval Letter]

Appendix – E: [The Interview Schedules]

INTERVIEW SCHEDULES

Part: 1 [Interview Schedule for Managers]

Basic Facts:

1. Can you briefly talk about yourself, where are you from?
2. How long have you been in the industry?
3. How long have you been working in the company and in this position?
4. What was you previous position?
5. Were you sailing prior to that?
6. What is the official title of your job?
7. What all tasks are you responsible for?
8. How many employees are you responsible for?
9. How many ships do you manage/ supervise?
10. What are your specific responsibilities?
    a. Are you the Designated Person Ashore?
    b. In that case, do you have any special responsibility?
    c. Do you look after the implementation of the ISM Code?
11. Who do you report to?
12. Which part of your job do you consider most demanding and why?

Risk Assessment:

13. How often do you communicate with the ships in the fleet?
    a. How?
    b. What do you discuss?
    c. Do they speak to you about shipboard risk?
14. How often do you visit them?
    a. What do you when you are there?
    b. Do you manage to visit ships as often as the procedures require?
    c. Do you consider that ship visits are useful?
15. Would you consider that maritime industry generally as risky?
    a. Why?
16. How would you rate the safety standard of your company?
    a. Why?
    b. Are there any special features of your company that makes it (un)safe?
17. In the last one year have you had any incident?
    a. What sort were they?
    b. How did they happen?

18. Who were at fault?

    a. Why do you think so?

19. How could you prevent those?

20. How would you rate the company's SMS?

    a. Would you consider that the SMS is sufficient for managing shipboard risks?

    b. Do you know who all contributed in developing it?

21. In practice, who all contribute to risk assessment?

    a. How is the office staff involved?

    b. How is the ship staff involved in this?

    c. Anyone else?

22. What training do you provide to office staff for assessing risk?

    a. How?

    b. Are they relevant?

    c. If no, would you have found certain trainings useful?

23. What training do you provide to sea staff

    a. What are they specifically aimed at it?

    b. Onboard or ashore?

    c. Are they beneficial?

24. How do you assist the ships in assessing risk?

25. How do you encourage sea staff to assess risk prior to their tasks?

    a. Example?

    b. Do they comply?

26. What do you do if you find that risk assessment is not done properly?

    a. How do you check whether your colleagues at sea are in fact assessing risk?

    b. Is there any complain from the seafarers?

27. Can you think of any reason why seafarers may not comply with the risk assessment if it is meant for their benefits?

    a. Are all seafarers same?

    b. Is there any specific issue because of which seafarers find it hard to comply?

28. Can you manage to comply with the SMS yourself?

    a. Always?

    b. Completely?

    c. Is there any specific issue that impedes safety compliance in the office?

29. How often do you hold office meetings and discuss safety/ risk assessment issues?

30. How do you contribute in such meetings?

    a. Can you please remember what happened in the last meeting?

    b. How do you follow it up?

31. Do you look at the shipboard meeting reports?

    a. Who all does?

    b. For what?

32. How do you find the reports of the shipboard meetings?

    a. How frank are the sea staffs in the safety meetings?

    b. Please could you show me some examples?

Incident Reporting:

33. Why do you have incident reporting system?

34. How do you practice it?

35. Does it help reduce the number of incidents?

    a. How?

36. How often do you get incident reports?

    a. What kind?

37. Do you find that your colleagues at sea are reporting all incidents/ near-miss occurrences?

38. What problems do you face in receiving incident reports?

39. If not, what do you think is the problem?

    a. Please could you provide some examples?

    b. How do you address it?

40. How does the office encourage the ships to report?

    a. No-blame?

    b. Affect promotion?

    c. Please could you show an instance of such encouragements?

41. Do you consider that the reporting form is easy to fill in?

42. Do you give any training to the sea staff particularly for this reporting procedure?

    a. What kind?

    b. How?

43. What happens in the office when such reports reach here?

    a. Do you involve any external party?

    b. Who studies such reports in this office?

44. Do you hold any meeting?

45. Who attends such meeting?

46. Generally, who all contribute to it?

    a. MD?

    b. All departments?

    c. Only Safety Manager?

47. What training is provided for the office staff to analyse such reports?

    a. Do you feel you need any more training?

48. How do you follow up on these reports?

    a. Circulars/ e-mails?

49. Who all are involved in this follow up process?

    a. MD/ Managers?

50. What happens after that?

    a. Can you please share examples of responses to such reports?

    b. Actions taken?

Audit:

51. How often do you conduct audits on ships?

52. Who selects the auditors and on what basis?

    a. MD?

    b. Others?

53. Who conducts these audits?

54. Do you audit yourself?

    a. Please provide examples.

55. What would you say is the purpose of conducting audits?

56. What do auditors actually do?

    a. What is the main focus?

    b. Why?

    c. Please could you share your experience with conducting audit?

57. How is the audit report dealt with?

    a. Do the auditors meet the relevant office staff after the audit?

    b. Who investigates the report in the office?

58. Please could you explain how an audit report was dealt with?

Review:

59. How often do you review your management system?

60. Who all contribute to it?

    a. Do you?

61. How do you urge the seafarers to contribute?

62. Do captains contribute?

    a. Why (not)?

    b. How do people find time out from their regular jobs to carry out reviews?

    c. Are they useful?

63. Where do you get the maximum input from?

    a. Why do you think?

64. What do you do with the reviews?

65. Would you call this an easy or a complex procedure?

    a. Why?

    b. Please could you show example of a review from start to end?

66. Finally, would like to add something?

Part: 2 [Interview Schedule for Senior Officers]

Basic Facts:

1. Where do you come from?

2. How long have you been at sea?

3. For how many years have you sailing in this rank?

4. For how long have you been sailing on this ship?

5. How is your contract of employment?

6. How long have you been employed by this company?

7. (For contracted employees only) Do you plan to return to this company?

    a. Why/ or why not?

8. Do you feel anxious of keeping your job/ getting next job?

9. What is the exact nature of your task?

10. Which part of your job do you consider most demanding, why?

Risk Assessment:

11. Do you consider that maritime industry is generally dangerous?

    a. Why?

12. Is this a safe ship?

    a. Why?

13. What do you consider as the most important elements of ship safety?

    a. Officers?

    b. Ratings?

14. How safely do you conduct your day-to day task?

15. What do you do in practice?

    a. Consult procedures written in SMS?

16. Do you feel that the ratings and junior officers work safely?

17. Do you know about any unsafe practice on this ship?

    a. How?

    b. Why does it occur?

18. Have you had any injury/ incident on this ship?

    a. Please could you tell me about it?

19. How could it be prevented?

20. Generally speaking, how could you make this ship safer?

21. Does the management provide you with any assistance?

    a. How?

    b. Do you consider that the assistance is adequate?

    c. What more could they offer?

22. How do you communicate with the managers?

    a. Is the Designated Person Ashore aware of all ship's requirements?

    b. Who do you communicate with most?

23. How do you practice risk assessment on this ship?

    a. Does it contribute to safety effectively?

    b. How?

    c. Who all are involved in the assessment?

24. Do you or others have any special training for the purpose?

25. Who is expected to contribute?

    a. Can a rating have a say, how?

26. Is the checklist type assessment effective?

    a. Why do you say that?

27. What is the main purpose of company's risk assessment system?

    a. Is it helpful?

    b. Why or why not?

    c. Please could you give me an example?

28. Do the managers provide any support?

    a. How?

    b. Does it help?

    c. Can you discuss with the managers freely?

29. When do you conduct risk assessment?

    a. Every time?

    b. Are you expected to carry out such assessment every time for every job?

30. How do you think can one improve the company's risk assessment system?

Incident Reporting:

31. How does the incident reporting system work in your department?

32. If you discover a minor incident/ injury – what do you do?

33. What training did you receive in conducting this task?

34. Who all can make such reports?

    a. How?

    b. What problems he may encounter in making such a report?

    c. How do you motivate/ encourage your crew to report to you?

35. Do you report all types of incidents?

    a. Every time?

    b. Do you face any concern?

36. What do you feel about reporting incidents?

    a. Please could you explain?

    b. Any concerns in particular?

37. What types of incidents and accidents do you generally report?

    a. Please could you give some recent examples?

38. What about reporting near-miss occurrences?

    a. Is it any different?

    b. Do you have recent examples?

    c. Is this of any concern?

39. What kind of response do you get from the office after reporting?

    a. How do they reply to your reporting?

    b. How do they encourage reporting?

    c. Do they take any action on reporting?

40. Have you reported from this ship?

    a. Please could you share you experience with me?

41. How do you feel that the reporting practice could improve?

Audit:

42. In the last audit which all areas did the auditor focus on?

    a. How much time did he take to audit the ship?

43. What are the typical questions that he/she asked?

44. What do you feel was the main objective of the audit?

45. How were you involved in preparing for it?

46. How do you generally prepare for such audits?

    a. How long does it take to prepare?

    b. Do the ratings contribute?

47. Does the audit improve safety on this ship?

    a. How?

    b. Why not?

48. What do you do after an audit is completed?

Review:

49. What practice do you follow to conduct review of the SMS?

50. Who contributes to this review?

    a. Junior Officers?

    b. Ratings?

51. Have you carried one out on this ship?

    a. Can you please show/ explain it?

52. How much time does it take to review?

53. What is the response from the managers?

54. Do you consider that your views are important to the managers?

Part: 3 [Interview Schedule for Junior Officers and Ratings]

Basic Facts:

1. Where are you from?

2. How long have you been at sea?

3. For how many years have you sailing in this rank?

4. For how long have you been sailing on this ship?

5. How is your contract of employment?

6. How long have you been employed by this company?

7. (For contracted employees only) Do you plan to return to this company?

    a. Why/ or why not?

8. Do you feel anxious of keeping your job/ getting next job?

9. What is the exact nature of your task?

    a. What are your main activities?

Risk Assessment:

10. Do you consider ships are generally dangerous workplaces?

    a. What are the sources of hazards?

11. Do you think that this is a safe ship?

    a. Why/ why not?

12. Have you had any injury/ incident on this ship?

    a. Please could you tell me about it?

    b. How about your fellow ship-mates?

13. Would you say that you give priority to health and safety?

    a. Always?

    b. Every time?

    c. If not, what has come before safety?

14. What would you say is the most dangerous part of your job?

    a. Why?

15. How could you make it safer?

16. Do you know how you could face hazards at work generally?

    a. When working aloft?

    b. When in the tank?

    c. When using the welding machine?

17. Whose duty is it to ensure that work is being conducted safely?

18. What is the most helpful source of information for you to work safely?

    a. Could you speak to your colleagues?

    b. Who?

19. Could you speak to the senior officer to express your concerns?

    a. Who?

    b. Do you have any concern?

20. What role do you play to ensure that you and your colleagues are safe?

21. How do you contribute in Safety Meetings?

    a. Raise Points?

    b. If not, why?

    c. Do you know who represents you in such meetings?

    d. Does he bring up all the points that you convey to him?

22. What do you think about the company's risk assessment system?

    a. Is it effective?

    b. Why?

23. Do you consider that the checklists are useful?

    a. How?

24. Do you use formal checklists before your work started?

    a. Every time?

25. If you saw some hazard, could you tell a senior officer?

    a. Who is it in your case?

    b. Without any concern?

    c. Please could you give an example?

Incident Reporting:

26. Do you know anything about the incident/ near-miss reporting procedure?

27. What do you consider as an injury/ incident/ near-miss occurrence?

28. What are you expected to report?

29. Have you ever made any reporting or contributed to it?

    a. How?

    b. Please could you share your experience?

30. Who did you report to?

31. What response do you get?

    a. Angry?

    b. Upset?

    c. Encouragement?

32. Did you ever fill in any reporting form?

    a. Please could you share your experiences?

Safety Audits:

33. In the last audit what were the items checked by the auditor?

34. Did he/she inquire from you about the procedures you follow at work?

35. Do you see that operation of the ship becomes any safer after an audit?

36. Generally how do you prepare for an audit?

37. What happens after an audit?

Review:

38. How are you involved in reviewing the SMS?

39. Have you ever read the SMS?

    a. Where are these kept?

    b. Which part of the SMS have you studied?

40. Have you suggested any change to the SMS?

    a. Please could you share some examples?