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Original article

Measuring Safety Culture on Ships Using Safety Climate: A Study among Indian Officers *

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Abstract

Workplace safety continues to be an area of concern in the maritime industry due to the international nature of the operations. The effectiveness of extensive legislation to manage shipboard safety remains in doubt. The focus must therefore shift towards the human element - seafarers and their perceptions of safety. The study aims to understand the alignment that exists between safety culture and safety climate on board ships as perceived by seafarers. The underlying factors of safety climate were identified using factor analysis which isolated seven factors - Support on Safety, Organizational Support, Resource Availability, Work Environment, Job Demands, 'Just' Culture, and Safety Compliance. The perception of safety level of seafarers was found to be low indicating the existence of misalignments between safety culture values and the actual safety climate. The study also reveals that the safety perceptions of officers employed directly by ship owners and those by managers do not differ significantly, nor do they differ between senior and junior officers. A shift in perspective towards how seafarers themselves feel towards safety might provide more effective solutions – instead of relying on regulations - and indeed aid in reducing incidents on board. This paper details practical suggestions on how to identify the factors that contribute towards a better safety climate on board ships.

Keywords: Safety, Culture, Climate, Indian, Support, No blame

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I. Introduction

The International Labour Organization (ILO) estimates that worldwide around 340 million occupational accidents and 160 million work related illnesses occur annually. Approximately 2.3 million individuals lose their lives due to work-related accidents or diseases every year which is an astounding 6000 deaths every single day, and costs the global economy a staggering $1.25 trillion or 4% of the world's GDP annually (ILO, 2012). American businesses incurred annual losses to the tune of USD 170 billion (Leigh, 2011), while in the UK, in 2011/12, workplace illnesses cost an estimated £13.8 billion, (HSE, 2013), and in Australia $60.6 billion in the 2008–09 financial year (Safe Work Australia, 2013).

Shipping is one of the most dangerous industries in the world; between 2003–12, the fatal accident rate in shipping was 21 times that of the general British workforce, 4.7 times of that in the construction industry and 13 times of that in manufacturing (Roberts et al, 2014). Kristiansen (2005) found that shipping has a fatality frequency of 1.9 – 2.1 per thousand, against 0.15 for industry, 0.3 for construction and 0.9 – 1.4 for mining.

Ship operators, through the P&I industry, are estimated to deal with third party liability claims for personal injury, illness and death totaling more than $400 million a year (UK P&I, 2013). The Club finds that despite the number of personal injury and illness claims stabilizing, the per capita cost of the individual claims has risen by over 300% in recent years, and individual injury and illness claims now cost more than cargo claims. Between 2005 and 2010 the average cost of Members' claims was about $12,000 per claim. For the Swedish Club (2013), the claim costs for illness and injury made up 8% of all claims between 2009 and 2013, as opposed to 10% for pollution claims, while Skuld (2013) reported that injury claims were second highest after those related to cargo. Data provided by a major P&I Club revealed that in the period between February 2007 to November 2011, there were 3,580 injury claims, resulting in costs of USD 111,622,000. NEPIA (2012) reported that over the past 5 years, crew illness and injury claims accounted for 20% of all of claims, UK Club (2014) reported net notified claims of approximately $50 million in the year 2013, while American Club (2012) reported average cost of injury claims to be at around $28,000 per case. For P&I clubs, the big concern continued to be the "human element", and human error remained the major factor in many claims.

The primary objective of the study was to understand the alignment between safety culture and climate on board ships, and to assess the extent to which the safety climate matches with the espoused values on safety. Safety climate is the construct used to take a 'snap shot' of the safety culture on board ships. By its very nature, safety culture is multidimensional, and factor analysis is the most widely used technique for its analysis (Havold, 2007). Exploratory factor analysis was used to identify and explain the underlying factors, while an analysis of the responses would provide information on the alignment of safety climate and safety culture. Secondary objectives were to determine if the safety perceptions were different between officers working for ship managers' and ship owners, as well as between senior and junior officers.