IV. CONCLUSION

The overarching aim of state regulation in a market economy is to provide high social quality based on economic growth. Different instruments that redistribute national income are used for this purpose. The specific combination of instruments determines the model. Existing residual, institutional, and structural regulation models can be examined by quantity indicators and quality characteristics. This paper offered an adapted system of indicators of life quality that includes five groups of indicators that characterize condition of such spheres as: public finance, housing provision, environment, health, labor, and education. This paper showed that efficiency of public management is unsatisfactory in Russia. The system crisis in the Russian social sphere requires complete modernization of applied instruments of social regulation.

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THE IMPORTANCE OF MANAGING INTELLECTUAL CAPITAL IN RETAINING OFFICER-SEAFARERS

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University of Newcastle, Australia
John Stanton
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ABSTRACT

A key factor affecting the performance of the World shipping industry is the availability and retention of competent officer seafarers. Using an intellectual capital (IC) framework, this study addresses how shipping companies can improve their management of officer-class seafarers so that, retention will be improved. A survey was conducted of Indian sub-continent seafarers to ascertain their perceptions of how their IC was being managed and their intentions to continue in their occupation. Fourteen dimensions of IC of IC were examined but only four were significantly associated with officer retention. Culture of the employing shipping company was the most important. The results provide guidance to shipping companies on how to improve their retention policy.

BACKGROUND AND PURPOSE

Supplying quality officers for the world’s growing merchant fleet is acknowledged to be one of the greatest challenges facing the shipping industry. The limited supply as well as the low retention levels of seafarers, contributes to the problem (BIMCO/ISF Report, 2005). Recruitment problems have been attributed to a range of factors including inadequate commitment to training programs on the part of ship owners and managers, a poor industry image, a lack of career opportunities, a lack of job security, low wages, length of time spent away from home and stiff competition for jobs from other sectors (Corkhill, 2005). With one in every 10 officers leaving the industry within seven years of service, there is a need by ship management companies to address recruitment techniques, career planning, training development issues and retention strategies (BIMCO/ISF Report, 2005).

Key reasons for the officer seafarer shortage (Bapuaye, 2004, 2005) include: the loss of image of the shipping industry; a culture associated with criminal activity in certain maritime ports and nations; the availability of better opportunities elsewhere; a lifestyle peculiar to the industry; and the instability of a long-term career. The last three are potentially within the scope of ship owners and managers to address within their organizations. The study seeks seafarer perceptions of the way shipping companies manage their IC and to what extent such issues influence them to remain in seafaring. The question addressed is whether ship management companies’ management of the IC of its officer class has a positive association with their intention to remain seafarers.

The role of ship management companies involves responsibility for the technical and/or crew management of a ship. This entails recruiting, training and development of officers for management of crew as well as technical maintenance, asset preservation, safe navigation and compliance with maritime regulations. Ship management can be carried out in-house or as an out-sourced activity to a third-party ship manager. Ships are valuable assets. They are in the hands of seafarers who are expected to preserve its value, take responsibility for cargo movements, and ensure safe sea passage. Such expectations make the seafarer a core element of the resource base of the company and thus an internal customer of a ship management company (Egan, 2001). How these companies ensure that these core employees are retained, protected and nurtured is examined through a survey framed in terms of the way the companies manage and develop the intellectual capital under their control. High-involvement of companies with their customers enhances customer retention rates (Arthur, 1994; Haseld, 1995; Koch and McGrath, 1996). On the other hand, turnover of customers whether internal or external, is seen to be symptomatic of a larger systemic problem (Beshkoff 1997; Dobbs 2001). Following Cavoukas, (2000) employers should determine retention factors relevant to employees based on employee feedback. Most retention strategies however are designed from a company point of view. A result of this strategy is a cafeteria of options offered to customers - in this instance, seafarers (Chew, 2004). This research focuses directly on the officer - seafarer.
view of how well ship management companies are managing the intellectual capital under the ship management\textquoteleft{}s control. This is then linked to seafarers\textquoteleft{} intentions to remain seafarers. The management of such intellectual capital is within the control of ship management companies and if such management can influence officer grade seafarers\textquoteleft{} intentions to stay, then ship management companies could reduce the current shortage of such officers by managing their IC in a manner attuned to seafarers\textquoteleft{} perceptions.

If ship managers are to create value for their external customers, much of that value will come from the intangible resources embedded in seafarer competence. Hence these resources need to be nurtured, monitored and managed for the sustainability of the value creation process (Bontis et al., 1999). Salary increases and bonuses alone do not address the issue of employee retention and commitment; rather, it entails issues of strategic relationship and structure that help to enhance and influence employee retention (Accenture 2001; Gumbs and Johnson 2003; Walker 2001; Youndt, et al.1996). It may be important for companies to take a holistic approach in bringing together these issues of how they manage the intellectual capital of officer-seafarers (Roos et al., 2001). In short, the study seeks to determine the elements of IC that are most important to the officers thus providing guidance to shipping company managers on how they can seek to better manage and retain this highly skilled group.

**INTELLECTUAL CAPITAL (IC) COMPONENTS**

While there is a lack of agreement on a precise definition of IC, (Mart et al., 2004, p.312), there are key elements in common that help to identify its scope. It is a personal asset of an individual, comprising a combination of genetic inheritance, education, experience and attitude about life and business (Hudson (1993); an organizational asset that includes the knowing capability of a social collectivity such as an organization (Nahapiet and Ghoshal,1998, p.242); market assets, such as competitive advantage, human assets such as experienced and knowledgeable people and infrastructure assets such as physical capabilities and networks to get the job done (Brookings 1997, p.364); and structural capital ensuring the appropriate organizational fit needed for the business (Edvinsson,1997). Following Huang, (1997); Roos and Roos (1997); Sanchez et al. (2001) and Fletcher et al., (2003) three components are examined:

**Human capital** - incorporating the competence, skills, intellectual agility of individuals, their creativity, know-how, team-work capacity, flexibility, tolerance for ambiguity, motivation, loyalty, learning capacity, formal training and education.

**Structural capital** - including processes, systems, structures, brands and other intangibles that are owned by an organization. Alternatively, it is the pool of knowledge that stays with the firm at the end of the working day (Sanchez et al., 2001) or the knowledge that employees take home with them or when they leave the firm. (Sanchez et al., 2001) Whilst some of this knowledge is unique to the individual, some is generic. (Fletcher et al., 2003, p.505)

**Relational capital** - consisting of valuable relationships with customers, suppliers and other relevant stakeholders together with the perceptions they hold about an organization.

The mere existence of these resources does not create value for an organization; value is generated by an organization\textquoteleft{}s ability to deploy these resources, so that they transform into higher or better performance (G usable, 2001; Bontis et al., 1999; Pike et al., 2002; Fletcher et al., 2003). The potential elements of each IC construct were captured from a literature survey, with the list shown in Table 1.

**RESEARCH DESIGN AND METHODS**

The aim was to link officers\textquoteleft{} experiences in terms of particular intellectual capital constructs, with their intention to remain seafarers. As such the nature of the study was descriptive as well as hypothesis testing (Ng, 2003; Chew, 2004). Since seafarers are in an industry where their \textquoteright working\textquoteright life is spent at sea and a substantial period of their shore-leave time is spent in private engagement, they are not an easily accessible community. For this reason, a self-administered questionnaire was used for data collection (Ng, 2003; Wu, 2005). The distribution of the questionnaire was carried out at crew recruitment and maritime training centers in India, Bangladesh and Sri Lanka. Because no published research with an IC focus on this industry appears to have been carried out a survey was developed to identify the perceptions of seafarers and the impact such IC constructs could have on their intention to remain as seafarers.

**The Pilot Study**

Using the findings from the literature survey, (table 1) a questionnaire was developed as a pilot test. There were four steps: First, the grouping of specific items drawn from the literature review into a particular dimension or preliminary construct was initially undertaken by 10 industry experts, professionals drawn from the ship management business, maritime education centers, seafarer recruitment agencies and current seafarers, who had agreed to participate. Second, a questionnaire based on these constructs was then sent to 50 ex and current seafarers who had agreed to participate. Third, based on their feedback, further changes were made to the format, words used and items in each construct. Fourth, it was sent to the original 10 industry experts. They were requested to respond and to time their response. They did not suggest further changes and their completion times ranged between 18 to 20 minutes, which was accepted as reasonable.

This revised questionnaire contained 5 constructs pertaining to human capital, 5 pertaining to structural capital and 4 for relational capital (Table 2). Each construct contained between 4 to 6 items in order to obtain a reliable validity level and ensure that the dimension captured was clustering round appropriate elements that were well understood by the responders.

In order to measure the correlation of the above-mentioned dimensions to seafarers\textquoteleft{} intentions to remain as seafarers, the following statements were included in the questionnaire as a separate sub-set of statements:

- \textquoteright I have not been thinking about leaving my job\textquoteright
- \textquoteright I have been thinking about pursuing a career outside the shipping industry\textquoteright
- \textquoteright I have not been looking for other jobs\textquoteright
- \textquoteright I have been looking for jobs outside the shipping industry\textquoteright

<table>
<thead>
<tr>
<th>Human Capital</th>
<th>Structural Capital</th>
<th>Relational Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rewards</td>
<td>Organization structure</td>
<td>Strategic Relationships</td>
</tr>
<tr>
<td>Genetic inheritance</td>
<td>Knowledge management</td>
<td>Customer Relationships</td>
</tr>
<tr>
<td>Education</td>
<td>Information Technology</td>
<td>Valued Customers</td>
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<tr>
<td>Experience</td>
<td>Organizational Culture</td>
<td>Sustaining relationships</td>
</tr>
<tr>
<td>Attitude</td>
<td>Brand Image</td>
<td>Quality services</td>
</tr>
<tr>
<td>Knowledge people</td>
<td>Management Skills</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>Competence</td>
<td>Networks to get jobs one</td>
<td>Supplier Relationships</td>
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</tbody>
</table>

Source: constructed from a survey of the IC literature.

<table>
<thead>
<tr>
<th>Teamwork capacity</th>
<th>Processes</th>
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<tr>
<td>Career Prospects</td>
<td>Ethical Management</td>
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<tr>
<td>Flexibility</td>
<td>Systems</td>
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<tr>
<td>Tolerance</td>
<td>Competitive advantage</td>
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<td>Motivation</td>
<td>Organizational ethics</td>
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<tr>
<td>Loyalty</td>
<td>Tacit Knowledge</td>
</tr>
<tr>
<td>Learning capacity</td>
<td>Empowerment</td>
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<tr>
<td>Training &amp; Development</td>
<td>Trust</td>
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<tr>
<td>Talent acquisition</td>
<td>Respect</td>
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<tr>
<td>Leadership</td>
<td>Information</td>
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<tr>
<td>Recruitment Process</td>
<td></td>
</tr>
<tr>
<td>Recognition</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1** Summary of elements embedded within IC Constructs

<table>
<thead>
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<th>Structural Capital</th>
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</table>
After discussing the sample and confirmation of the validity and reliability of the constructs the hypotheses tested are explained.

### Table 2

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Intellectual Capital</th>
<th>Structural Capital</th>
<th>Relational Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training &amp; Development</td>
<td>Training &amp; Development</td>
<td>Organizational Culture</td>
<td>Relationship with Shore-Staff</td>
</tr>
<tr>
<td>Recruitment Process</td>
<td>Recruitment Process</td>
<td>Organizational Structure</td>
<td>Relationship with Seafarers</td>
</tr>
<tr>
<td>Recognition System</td>
<td>Recognition System</td>
<td>Information Technology</td>
<td>Relationship with Authority</td>
</tr>
<tr>
<td>Reward System</td>
<td>Reward System</td>
<td>Knowledge Management</td>
<td>Valued by the Company</td>
</tr>
<tr>
<td>Long Term career</td>
<td>Long Term career</td>
<td>Ethics</td>
<td></td>
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</table>

The Sample

The study was limited to Indian sub continent seafarers because India is an emerging seafarer labour market and also the researcher had access to gatekeepers of seafarers in India, Sri Lanka and Bangladesh, a region representing 14 percent of the global seafarer market. The questionnaires were administered through key maritime colleges (where the officers return for further training) and recruiting agents in these countries. These institutions agreed to distribute the questionnaires with a self-addressed, stamped envelope, to all officer grade seafarers who attended their training sessions or recruitment centers. The completed questionnaires were sent to the researcher’s designated address in the envelope provided. The questionnaires were distributed to 500 seafarers - 300 in India and 100 each in Bangladesh Sri Lanka in 2007. There were 217 (43.4%) complete and usable responses. These were used to check for validity and reliability of the constructs prior to proceeding with hypotheses testing.

Demographic data requested were nationality, age group, specialization, experience, marital status, level of responsibility and multi-company exposure. Because the aims were to examine how strongly the respondents agreed or disagreed with the statements given in the questionnaire, a Likert Scale was chosen (Cavus et al., 2001, Sekaran and Martin, 1992, Sekaran and Trafan 1978, Barry, 1989). To maximize the responses and to reduce the subjectivity of the scale a five-point instead of a seven-point scale was used (Ng, 2003; Chew, 2004; Wu, 2005).

Measurement, Data Reduction and Testing for Validity and Reliability

Principal Component Analysis was carried out on each cluster that formed a construct. This was to capture the elements that best explained each construct. A separate Principal Component Analysis was conducted for each. Items with a minimum loading of 0.5 were considered as having a weak loading and removed from the analysis (Cavus et al., 2001, Baker, 2002). For this, component matrix tables were used and, in order to calculate the proportion of the variance that was explained by the components, total variance tables were extracted using SPSS.

The questionnaire dealing with the three IC constructs consisted of 14 constructs. Each was framed around four to six items. Furthermore, internal reliability analyses were conducted to verify the proportion of the variance explained by the components. Variance tables were extracted using SPSS version 12. Thereafter, each dimension was tested to ensure that elements captured had the required loading of more than 0.50. As a result of the above data validation, three items were removed from different dimensions.

The data was tested for reliability to ensure that the measures were free from random error within acceptable limits and therefore would yield consistent results. Reliability was measured using Cronbach’s Alpha (Zikmund 2000). Following Hair et al. (1998), a Cronbach’s alpha larger than 0.6 was accepted. Of the 14 constructs, two in Relationship Capital (Relationship with shore staff [H3.1a] and Relationship with seafarers [H3.2a]) did not meet the reliability criterion and were excluded in the hypotheses testing, leaving 12 hypotheses.

Seafarers’ intentions to stay consisted of four questions. Two directly referred to the intention to stay whilst the other two referred to the intention to leave. This was to ensure that the answers were consistent in providing an accurate statement of seafarers’ intentions to stay. The data on the intention to leave were recoded to arrive at the final answer to the question on the intention to stay. Chronbach’s Alpha was 0.80.

**FINDINGS**

Responses were compared for differences between countries and no significant inter-country differences were found. Responses were therefore combined because all came from nations belonging to the South Asian Association of Countries (SAAC) and because ship management companies do not differentiate in their management of seafarers. The largest respondent age group was that of the 31-40 years, followed by the over 40-age group. Comparing age dispersion to that of the current Indian sub-continent seafarer population (Bajpejje, 2005) the sample was representative of the market.

Most respondents were married (74%). Whilst official data could not be found on such ratios based on Indian sub-continent seafarers, information gathered from the Human Resources Departments of three leading ship management companies that engaged Indian sub continent seafarers confirmed that such a ratio is not notably different from their human resource records on the civil status of these seafarers. Hence the views expressed by respondents can be considered to be representative of the population being studied and representative of the Indian sub-continent seafarer opinion.

As practiced in the shipping industry, this study defines senior staff as the top four officers in command, namely the Captain, Chief Officer, Chief Engineer and Second Engineer. Junior officers are the 2nd Officer, 3rd Engineer and the Electrician thus having a 4:3:2 ratio. The dispersion of the respondent sample reflected a 56.44 percent split between command levels which is representative of the senior to junior ratio of officers on board. It is not uncommon for certain companies to have a 50:50 ratio of senior and junior officers. Almost 80 percent of the respondents had worked in two or more companies so their perceptions were unlikely to relate to a single experience.

**Results of Hypotheses Testing**

Hypotheses testing was based on each construct and its association with the intention of seafarers to remain as seafarers. Pearson correlation analysis was carried out to test 12 hypotheses (from the original 14). The expectation being directional, a 1-tailed simple Pearson’s bivariate correlation technique was applied to measure the size and direction of the association (Tabachnick and Fiddell, 2001). Significance was tested at a confidence level of 95 percent (level of significance p < .05). Results meeting this test are shown with an *. The hypotheses formulated were as follows.

**Human Capital Hypotheses**

- **H1.1a**: Offering of more training and development is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.104$).

- **H1.2a**: A smooth and fair recruitment process is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.170^*$).

- **H1.3a**: Greater recognition by the employer is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.108$).

- **H1.4a**: A better reward system is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.094$).

- **H1.5a**: Long-term career prospects are positively associated with seafarers’ intentions to remain seafarers, ($r = 0.251^*$).

**Structural Capital Hypotheses**

- **H2.1a**: A structured training and development program is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.124^*$).

- **H2.2a**: A structured recruitment process is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.140^*$).

- **H2.3a**: A structured recognition by the employer is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.115^*$).

- **H2.4a**: A structured reward system is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.102^*$).

- **H2.5a**: A structured career prospects is positively associated with seafarers’ intentions to remain seafarers, ($r = 0.200^*$).
H2.1a: Employee friendly organisation culture is positively associated with seafarers' intentions to remain seafarers, ($r = 0.275^*)$.

H2.2a: A well-defined organizational structure is positively associated with seafarers' intention to remain seafarers, ($r = 0.104$).

H2.3a: Better on-board IT systems are positively associated with seafarers' intentions to remain seafarers, ($r = 0.068$).

H2.4a: Better on-board knowledge management systems are positively associated with seafarers' intentions to remain seafarers, ($r = 0.093$).

H2.5a: Ethical ship management is positively associated with seafarers' intentions to remain seafarers, ($r = 0.066$).

Relational Capital Hypotheses

H3.3a: A better relationship with maritime authorities is positively associated with seafarers' intentions to remain seafarers, ($r = 0.176^*$).

H3.4a: The feeling of being valued is positively associated with seafarers' intentions to remain seafarers, ($r = 0.108$).

Given only four of the hypothesis followed the expected association, further analysis was undertaken to examine the effects of all dimensions when collectively viewed, using stepwise regression analysis. This analysis revealed that when the effects of all the factors were considered simultaneously, only organizational culture had a significant, positive effect on intention to stay. Whilst many factors of intellectual capital are positively correlated to seafarers' intentions to stay seafarers, considering all aspects a key driver seems to be an 'employee friendly organizational culture'.

IMPLICATIONS AND CONCLUSIONS

The study has addressed the question whether better managed intellectual capital can influence seafarers' intentions to remain seafarers. The answer is not an overwhelming "yes" although it does indicate dimensions in the IC management of human, structural and relational capital that have a significant correlation with seafarers' intention to stay seafarers. This provides a useful focus for ship management companies if they wish to address the officer-seafarer shortage.

Implications from the human capital related hypotheses.

Seafarers are sensitive to the ways in which they are recruited to carry out their tasks onboard. They are aware of the acute shortage for their skills. This study found that the recruitment process is important to them. To halt the increasing shortage of officer seafarers, ship managers need to review their recruitment processes, with particular attention to sensitive issues such as seafarer treatment by staff of ship management companies. Seafarer officers desire 'long-term career prospects', desires which conflict with ship management's treatment of them as contract employees. This treatment arises from their lack of ownership of ships (mostly they are third party ship managers). Such ship managers are 'agents' with no assurances of long-term ship management contracts with ship owners. Given these circumstances, providing a career path for seafarer officers may need a creative restructuring of the status of officers as part of the ship management company. As the literature points out, identifying core staff and engaging in strategies that would provide them a level of confidence and security is critical for continued success of an organization.

Implications from the structural capital related hypotheses.

Whilst the shipping industry may be justified in attributing the seafarer shortage to matters outside their control, this study seems to indicate that ship management companies can contribute to resolving the seafarer shortage issue by reviewing their attitude towards seafarers, echoing the findings outlined above. An employee friendly organizational culture that recognizes talents, capabilities and responsibilities of officer seafarers as well as review of job descriptions, responsibilities and reporting routines between the ship and shore staff could do much towards increasing retention rates.

Implications from the relational capital related hypotheses.

Understandably, the finding that officer seafarers wish to maintain good relationships with external authorities is important to seafarers. In the current climate of heavy maritime legislation, stringent security codes of practice and regimes that are quick to criminalize seafarers who have personal liability attached to them, the importance of providing a supportive management environment to seafarers is more evident. Responding seafarers have endorsed their desire to work in the same trading area and to be assigned to ships under the same owner. This opens opportunities for reciprocal relationships with officers, supplying ship owners with their tacit knowledge about specific trading routes. As the literature points out, the creation of a knowledge sharing culture and the formation of communities of practice could be some of the ways ship management companies could limit the exit of these seafarers. This study has highlighted that better managed intellectual capital in some areas is positively associated with seafarers' intentions to stay seafarers. Ship management companies should focus their internal resources and efforts on the management of those IC aspects that were significantly associated with the key area of seafarer retention. As the study found, management of IC is only one area that can help in addressing the seafarer shortage.

LIMITATIONS

Even though the seafarer shortage is a global problem, this study was limited to three seafarer nations, India, Sri Lanka and Bangladesh. Further, the respondents were not randomly selected, limiting generalisability. Although dealing with closely related cultural groups, English was not the first language of any and cross-cultural effects were effectively ignored.
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