Guidelines to Reducing Fatigue in Seafarers

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ABSTRACT

Fatigue is a symptom of affective scattering after years of hard working. Considering the hard, and sometimes, intolerable working conditions of the seafarers, fatigue seems to be widely common in this job. The present study has been conducted as a correlation – descriptive analysis in 2011. It aims at examining the level of fatigue in seafarers and to provide practicable guidelines to overcome the problem. The population included in the examination consisted of seafarers of different ranks from National Iranian Tanker Company berthed at Khark Island and Port of Bandar Abbas, Iran. Statistical samples include 64 seafarers nominated by a simple random sampling method and were studied using Goldard’s standard and through a structured questionnaire basis. The collected data were analyzed by the descriptive statistical indices and inductive statistical methods by using Pearson’s statistical correlation test, the “t” test and also the Freedman test. The study has considered three groups of criteria, notably, individual, occupational and organizational factors. The variables of sexual, emotional and the personality desires have been taken as individual factors and the job records and promotional incentives as occupational variables and finally the rules, regulations and amenities are used to represent organizational factors. The research hypotheses are tested by Pearson’ statistical correlation method. The Study has concluded that all individual, occupational and organizational factors have a direct and significant impact on the seafarers’ fatigue. Using the “t” test, it has been found that there exists a significant relationship between the age of the seafarers and the fatigue amongst them. Finally, the Freedman test has indicated that the emotional and sexual desires would have the highest and amenities would have the lowest impact on the seafarers’ fatigue.

Keywords: Fatigue, Introversion, Job Promotion, Seafarers

INTRODUCTION

Maritime transportation is the most important mode of international transportation. Practically, the maritime transport shapes the foundation of cargo transportation in the world. The importance and the role of maritime transportation is the global trading in which over 90% of transportation in an industrial world happens through seas (Sury, 2007). Today, specialized and well – trained human forces are considered as a capital in all arenas and maritime transportation companies are not excluded from this. It indicates the necessity of caring seafarers. Job burnout is a problem to which seafarers are struggling due to their hard job (Saybani, Bershan, 2008). Workplace is an important factor which can impact other human life scopes too. Seafarers’ workplace includes physical, social and mental factors whereby each plays an important role on their health. They work in a fixed and closed workplace for a long time and usually they interact with few people (Farber, 1983). It can lead into their job burnout and finally damages the quality of their services (Saatchi, 1997). Job burnout was coined by Freadenberger (1970). He defined job burnout as mood of tiresome and failure due to the fact that individual cannot achieve his/her desired result in life or in his/her communicational method (Saatchi, 2003). However, the most common definition for job burnout is “physical and mental tiredness due to long time working in tiresome spiritual conditions (Schauffli, Greenglass 2001).” In another definition by Maslach and Jackson (2004), job burnout is the mitigation of a person’s adaptation power due to stressors and the symptoms of emotional/physical fatigue. Such symptoms lead
into a negative self-imagery on job and the lack of feeling of interacting with other people. It may guide the person toward types of mental and physical diseases. According to Sarminito (2004), job burnout has three important constituents:

The first constituent is personal amnesia which is an emotional withdrawal of clients’ direct care leads into a type of disregard and unfeeling to other people (Hassan, 2006). The second constituent is emotional fatigue which leads into tiredness and exhaustion. The third constituent is mitigation in activities by which jobber believes that he/she is doing nothing fruitful (Jackson and Maslach, 1982). In another definition, Sarason believes that job burnout is symptom of high affective fatigue due to years of involvement and commitment to “job and people”. In other words, job burnout is physical, emotional and mental fatigue due to long time hard jobs.

Until 1980s, job burnout was uniquely studied in USA. Gradually, in other English language speaking countries such as Canada and UK were also attracted to this phenomenon. Articles and books were published and translated to other languages in the second half around 1980s. Many research instruments, especially questionnaires were utilized by scientists in other countries. A research by Huesseinian et al. (2007) indicated that collective advisory by Fordais’ cognitive paradigm – happy behavior impacts on the mitigation of job burnout among social workers at Tehran Razi Psychiatry Center.

Lee Ashforth (1990) introduced such factors as role ambiguity, job responsibility more than the capability and role conflicts as negative affecting factors on job burnout. According to Sarminito (2004), power and authority are very important factors in job burnout for job satisfaction and the performance of mentors in Canadian Nursery School. Maslach and Jackson (2004) believe that the role of high work volume, low control, lack of social networks and conflicts between individual and workplace values are effective in job burnout.

Regarding the impact of gender on job burnout, a research by Maslach and Jackson (2004) indicated that female managers show serious repetitive impacts of effectiveness and job burnout compared to male managers. In a research aimed at to study the impact of mission on military members’ job burnout. The findings depict that missions increase job satisfaction and reduce role conflicts, emotional fatigue and job burnout. However, job has been burnout increased among those members who deploy to missions continuously without rest (Johnson, 1998).

Findings of a study by Van WC (1997) report low to medium job burnout among military staff.

Noteworthy, despite of paramount problems and difficulties in seafarers’ jobs, there is still no comprehensive study on their job burnout. Present study is, inter alia, a few studies that examine affecting factors on Iranian seafarers’ job burnout and provided guidelines to mitigate their job burnout. It should be noted that studying job burnout among seafarers and providing proper guidelines to reduce it would not only lead into seafarers’ mental and physical health but also impact on their productivity and would result in seafarers job security (Irvinchi and Sarasson 1992). It will also result in their stronger commitments to their job and organization which finally reduce low work levels and absenteeism due to burnout. It also may decrease job redundancies of seafarers and automatically mitigates the costs of employing new navigators and releases the organization form additional costs of employment.

**METHODOLOGY**

In terms of problems and their natures together with research aims, this study is an applied research study and in terms of methodology, it is a correlative – descriptive survey. In terms of time interval, it covers mid – June to mid – October 2011. To analyze data, Pearson’s correlation test and “t” test are used while Freedman test is applied to prioritize affecting factors on job burnout. Data collection was conducted by two structured questionnaires on seven – point Likert scale. Goldard’s questionnaire was utilized to collect data on seafarers’ burnout and structured questionnaire was used to collect data on affecting individual, occupational and organizational factors on seafarers. Then, correlation test was applied to study the existence or non-existence of relationships among suggested criteria and burnout while Freedman test is used to rank those factors that their relationship with seafarers’ burnout is confirmed by correlation and “t” tests. To obtain more familiar with seafarers under study and to provide necessary information on research title along with to convince seafarers on the necessity of such research, encourage them to spend their time and to study the questionnaires carefully, to provide proper and correct responses to questions. To overcome existing ambiguities and to obtain the opinions and suggestions, the authors have also utilized interviewing methods respectively.

**Statistical Population and Sample**

Research population consists of seafarers from National Iranian Tanker Company at Khark Island and Bandar Abbass Port Complex. Since a representative of group sample was important to extend the findings,
possible sampling and random sampling methods were used. To this end, the sample obtained consists of 64 seafarers of National Iranian Tanker Company in Khark Island and Bandar Abbass Port Complex. Goldard’s job burnout questionnaire is used to measure the rate of job burnout. It is used in various researches and its reliability is calculated. Scoring system of the questionnaire is based on Likert scale and each item set to have a score from one to seven. In present study, reliability of the questionnaire was obtained through test – retest method which was about 76%.

**Research Hypotheses**

Present study addresses the four major and six minor hypotheses.

**Major Hypotheses**

- There is a significant relationship between seafarers’ individual factors and their job burnout.
- There is a significant relationship between seafarers’ occupational factors and their job burnout.
- There is a significant relationship between seafarers’ organizational factors and their job burnout.
- Affecting factors on seafarers’ job burnout are different in terms of their importance.

**Minor Hypotheses**

- There is a significant relationship between seafarers’ affective and sexual needs and their job burnout.
- There is a significant relationship between seafarers’ introversion and their job burnout.
- There is a significant relationship between seafarers’ job records and their job burnout.
- There is a significant relationship between seafarers’ job promotion and their job burnout.
- There is a significant relationship between seafarers’ amenities and their job burnout.
- There is a significant relationship between seafarers’ laws and regulations and their job burnout.

These hypotheses originated from studied theories, observations and authors’ perception and it is attempted to devise them clearly and free from values.

**Figure 1. Research Conceptual Model**
By using the statistics of the descriptive indicators such as frequency, average and standard deviation data was categorized and summarized as:

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than 25</td>
<td>21</td>
<td>23.5</td>
<td>1.2</td>
</tr>
<tr>
<td>25 – 35</td>
<td>35</td>
<td>29.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Upper than 35</td>
<td>8</td>
<td>37</td>
<td>1</td>
</tr>
</tbody>
</table>

Since significance level is less than 0.05, we find that there is a significant relationship between seafarers’ age and job burnout. Correlation coefficient between age and job burnout is 0.709 which shows a direct relationship between age and job burnout. It means that rising the age of seafarers would increase the possibility of their job burnout. The results are reflected in Tables 1, 2 and in Figure 1.

![Figure 1. Creative Statistics for Age Variable](image)

Table 1. Descriptive Statistics for Age Variable

<table>
<thead>
<tr>
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<tr>
<td>25 – 35</td>
<td>35</td>
<td>29.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Upper than 35</td>
<td>8</td>
<td>37</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2. t Statistic and Coefficient Correlation for Age

<table>
<thead>
<tr>
<th>Test value=0/05</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>t test</th>
<th>sig</th>
<th>Correlation coefficient</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>1.7969</td>
<td>0.6468</td>
<td>21</td>
<td>0.000</td>
<td>0.709</td>
<td>0.000</td>
</tr>
</tbody>
</table>

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CONCLUSIONS

Job burnout is considered a physical phenomenon and mental tiredness happens due to long time working in tiresome spiritual conditions and it is the most common problem that seafarers face it. In present research, we study the relationship between individual factors (sexual and affective issues and introversion), occupational factors (job records, job promotion) and organizational factors (amenities, laws and regulations) regarding seafarers’ job burnout. Findings indicate that there is a significant relationship between the affective factors and the sexual issues, introversion, job promotion, between laws and regulation and job burnout while there is no significant relationship between job records and amenities with job burnout. Demographic studies show that a rise in the seafarers’ age would result in an increase in their job burnout. Since the impacts caused by the two age and job records are negligible, or, there is no impact at all, we can ignore these and consider other factors notably the affective and sexual issues, introversion, job promotion and laws and regulation.
Testing Research Hypotheses

The first major hypothesis: there is a significant relationship between seafarers’ individual factors and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ individual factors (affective and sexual needs and personality type) and their job burnout is 0.831. Since the amount of significant error for both individual factors and job burnout (sig = 0.012) is less (α = 0.05) than estimated error, the first main hypothesis is supported. This means that there is a direct relationship between both seafarers’ individual factors and their job burnout and vice versa.

The first minor hypothesis: there is a significant relationship between seafarers’ affective and sexual needs and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ affective and sexual needs and their job burnout is 0.861. Since the amount of significant error for both variables (sig = 0.000, α = 0.05) is less than estimated error, the first minor hypothesis is supported. This also means that there is a direct relationship between both seafarers’ affective and sexual needs and their job burnout. So, it is true to say that more employees’ affective and sexual needs will result in a more job burnout and vice versa.

The second minor hypothesis: there is a significant relationship between seafarers’ introversion and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ introversion and their job burnout is 0.721. Since the amount of significant error for both variables (sig = 0.027, α = 0.05) is less than estimated error, the second minor hypothesis is supported. This means that there is a direct relationship between both seafarers’ introversion and their job burnout. So, this means that more employees’ introversion may result in a more their job burnout and vice versa.

The second major hypothesis: there is a significant relationship between seafarers’ occupational factors and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ occupational factors and job burnout is -0.451. Since the amount of significant error for both occupational factors and job burnout is (sig = 0.015) or less than estimation error (α = 0.05), the second main hypothesis is supported. It means that there is a significant and inverse relationship between both seafarers’ occupational factors and their job burnout and vice versa. It has been found that seafarers are facing with more job burnout when simultaneously have more job records and less job promotion.

The third minor hypothesis: there is a significant relationship between seafarers’ job records and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ job records and their job burnout is 0.235. Since the amount of significant error for both variables (sig = 0.41) is more than estimation error (α = 0.05), the third minor hypothesis is rejected. This means that there is no relationship between both seafarers’ job records and their job burnout.

The fourth minor hypothesis: there is a significant relationship between seafarers’ job promotion and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ introversion and their job burnout is -0.515. Since the amount of significant error for both variables (sig = 0.011) is less than estimation error (α = 0.05), the fourth minor hypothesis is supported. It also means that there is an inverse relationship between seafarers’ job promotion and their job burnout. It has been found that more employees’ introversion will result in a

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Pearson correlation coefficient</th>
<th>Sig</th>
<th>Support or reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st major individual factors</td>
<td>burnout</td>
<td>0.831</td>
<td>0.012</td>
<td>Support</td>
</tr>
<tr>
<td>1st minor Affective and sexual needs</td>
<td>burnout</td>
<td>0.860</td>
<td>0.000</td>
<td>Support</td>
</tr>
<tr>
<td>2nd minor Introversion</td>
<td>burnout</td>
<td>0.721</td>
<td>0.027</td>
<td>Support</td>
</tr>
<tr>
<td>2nd major Job factors</td>
<td>burnout</td>
<td>-0.451</td>
<td>0.05</td>
<td>Support</td>
</tr>
<tr>
<td>3rd minor Job records</td>
<td>burnout</td>
<td>0.235</td>
<td>0.41</td>
<td>Reject</td>
</tr>
<tr>
<td>4th minor Job promotion</td>
<td>burnout</td>
<td>-0.515</td>
<td>0.011</td>
<td>Support</td>
</tr>
<tr>
<td>3rd major Organizational factors</td>
<td>burnout</td>
<td>0.860</td>
<td>0.012</td>
<td>Support</td>
</tr>
<tr>
<td>5th minor Amenities</td>
<td>burnout</td>
<td>-0.602</td>
<td>0.406</td>
<td>Reject</td>
</tr>
<tr>
<td>6th minor laws and regulations</td>
<td>burnout</td>
<td>0.615</td>
<td>0.001</td>
<td>Support</td>
</tr>
</tbody>
</table>
more job burnout and vice versa. So, we can conclude that more seafarers’ job promotion will cause less job burnout and vice versa.

The third major hypothesis: there is a significant relationship between seafarers’ organizational factors and their job burnout.

Referring to Table 3, Pearson's correlation coefficient amount between seafarers’ organizational factors (amenities, laws and regulations) and their job burnout is 0.545. Since the amount of significant error for both organizational factors and job burnout (sig = 0.045) is less than estimated error (α = 0.05), the third main hypothesis is supported. It means that there is a direct relationship between both seafarers’ organizational factors and their job burnout and vice versa.

The fifth minor hypothesis: there is a significant relationship between seafarers’ amenities and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ amenities and their job burnout is -0.602. Since the amount of significant error for both variables (sig = 0.406) is greater than estimation error (α = 0.05), the fifth minor hypothesis is rejected. This means that there is a no relationship between both seafarers’ amenities and their job burnout.

The sixth minor hypothesis: there is a significant relationship between seafarers’ laws and regulations and their job burnout.

Referring to Table 3, Pearson’s correlation coefficient amount between seafarers’ laws and regulations and their job burnout is 0.615. Since the amount of significant error for both variables (sig = 0.001) is less than estimation error (α = 0.05), the sixth minor hypothesis is supported. It means that the more organizational laws and regulations, the more seafarers’ job burnout and vice versa.

The fourth major hypothesis: affecting factors on job burnout are different in terms of their importance.

Regarding the results of statistical analysis of 1st – 6th hypotheses, such variables as affective and the sexual issues, introversion, job promotion together with laws and regulations will have a significant relationship with seafarers’ burnout while there is no significant relationship between job records, amenities and burnout. To examine the fourth major hypothesis, we prioritize four influential variables by Freedman statistical test (by not considering job records and amenities since no significant relationship was found between them and seafarers’ job burnout). The results of prioritizing these variables are outlined in table 4. As seen in the analysis, since Freedman statistic is different for various variables. Affecting factors on job burnout do not enjoy an identical importance so this hypothesis is supported. As it can be observed, the affective and sexual issues are the most important factors in seafarers’ job burnout followed by job promotion, introversion, laws and regulations.

<table>
<thead>
<tr>
<th>Affecting factors on seafarers’ burnout</th>
<th>Friedman statistic</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective and sexual issues</td>
<td>0.680</td>
<td>1</td>
</tr>
<tr>
<td>Introversion</td>
<td>0.490</td>
<td>3</td>
</tr>
<tr>
<td>Job promotion</td>
<td>0.528</td>
<td>2</td>
</tr>
<tr>
<td>Laws and regulations</td>
<td>0.313</td>
<td>4</td>
</tr>
</tbody>
</table>

Effective Recommendations and Guidelines

To provide constructive recommendations and guidelines to eliminate the problems of seafarers’ job burnout, the study has considered important dissatisfactions made by navigators in their direct interviews:

- Lower salary and fringes compared to other foreign navigators in an international level
- Long maritime journeys which cause seafarers’ affective and physical fatigue and increase risk of their job burnout, depression and dissatisfaction
- Imbalances exist between scientific and training courses and seafarers’ job tasks
- Seafarers’ job has not been considered as a hard job
- Lack of efficient and effective rules
- Lack of an efficient and integrated administrative system on seafarers’ transportation
- Training and educational courses are long and boring

Recommendations Based on Research Hypotheses

a. Supplying proper accommodation, leisure and recreation on ships to facilitate living standards that accompanies seafarers spouse are crucial.

b. Changes in maritime training system in training and research institutes are required so that provided theoretical materials would be proportional to their job tasks.
c. Changes in the attitudes of manpower: human capital plays an important role in a better utilizing of the sea resources especially in maritime transport. Therefore, one should attempt to keep their mental and physical health and interact with social capitals positively and constructively though efficient and proper planning.

d. Establishing a friendly environment an effective relation among employees and superiors, preventing tiredness and mitigating mental pressures is of crucial because of being far from families is hardly tolerable.

e. Establishing a fair payment system according to seafarers’ hard work and at least keeping the average international payments is of crucial importance.

f. Special cares to be exercised when recruiting employees as navigators and seamen (in terms of morale and personality criteria) at the place of employment.

g. Shortening the time of courses and journeys.

h. Flexibility of organizational structure together with elimination of excessive administrative and bureaucracy and easing up the laws and regulations are of paramount importance.

REFERENCES


Schaufeli WB, Greenglass ER. 2001. “Introduction to Special Issue on Burnout and Health”. Psychology and Health
