Methodology

The primary aim of the present investigation was to conduct a comparative study of Depression, Stress, Quality of life, Job satisfaction and Subjective well-being among Deck and Engine merchant navy officers. A pilot study was conducted on 20 merchant navy officer and 20 company employees (working at the managerial level) of the same merchant navy companies. It was found that sailors scored higher on depression and stress and lower on quality of sleep, quality of life, job satisfaction and satisfaction with life than the non-sailors. Based on the findings of pilot study, a further comparison between Deck and Engine officers was done, keeping in view their varied nature of work. The final sample for the present investigation included 300 officers and they were selected randomly from both the departments (150 from Deck department and 150 from Engine department). Only middle ranked officers were included, keeping in mind the homogeneity of working conditions, age, salaries and work timings of these officers. Within the distribution of 150 officers from Deck wing, 75 officers from each branch namely Chief officers and second officers and within the distribution of Engine wing, 75 officers from each branch namely Second Engineers and Third Engineers constituted the sample.

Design

The study adopted a group comparison design in order to compare Deck merchant navy officers with Engine merchant navy officers on depression, job satisfaction, quality of sleep, subjective well-being, quality of life and stress. A further comparison was also done between the junior officers and the senior officers from both the Deck and Engine department. The study also had a correlation design wherein relationship of Subjective well-being and Quality of life with Depression, Job satisfaction, Quality of sleep and Stress was investigated.

For this, Purposive random sampling technique was used. The two groups viz. Deck merchant navy officers and Engine merchant navy officers were compared on Depression, Job Satisfaction, Quality Of Sleep, Subjective well-being, Quality of Life and Stress.

For Depression, both the groups were compared on the measures of Beck’s Depression Inventory (BDI) by Beck, Steer and Brown (1961).
Methodology

For measuring Stress, Perceived stress scale (PSS) by Cohen, Kamarck and Mersmeltein (1983) was used.

For measuring Quality of life among both the groups, World Health Organization Quality of life scale (WHOQOL-BREF) viz. Physical quality of life, psychological quality of life, social quality of life and environmental quality of life was used. Generic Job satisfaction scale by Macdonald & MacIntyre (1997) was used to measure Job satisfaction.

To measure Subjective well-being two scales were used Positive and Negative Affect Schedule (PANAS) by Watson, Clark and Tellegen (1988) and Satisfaction With Life Scale by Diener, Emmons, Larson and Griffin (1985).

They were also compared on Pittsburgh sleep quality index (PSQI) by Buysee, Reynolds, Monk, Berman and Kupfer (1989) assessment of their Quality of sleep. To calculate subjective well-being the following formula was used.

Subjective wellbeing = Satisfaction with Life + Positive Affect – Negative Affect

All subjects were explained about the purpose of the study and their role in the study. The informed consent was taken before they were enlisted as subjects. All the above mentioned scales were applied to derive results. The raw scores consisted of scores on all the above mentioned variables and sub variable: depression, stress, quality of life (quality of physical, psychological, social and environmental life), quality of sleep, job satisfaction and subjective well-being (positive and negative attitude and satisfaction with life). The raw scores were analyzed using appropriate statistical analysis i.e. Descriptive statistics (Mean, standard deviation and T-test), Discriminant Functional Analysis, Inter correlations, Two Analysis of Variance, Multiple Comparison analysis and Mann-Whitney were used.

SAMPLE

The present investigation aimed to make a further comparison between Deck and Engine officers, keeping in view their varied nature of work. The sample included 300 officers and they were selected randomly from both the departments (150 from Deck department and 150 from Engine department). Only middle ranked officers were included, keeping in mind the homogeneity of working conditions, age, salaries and work timings of these officers. Within the distribution of 150 officers from Deck wing, 75 officers from each branch namely chief officers and second officers and within the
distribution of Engine wing, 75 officers from each branch namely second Engineers and third Engineers were constituted the sample.

**Inclusion criteria:**
- Officers taken for the present study will meet the criteria of 5 years of service in this profession.
- Officers who have sailed for at least duration of 6 months in the past 1 yr shall be taken.
- Due to less availability of female officers onshore, only male officers shall be included in the present investigation.

**Exclusion criteria:**
- Individuals with any history of chronic physical disease or psychological disorder shall be excluded.

**Ethical Issues**
- Consent of the subjects will be taken.
- Confidentiality will be maintained.
- Participants shall be given the freedom to withdraw from the study at any stage.
Tests and Tools:

1. **Beck’s Depression Inventory** (Beck, Steer and Brown, 1961)
2. **The Generic Job Satisfaction Scale** (Macdonald and Maclntyre, 1997)
3. **The Pittsburgh Sleep Quality Index** (Buysee, Reynolds, Monk, Berman and Kupfer, 1989)
4. **The Positive and Negative Affect Schedule** (Watson, Clark and Tellegen, 1988)
5. **Satisfaction With Life Scale** (Diener, Emmons, Larson and Griffin, 1985)
7. **Perceived Stress Scale** (Cohen, Kamarck and Mersmeltein, 1983)

In addition, a general information schedule was also administered on the respondents for getting their demographic information on the following dimension: Name, Age, Rank and the Department on ship they are working for i.e. whether the officer is from Engine Department or Deck Department. They were also asked to mention the last time of their sign off. A formal consent was also taken from them stating that they understand that the information obtained in this evaluation is confidential and will not be released to any person except the evaluator. The purpose of this research has been well informed before the commencement of the testing and with their signatures below; they freely agree to undergo this assessment.

**Brief Description of Tests and Tools:**

1. **BECK’S DEPRESSION INVENTORY (BDI-II)**

   Beck’s Depression Inventory (BDI) was given by Aaron T. Beck in the year 1961. Later in 1996 the original BDI was revised into BDI-II. The Beck Depression Inventory Second Edition (BDI-II) is a 21-item self-report instrument intended to assess the existence and severity of symptoms of depression as listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

   BDI-II in its current version is designed for individuals from the age of 13 and above, and is composed of items relating to symptoms of depression such as hopelessness and irritability, thoughts of guilt or feelings like one is being punished, physiological symptoms like fatigue, reduction in weight, and loss of interest in sex.
The retest reliability ranged from 0.73 to 0.96 and the internal consistency was satisfactorily high 0.84 to 0.9. The criterion-based validity showed good sensitivity and specificity for detecting depression. The Beck Depression Inventory reports correlations of 0.93 and 0.84 between the BDI-II and its predecessors in two samples of 191 and 84 outpatients and the correlations between of 0.68 and .71, respectively, between the BDI-II and two other depression instruments, The Revised Hamilton Psychiatric Rating Scale for Depression (HPRC) and the Beck Hopelessness Scale.

The Beck Depression Inventory (BDI, BDI-1A, BDI-II), is a multiple-choice self-report inventory, one of the most widely used psychometric tests for measuring the severity of depression. In this scale every answer being scored on a scale value of 0 to 3. Higher total scores indicate more severe depressive symptoms. The psychometric characteristics of this scale have been well documented in Indian studies (Upmanyu and Seema, 2002; Mohan and Anasseri, 2012; Upmanyu and Dwivedi, 2014; Upmanyu and Sekhri, 2014).

The standardized cut-offs used differ from the original:

0–13: minimal depression
14–19: mild depression
20–28: moderate depression
29–63: severe depression.

The following table shows individual symptoms/variables being measured by each item in Beck’s Depression Inventory.

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>11. Irritability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sadness</td>
<td>12. Social withdrawal</td>
</tr>
<tr>
<td>2. Pessimism</td>
<td>13. Indecisiveness</td>
</tr>
<tr>
<td>4. Dissatisfaction</td>
<td>15. Psycho-motor retardation</td>
</tr>
<tr>
<td>5. Guilt</td>
<td>16. Insomnia</td>
</tr>
<tr>
<td>6. Punishment</td>
<td>17. Fatigability</td>
</tr>
<tr>
<td>7. Self Dislike</td>
<td>18. Loss of Appetite</td>
</tr>
<tr>
<td>8. Self Acquisition</td>
<td>19. Loss of Weight</td>
</tr>
<tr>
<td>9. Suicide</td>
<td>20. Somatic Pre-occupation</td>
</tr>
<tr>
<td>10. Crime</td>
<td>21. Low level of energy</td>
</tr>
</tbody>
</table>
2. GENERIC JOB SATISFACTION SCALE

Macdonald and MacIntrye (1997) constructed Generic Job Satisfaction Scale. This is a 10-item instrument that has been used to measure job satisfaction in a wide range of occupational groups. It is a Likert type scale with responses ranging from ‘strongly disagree’ to ‘strongly agree’. The least obtainable response is 10, while the highest obtainable response is 50.

The Cronbach alpha for the 10 items of the scale is .77. Researchers have found various factors emerging from this scale i.e. recognition for work (.77), close to people at work (.76), a good environment for working (.74), secure in the job (.64), get along with supervisors (.73), and feel good working for the organization (.84). Additionally, satisfaction with wages and talents (Eigenvalue = 1.08, accounting for 12.04% of the variance and α = .81) including both satisfaction with wages (.86) and feeling that all talents and skills were being used (.77).

Scores ranging from 42-50 indicates very high job satisfaction, 39-41, indicates high job satisfaction, 32-38 means average job satisfaction, 27-31 indicates low job satisfaction, while 10-26 indicates very low satisfaction. For ease of analysis, we grouped job satisfaction into three: high, medium and low. Thus scores ranging from 39-50, indicates high job satisfaction, scores ranging from 31-38 indicates medium job satisfaction, while scores ranging from 10-30 indicates low job satisfaction.

<table>
<thead>
<tr>
<th>Item no.</th>
<th>Components</th>
<th>Item no.</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Recognition</td>
<td>6</td>
<td>Danger of Illness</td>
</tr>
<tr>
<td>2</td>
<td>Isolation</td>
<td>7</td>
<td>Wages/Income</td>
</tr>
<tr>
<td>3</td>
<td>Satisfaction</td>
<td>8</td>
<td>Boredom</td>
</tr>
<tr>
<td>4</td>
<td>Job Security</td>
<td>9</td>
<td>Isolation</td>
</tr>
<tr>
<td>5</td>
<td>Concern</td>
<td>10</td>
<td>Happiness</td>
</tr>
</tbody>
</table>

3. PITTSBURGH SLEEP QUALITY INDEX (PSQI)

A self-report questionnaire Pittsburgh Sleep Quality Index (PSQI) assesses sleep quality of over an interval of 1-month, developed by Buysse et al. (1988). 19 individual items of this scale generate seven “component” scores:

Component 1: subjective sleep quality
Component 2: sleep latency (i.e., how long it takes to fall asleep)

Component 3: sleep duration

Component 4: habitual sleep efficiency (the percentage of time in bed that one is asleep)

Component 5: sleep disturbances

Component 6: use of sleeping medication, and

Component 7: daytime dysfunction

The scale has been used in many settings, including research and clinical activities, and has been used in the diagnosis of sleep related disorders. University of Pittsburgh developed this scale for the clinicians and researchers to use with ease as a standardized sleep questionnaire.

The survey contains 19 questions, which can be scored on a 0-3 interval scale. Each component is scored individually and a global PSQI score is taken from the grand total of all components, with lower scores correlating to better sleep quality. Those scoring more than 5 have sleep related disorders.

The global PSQI score has high internal consistency and reliability (Cronbach’s $\alpha = 0.80$) and correlates moderately to high with different scales of sleep quality and sleep problems. (Carpanter, 1988). It has been used by Mesquita and Reimao (2007), Dhalowal (2010), Lund et al. (2010) and Sandhu (2014).

4. POSITIVE AND NEGATIVE AFFECT SCHEDULE (PANAS)

Positive and Negative Affect Schedule (PANAS) was developed by Watson, Clark, and Tellegen in 1988. It is a widely used measure of both positive and negative affect. This scale consists of a number of words that describe different feelings and emotions. There are 20 randomly numbered items both positive and negative each.

The alpha reliabilities range from 0.6 to 0.90 for PA and from 0.84 to 0.87 for NA. Each scale is rated on a 5-point Likert scale which ranges from Very slightly or Not at all to Extremely, according to the extent to which the subject felt the way during the past few weeks.
The positive and negative affect schedule is a reliable and efficient means for measuring these two important dimensions of mood.

To measure Positive Affect add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. With higher scores represent higher levels of positive affect ranging from 10 – 50.

To measure Negative Affect add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20. With lower scores that represent low levels of negative affect ranging from 10 – 50. It has been successfully used in India by Salariya (2006), Bala (2007), Haobam (2007) and Tripathi (2008).

5. SATISFACTION WITH LIFE SCALE

Diener, Emmons, Larsen and Griffin (1985) developed a scale for measuring life satisfaction e.i. Satisfaction with life scale (SWLS). The SWLS is a short 5-item instrument designed to measure global cognitive judgments of satisfaction with one's life. Individuals indicate their degree of agreement or disagreement on a 7-point Likert scale with response pattern ranging from Strongly agree to Strongly disagree. Scores range from 5 to 35.

To understand life satisfaction scores, it is helpful to understand some of the components that go into most people’s experience of satisfaction. Social relationships have most important influences on happiness. People who score high on life satisfaction tend to have close and supportive family and friends, whereas those who do not have close friends and family are more likely to be dissatisfied with their lives.

Work or performances such as homemaker or grandparent are also the factors that influence life satisfaction. When the person enjoys his or her work, whether it is paid or unpaid work, and feels that it is meaningful and important, this contributes to life satisfaction.

Personal satisfaction, spiritual life, learning and personal growth and leisure also influences the life satisfaction of many people. There is no one key to life satisfaction, but rather a recipe that includes a number of ingredients. With time and persistent work, people’s life satisfaction usually goes up when they are dissatisfied. People who have had a loss recover over time. People who have a dissatisfying relationship or work often make changes over time that will increase their dissatisfaction.
Methodology

Diener, Emmons, Larsen and Griffin (1985) reported a 2 month test-retest correlation coefficient of .82 and an alpha coefficient of .87 for undergraduate students. They also reported it to be a valid test. Schimmack (2002) reported that the reliability of this scale varies between 0.61-.90 in different cultures.


6. WHO QUALITY OF LIFE-BREF (WHOQOL-BREF)

The WHOQOL-100 quality of life assessment was developed by the WHOQOL Group in 1994. The WHOQOL-BREF consists of 26 questions and is based on a four domain structure i.e. Physical, Psychological, Social Relationships and Environmental. Each domain consists of 24 facets. To provide a broad and comprehensive assessment, one item from each of the 24 facets contained in the WHOQOL-100 has been included.

Two items from the Overall quality of Life and General Health facet have also been included. The WHOQOL instruments can be used in particular cultural settings, but at the same time results are comparable across cultures. The WHOQOL is now available in over 20 different languages.

WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. Physical health, mental state, beliefs, social relationships and their relationship to their environment affects the quality of life of an individual in a broad range.

Scores represent one’s personal experience and satisfaction regarding various aspects of life. It is a 5-point Likert scale ranging from 1 to 5 including both positive and negative dimensions. Physical health (raw score range: 7-35), Psychological health (raw score range: 6-30), Social relationships (raw score range: 3-15), Environment (raw score range: 8-40) and 2 items that measure overall QOL and general health.

The internal consistency (Cronbach’s α) coefficients ranged from 0.70 to 0.77 for the four domains. The test–retest reliability coefficients with intervals of 2 to 4 weeks ranged from 0.41 to 0.79 at item/facet level and 0.76 to 0.80 at domain level.
Content validity coefficients were in the range of 0.53 to 0.78 for item–domain correlations and 0.51 to 0.64 for inter-domain correlations (all p < 0.01). This scale has been effectively used in India by Irandokht Asadi Sadeghi (2005).

7. PERCEIVED STRESS SCALE

Perceived Stress Scale was constructed by Cohen, Kamarck and Mersmeltein (1983). It is the most widely used psychological instrument for measuring the perception of stress. It is a measure of degree to which situations in one’s life are appraised as stressful. Questions were designed to know how unpredictable, uncontrollable and overloaded subject finds his/her life. The scale also includes a number of direct queries about current levels of experienced stress. Moreover, the questions are of general nature rather than focusing on specific events or experiences. The questions are based to know about the feelings and thoughts that the respondent had during the last month. In each case, respondents are asked how often they felt a certain way.

A unidimensional scale of global perceived stress, original PSS consists of 14 items. When evaluated using exploratory factor analysis, across the literature, four of the items tend to perform poorly, a scores on the 14-item PSS tend to exhibit good reliability. As a result, the PSS with 10-items form is commonly implemented now.

Regarding the scale’s dimensionality, most researchers have found evidence for a two-factor structure (Reis, Hino and Añez, 2010). The two factors revealed in the EFAs were named Perceived Helplessness (comprised of items 1, 2, 3, 6, 9, and 10) and Perceived Self-efficacy (comprised of items 4, 5, 7, and 8, which are reversely coded when computing the total score).

Researchers report relatively satisfactory reliability estimates for scores on the 10-item forms. Roberti (2006) reported reliability estimates of .85 and .82 in a university sample for scores on the perceived helplessness and perceived self-efficacy scales, respectively. Taylor (2015) reported that the perceived self-efficacy and perceived helplessness subscales tended to estimate scores reliably across levels of the latent variables except among respondents with exceptionally low levels of perceived helplessness and exceptionally high levels of perceived self-efficacy. Cronbach’s alpha coefficient was 0.78 to 0.91 and test re-test reliability coefficients range from
Methodology

0.55 to 0.85. The criterion validity of perceived stress scale was found to be between .35-.49.

The PSS10 queries respondents as to how often over the past month they have felt or thought about each of the 10 items on a 5-point Likert scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often). Each item is rated on a 5-point scale ranging from never (0) to almost always (4). Positively worded items are reverse scored, and the ratings are summed, with higher score indicating more perceived stress.

PSS-10 scores are obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, 3=1, 4=0 and then summing across all the 10 items. Items 4, 5, 7 and 8 are the positively stated items. A total PSS10 score is obtained by reverse scoring the four positively worded items, then adding the scores for all 10 items. A higher total score indicates a higher level of perceived stress. The test has been successfully used in India by Opara (1999), Mohan et al., (2000, 2006), Kaur (2002), and Rampal (2011).

Procedure

All the respondents for the testing sessions were contacted personally and requested to volunteer for the testing schedule. These respondents were then given the questionnaires in a booklet form and were requested to respond to them truthfully according to given instructions. They were assured that the information they give about themselves and their results would be kept strictly confidential and used for research purposes only.

The testing schedule was started by firstly asking the participants to fill in the basic information and demographic profiles and following instructions were given to them regarding each questionnaire as specified in the respected manuals.

Instructions for the Questionnaire

1. Instructions for Beck’s Depression Inventory

Following instructions were given to the subjects- “This questionnaire consists of 21 groups of statements. Please read each group of statements carefully and then pick one statement in each group that best describes the way you have
been feeling during the past two weeks, including today. Circle the number beside the statement you have picked.

2. Instructions for Generic Job Satisfaction Scale

The subjects were given the following instructions- “This test comprises of 10 questions on 5 alternatives. Choose any one alternative for how you feel about each statement reflecting your satisfaction towards your job. 1. Strongly Disagree 2. Disagree 3. I don’t know 4. Agree 5. Strongly Agree.

3. Instructions for Pittsburgh Sleep Quality Index (PSQI)

The subjects were given the following instructions- “The following questions relate to your usual sleep habit during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

4. Instructions for Positive and Negative Affect Schedule

The subjects were given the following instructions- “Read each word carefully and rate it on a 5 point scale according to the extent to which you have felt during the past week. The scale ranges from 1. Very slightly or not 2. A little 3. Moderately 4. Quite a bit 5. Extremely”

5. Instructions for Satisfaction with Life Scale

The subjects were asked to read each statement and choose from one of seven alternatives. They were instructed- “There are a number of statements given below. Read each statement carefully and choose one of the seven alternatives. 1 Strongly Disagree 2. Disagree 3. Slightly Disagree 4. Neither Agree nor Disagree 5. Slightly Agree 6. Agree 7. Strongly Agree.

6. Instructions for WHO Quality of Life Scale

Following instructions were given to the subject- “This questionnaire asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. You have to choose one response between 5 responses that are provided with each statement. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.
Methodology

7. Instructions for Perceived Stress Scale

Following instructions were given to the subjects and they were asked to rate on a 5 point scale according to the extent they have felt or thought over the past month about each of the 10 items. 1. Never 2. Almost Never 3. Sometimes 4. Fairly often 5. Very Often

Scoring of Tests and Tools

The scoring of the tests was done by following the procedure as suggested by the authors of individual tests:

Beck’s Depression Inventory:

All the 21 items of Beck’s Depression Inventory were scored from range 0 to 3. The respondents had to circle one option from three options given for each item. The grand total of all individual 21 items were computed as the final score of BDI.

The Generic Job Satisfaction Scale:

This scale comprised of 10 items that an individual was to respond on a scale of 1 to 5 i.e. ‘Strongly Disagree’ to ‘Strongly agree’. Each item was given a score from 1 to 5 as per marked by the respondent and the grand total of all items will be computed.

The Pittsburgh Sleep Quality Index (PSQI):

There are 19 items in this scale and these items are divided into 7 components. Each component was scored individually and seven scores of seven components were taken out and a grand total of PSQI was also calculated by adding scores of all components to see the total sleep quality of the individual.

The Positive and Negative Affect Schedule:

There are 10 positive items and 10 negative items in this scale. An individual had to give responses ranging from 1 to 5 i.e. ‘Very Slightly’ to ‘Extremely’. Both positive items and negative items were summed individually and further the scores of both were used to calculate Subjective well-being.

Satisfaction with Life Scale:

This scale consisted of 5 items ranging from 1 to 7. The individual had to respond to each item and the sum of all items were calculated as total of satisfaction
with life. Further the scores of satisfaction with life were added to scores of positive affect scores and from the sum of both scores of negative affect were subtracted. The result from this calculation came out to be the grand score of Subjective well-being.

Formula to calculate SWL: Satisfaction With life + Total of Positive affect - Total of Negative Affect = Subjective Well-being.

**WHO Quality of Life Scale/ BREF:**

There are 26 items in this scale but the scoring of 24 was done as divided into 4 domains i.e. Physical, Psychological, Social and Environmental. The respondent had to choose between responses ranging from 1 to 5. Each domain consists of specific number of questions in this which are to be calculated individually resulting in total of each domain separately. There is no grand total of quality of life, but four domains being scored individually.

**Perceived Stress Scale:**

This scale consisted of 10 items that reflected stress being perceived by an individual. The respondents had to choose one response ranging from 0 to 4 for each item and a grand total were computed in the end.

**STATISTICAL ANALYSIS**

The information obtained from the sample was tabulated and subjected to various statistical analysis by means of the statistical product and service solutions (SPSS) Package.

Keeping in view the objectives of the study, Means and Standard Deviations, T-ration, Two-Way Analysis of Variance (ANOVA), Multiple Comparison (Scheffe’s Post-hoc test), Inter-Correlation analysis, Stepwise Discriminant Functional Analysis and Man-Whitney was also carried out.