Investigating the Relationship between the Performance of Human Resources and Emotional Intelligence in the Industry - Case Study: An Industrial Unit Active in the Field of Polymer Disposable Accessories for Food Packaging and Pharmaceutical Serving and Packaging

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Abstract - Introduction: Given the identification of human resources’ problems in the studies, this research began with the hypothesis of the effect of emotional intelligence on communication ability and environmental perception on the level of employees’ performance. Thus, it investigated the relationship between the level of emotional intelligence of employees and their level of performance.

Methodology: This study was conducted using analytical, survey and statistical methods. The tool needed to collect data on emotional intelligence and performance was a questionnaire completed using survey method. For comparative evaluation, two valid emotional intelligence questionnaires, developed by Bar-On and Goleman, were used whose validity and reliability had been proven in previous studies. The localized Goleman and Bar-On Questionnaires, consisting of 33 and 90 questions, respectively, were completed for a sample of 164 people selected from a population of over 250 people.

The data on the level of performance of the employees were also distributed through the design of a performance evaluation check list with a reliability of 95.2% with using a 360-degree method by managers, customers, equal-level forces, and subordinates.

Data were analyzed using SPSS software for statistical analysis. Cronbach's alpha coefficient was used to measure reliability, Kolmogorov–Smirnov test was used to measure the normality of data, hypothesis t and F test was used to examine the relationship between variables and linear regression was used to estimate the relationship between variables.

Results: There was a positive and significant relationship between the level of performance of employees and Goleman’s five components. Additionally, the level of performance other than stress control and interpersonal relationships showed a positive and significant relationship with three other components of Bar-On Emotional Intelligence, including general mood, adaptability, and interpersonal relationships. According to the regression analysis, Goleman emotional intelligence explained higher level of total performance level, compared to Bar-On emotional intelligence.

Keywords: Performance evaluation, Human resource performance, Grounded data, Fuzzy Delphi, Emotional intelligence, EQ, Bar-On, Goleman, Siberia Sharing.

1-Introduction

The main goal of all organizations is to enhance the productivity in all organizational inputs. Enhancing the productivity will also be realized in the light of the increasing efficiency and effectiveness. OECD has defined productivity as the income divided by resources. EPA has defined productivity in two ways:
- Productivity is maximizing the use of resources needed in production.
- Productivity is a type of thinking; we must believe that everything that can be done tomorrow may be done better today (Haghighatian and Ezati, 2015).
From the JPC point of view, productivity is a national choice and priority and every effort to increase the productivity should lead to increased social welfare, reduced poverty, and correctly choosing and doing the works. In other words, productivity means the scientific use of national resources such as human resources and other factors of production in lowering prices, increasing market value, reducing unemployment, increasing real incomes, and increasing living standards for customers, managers and employees (Organization of Asian Productivity, 2004). The absolute value of using valuable and proportional physical assets combined with efficient human resources, will allow for the realization of planned organizational goals and increased productivity.

Without doubt, using valuable physical capital and assets along with efficient human resources will result in the realization of planned organizational goals and increased productivity. It has been sometimes proven that even the presence of many physical and capital assets and valuable technical knowledge have resulted in the loss and waste of resources due to inefficient human resources and poor performance. In other words, the realization and acquisition of the maximum productivity of other organizational inputs are significantly correlated with the performance of human resources and the way of employees’ dealing with these inputs.

Knowledge capitals of employees are one of the most important components of organizational performance. While for the proper functioning of the organization, the existence of knowledge is necessary but not enough, the human resources in an organization increase the use of tangible assets (tools and equipment) and apply the intangible assets (Fitz-enz, 2001).

The above concept is followed by an increase in productivity and increasing productivity and human resource performance finally lead to increased satisfaction of managers’ satisfaction and this satisfaction can lead to more welfare facilities, development of assets, wealth and savings.

Accordingly, special attention has been paid to the role of human resources in organizations in recent years compared to other resources of the company and researchers are looking for examining the factors that increase the efficiency of human resources. Human is considered as the most complex natural world system in management knowledge, so it can be predicted that several factors are effective in increasing the human resources’ performance of an organization or group. These factors can physically and emotionally affect the human resources and the type of his dealing with work and job responsibilities. As personality factors have more profound effects on the human resources’ performance, it plays a particular importance. Among the important examples in these personality factors, we can refer to the elements that influence the person’s control of the emotions and management of his relationships with other people. Therefore, along with monitoring and evaluating the human resources’ performance in the organization, factors such as the above-mentioned that indirectly affect the performance of people, can be investigated. Emotional intelligence or EQ of employees and human resources of an organization in addition to leaving individual and personality impact on people, can also be effective in work and organizational strategies.

Social and emotional competencies and capabilities are factors that determine the quality of social relationships and success in various life and professional areas (Myer and Karasu).

Therefore, this research examined the emotional intelligence of employees and the level of their performance and the relationship between these two variables.

2- Statement of the problem

The present study was conducted as a case study in an industrial unit with more than 300 employees. According to its policy in the development area, training and recruitment of human resources have faced with the issue of employees’ performance evaluation and the solutions to increase it. Among the factors affecting the performance of employees is the EQ of people, which can be effective in the work performance of that person and the human resource productivity of the organization, due to the emergence of some capabilities in communication between people and their colleagues and their clients. This study was conducted to find if there is a significant relationship between employees’ emotional intelligence and their performance according to the considered indicators of the organization. This relationship has been examined based on two assessment methods of Bar-On and Goleman emotional intelligence and its results have been compared. The unknown aspects of the problem were the relationship between employees’ performance and EQ level of employees.

Independent variables

The level of emotional intelligence of employees has been considered as the independent variable. The level of emotional intelligence was derived from Goleman and Bar-On Questionnaires in the form of EQ score. For a more accurate evaluation, each emotional intelligence score includes components whose scores have been calculated separately. Scores are calculated on a scale ranging from 0 to 100 and the final score along with the components, separately, have been considered as an independent variable.
Goleman Emotional Intelligence Questionnaire includes five main components and Bar-On Emotional Intelligence Questionnaire includes five main components and fifteen sub-components which have been considered as independent variables.

**Dependent variable**
The level of performance and productivity of human resources is dependent variable of the study. The level of performance is evaluated around two axes.

**Axis 1:** Observing general requirements in the ethics area and organizational commitment with a share of 40%

**Axis 2:** Correctly performing the specialized tasks with a share of 60%.

### 3- Review of the related literature

As most studies, the present research also began with review of library studies and scientific articles.

Minarova (2014) considered emotional intelligence as an essential part of the competence of a manager. He has defined competence as manager's ability (consisting of three components of general and technical ability, scientific and practical skill, and individual and social maturity) and competence (power, responsibility, and duty). Arguing that the high level of managers’ competence (in addition to the balance among its elements) is an important prerequisite for the success of a company in achieving its mission and vision, he has considered the emotional intelligence as the basic element of social maturity. If a company wants to succeed in the long term, it must actively cooperate with its employees as they are the only owners of its human capital (Mura 2013). Goleman (2000) has defined emotional intelligence as the ability to control and manage the emotions. It needs to be guided appropriately and effectively to cooperate with other members of a group to achieve mutual goals. He argues that the level of emotional intelligence is not determined by genetics and is not affected by growth at the beginning of a childhood. It has been proven that the quality of emotional intelligence increases in the long term and it should be noted that these qualities should be learned. Minarova (2014) viewed emotional intelligence as part of the functional element of intelligence in the sense of the ability to use emotions in social situations: recognizing the individual’s emotions, motivation, self-evaluation ability, and self-movement (internal components of emotional intelligence) and simultaneously being emotional and having social skills and effective involvement for the benefit of others (Interpersonal components of emotional intelligence).

Samadi (2015) examined the effect of emotional and spiritual intelligence on the job performance of 185 employees of the Iranian Oil and Gas Pipeline and Oil Telecommunications Company. He concluded that the components of interpersonal skills, adaptability, stress control, critical existential thinking, generation of personal meaning and transcendental knowledge affect the job performance. Mashayekh Bakhsh (2014) investigated the organizational conflict and its relationship with emotional intelligence in employees of Mellat Bank (Mazandaran province) in a population of 850 people. He concluded that in ranking the emotional intelligence components, the component of management and control of emotional intelligence is the most important among other components in employees and managers. Among the interpersonal conflict factors, the most important factor was the conflict with subordinate. There was a significant and positive correlation between the components of normative intelligence with each other in employees and managers. Moreover, there was a positive and significant relationship between the interpersonal conflict factors among employees with each other and among managers, while no correlation was found between the factor of conflict with manager and conflict with subordinate. There was a significant and negative relationship between the components of emotional intelligence and interpersonal conflict factors among the employees, but no relationship was found among the managers.

In their research entitled "The relationship between emotional intelligence and job satisfaction of physical education teachers, Yarmohammadi Monfared et al. (2010) found that by providing facilities and meeting the needs of teachers and by training and increasing the emotional intelligence, their job satisfaction could be increased. The results of a study conducted by Shushhtarian et al., (2009) suggested that emotional intelligence leads to self-awareness, self-management, social awareness and adaptation to work environment, and emotional intelligence has a positive and significant relationship with job satisfaction and job performance. Moreover, the results of a study conducted by Golparvar et al., (2010) showed that there is a significant and positive correlation between the components of emotional intelligence and self-evaluation and job performance. Seyed Javadin et al. (2007) also confirmed the relationship between emotional intelligence and job performance.

### 4-Research methodology

This research was conducted using descriptive and statistical analysis method and SPSS software. Data on the level of emotional intelligence were collected using survey method through Baran and Goleman questionnaires. Data on the level of employees` performance were collected using a checklist whose reliability was confirmed with a Cronbach's alpha coefficient of 95.2%. Cronbach's alpha coefficient are used to measure the reliability of the questionnaire and Spearman correlation coefficient and t and F tests are used to examine the relationship between variables.
The normality of data has been examined using Kolmogorov-Smirnov test.

Sampling method: convenient randomized method

Sample size determination method: Cochran formula

The employees’ performance was evaluated based on the way of performing the duties and adherence to ethical and professional principles and requirements.

General performance evaluation: It was based on the adherence to the ethical and professional principles and requirements.

Specialized performance evaluation: It was based on performing specialized tasks and duties related to job identification, with a necessary expertise in four areas of knowledge, skills, motivation and transfer of experience.

Statistical population: It included employees working in an industrial unit operating in the production of disposable tableware and polymer food and drug packaging. The evaluation of their performance in the third quarter of the year 2017 was used in this study. Sample size was determined to include 164 people out of a population of 286 people using Cochran formula. Considering a rate of incorrect completion of questionnaires or lack of their returning, 250 questionnaires were distributed.

5-Investigating the relationship between emotional intelligence and the level of employees’ performance

Historically, emotional intelligence is rooted in the concept of social intelligence, which was first recognized by A.L Gerendyke in 1920. Since that time, psychologists have also identified other categories of intelligence. In 1970, two American psychologists, namely, Dr. Peter Salovey of the University of Yale, and Dr. John Mayer of the University of New Hampshire, presented the scientific discussion of emotional intelligence for the first time. In 1975, Howard Gardner introduced the idea of Multiple Intelligence. He introduced eight types of intelligence in two broad categories of interpersonal intelligence and intrapersonal intelligence. Many psychologists, including Gardner, argued that traditional IQ evaluation criteria, such as IQ tests, are not able to describe the cognitive abilities. The term Emotional Intelligence was first introduced in 1985 by Wayne Pine, but it was popularized by Daniel Goleman in 1995.

Most of the studies in this area have been conducted by Peter Salvoy and John Mayer in the 1990s. They concluded that the capacity to perceive the emotions is a new factor in the personality of people.

Bar-On believes that emotional intelligence is a set of abilities and skills that equip a person to adapt effectively to the environment and to succeed in life, and the trait of emotional in this kind of intelligence plays key role andmakes it to be distinguished from cognitive intelligence.

5-1- Emotional intelligence level

The tools used to collect qualitative data in the area measuring the emotional intelligence included Bar-On emotional intelligence questionnaire and Goleman emotional intelligence questionnaire.

The above-mentioned questionnaires were identified during the library studies of the articles and the results of the conducted studies. Their validity and reliability have been examined and confirmed in these studies. In his Emotional Intelligence Questionnaire, Bar-On has considered 5 components for emotional intelligence, including intrapersonal emotional intelligence, interpersonal emotional intelligence, stress tolerance, general mood and adaptability. These 5 components include 15 sub-scales.

In Goleman Emotional Intelligence Questionnaire, as with Bar-On Questionnaire, emotional intelligence includes 5 components, while none of these components is subdivided into sub-components in this questionnaire. These five components include self-awareness, self-motivation, self-control, social skills and social consciousness. In each question, each group of questions is assigned to a certain area of the components and their scores are summed up to show the final score of that component and finally the final score of emotional intelligence.

Emotional intelligence indicators based on the Bar-On questionnaire consist of 5 main components and 15 sub-components:

1- Intrapersonal skills
   • Emotional self-awareness (the ability to be aware of your feelings and emotions)
   • Self-assertiveness (the ability to express the feelings, beliefs and thoughts and defend the constructive skills)
   • Independence (the ability to direct your thoughts and actions)
   • Self-actualization (the ability to understand your potential and attempt to do something that can be done)
   • Self-respect (the ability to be aware of your perceptions, acceptancerespecting yourself)
2- Interpersonal skills:
  • Interpersonal relationships (awareness, understanding, and perceiving others' feelings, creating and sustaining satisfactory bilateral relationships characterized by emotional closeness and affiliation)
  • Social commitment (being an effective and constructive member of your social group, showing yourself as a good partner)
  • Empathy (the ability to recognize others' feelings, perceive their feelings and admire them)
3- Adaptability:
  • Problem solving (ability to diagnose and define problems and realize effective solutions)
  • Realism (the ability to measure the coordination between what has been emotionally felt and what has been actually happened)
  • Flexibility (ability to adapt thoughts and behavior to environmental changes and situations)
4- Stress control:
  • Ability to tolerate the stress (ability to tolerate the stressful events and strong emotions positively and actively coping with stress)
  • Impulse control (ability to tolerate an impulse and control your emotions)
5- General mood:
  • Happiness (the ability to feel satisfied with yourself and making yourself and others happy)
  • Optimism (the ability to look at life cleverly and strengthen positive attitudes even in the event of a misfortune and a negative feeling)

Emotional intelligence indicators based on the Goleman questionnaire consist of five main components:
- Self-control: The ability to manage your emotions.
- Self-awareness: The ability to be alert and accept your feelings.
- Self-motivation: The ability to deliberately develop a strong will and an optimistic behavior.
- Social vigilance: Ability to understand other feelings even if we have different feelings.
- Social consciousness: The ability to adapt your actions, behaviors and feelings to other people’s expectations and feelings.

5.1.1. Validation of emotional intelligence measurement questionnaires:

The design of the Bar-On Emotional Intelligence Test (1980) was initiated in 1980 with the question of "Why some people are more successful than others in life." In this year, the author presented the concept, definition and size of non-cognitive intelligence (Bar-on, 1988, 1992, 1996a, 1996c, 1997a and 1997b). His strategy to construct the test consists of four main steps:
1. Classification of different variables and recognizing that these variables fall under which keywords to determine effective and successful performance and also positive emotional health (based on author's clinical experiences and a review of literature on mental health).
2. The operational definition of these factors.
3- Making a plan of questionnaire to test these factors.
4. Interpreting the results and applying them for having access to reliability, factor structure and validity of test.

Bar-On Emotional Intelligence Test Characteristics:
This test has 117 questions and 15 scales. It has been implemented by Bar-On on 3831 people of 6 countries (Argentina, Germany, India, Nigeria and South Africa), which 48.8% of them were male and 51.2% were female and systematically standardized in North America.
The results of standardization showed that the test had a good level of validity and reliability.
(Source: Samei, Raheleh et al., Sina Institute for the Study of Behavioral Sciences)
The reliability of the fifteenth scales of the questionnaire was determined by Bar-On by using Cronbach's alpha coefficient and it was reported 69% to 86% with a mean of 76%. Bar-On also reported its reliability as 85% after one month and 75% after four months using test-retest method.
In order to examine the validity of the questionnaire, the correlation coefficient of the scores obtained from this questionnaire with other valid emotional intelligence questionnaires was calculated and the results indicated the validity of the questionnaire (Mokhberian Nejad, 2007).
In his study on high school students in Tehran, Mokhberian Nejad (2007) has attempted to standardize the Bar-On Emotional Intelligence Questionnaire.
Based on this research, the total validity of the questionnaire was calculated to be 91%. In order to examine the construct validity of the questionnaire, factor analysis was carried out using principal components analysis method.
The results showed that the fourteen factors having an eigenvalue more than one explained 37.652% of the total variance of variables. The results confirmed the validity and reliability of the questionnaire. As a result of standardization, this questionnaire was adjusted from 133 questions to 90 questions.

Scoring:
As options are set on a 5-point Likert scale, the scoring is done from 5 to 1 (I strongly agree = 5, and I strongly disagree = 1), and in some questions with negative or inverse content, the scoring is done from 1 to 5 (I strongly agree = 1 and I strongly disagree = 5). The total score of each scale is obtained by summing up the scores of each of the questions of that scale and the total score of the test is obtained by summing up the scores of 15 scales. Obtaining higher score in this test reflects the higher success of the person on the given scale or the entire test, and vice versa. For example, obtaining higher scores on self-assertiveness scale reflects higher self-assertiveness of the person.

The questions are uniformly distributed indifferent components. In other words, 90-item questionnaire contains 15 sub-components, each of which contains 6 questions.

Goleman EQ Measurement Questionnaire:
This questionnaire has five components. The distribution of the questions of the Goleman questionnaire is not uniform, in contrast to the Bar-On questionnaire and its number varies in each component:
Self-awareness: It includes 8 questions
Self-motivation: It includes 7 questions
Self-control: It includes 7 questions
Social consciousness: It includes 6 questions
Social Skills: It includes 5 questions
The original version of this questionnaire, developed by Goleman, includes 70 questions. It was standardized in Iran by Mansouri (2001) and adjusted to 33 questions.
He obtained the internal consistency of the test as 85% by Cronbach's Alpha. In examining construct validity of the test, the correlation between the scores of Tehran university students in this test and those of Cooper's self-esteem test was examined on a sample of 30 people. According to the obtained data, the rate of correlation was reported as 63%.
Mansouri also reported the Cronbach's Alpha coefficient for each of the sub-scales as follows:
Self-awareness: 59%
Spontaneity: 59%
Self-control: 54%
Social consciousness: 51%
Social skills: 51%
Additionally, Asadi (2003) obtained the internal correlation of the test to be 84% using Cronbach's alpha. In the present study, the reliability coefficient of Goleman emotional intelligence questionnaire was calculated to be 81.5% using Cronbach's alpha method.

5-2-Human resources performance level
Quantitative and qualitative data in the field of employees’ performance measurement were collected in the form of a questionnaire.
A 360-degree method was used to evaluate the performance, which includes:
Self-evaluation
Evaluation by subset force
Evaluation by an equal-level force of other units
Evaluation by unit manager
The performance of employees has been measured in two general and specialized sections.
A) General performance: It includes adherence to the professional and ethical requirements of the workplace
B) These professional and ethical requirements include four key areas as follows:
- Professional behavior and ethics
- Innovation and creativity
- Education and transfer of knowledge and experience
- Satisfaction and motivation
  Each of these four areas includes sub-categories that have been measured separately.
  B) Specialized performance: It includes the correctly and sufficiently doing of the assigned tasks.
  As the following items are effective in the correctly performing of the tasks and the correctly applying of authorities, the evaluation of the specialized performance of each individual is measured in the four areas and with the same weight in the final evaluation of the specialized performance. These four areas are:
  Knowledge
  Skill
  Motivation
  Transfer of experience

General performance with a weight of 40% and a specialized performance with a weight of 60% were applied in the final evaluation of performance.

Using Cochran formula, sample size was considered 164 people out of a population of 286 people. Using questionnaire and performance evaluation checklist, the data were collected and categorized for them. It should be noted that performance evaluation checklist was extracted in a separate research using the concept of grounded data and the fuzzy Delphi method. With an acceptable reliability (Cronbach's alpha coefficient of 95.2%), it was used in this study.

5-3-Significance of the study
The case study of this research was an industrial company operating in the production of serve disposable tableware and polymer food and drug packaging with a history of more than 20 years. Currently, with more than 270 employees, it is considered a medium-sized industry. The organizational levels have been defined and classified from the worker to unit management and senior management.

Such a manufacturing unit, with this volume of human resources, needs an efficient human resources management system, as this job classification, the fair distribution of duties and authorities, the distribution of organizational facilities such as rewards, motivational opportunities, etc., with this volume of human resources, require a systematic and scientific system, otherwise, it would lead into dissatisfaction, unwillingness to promote a job and acquire individual and organizational goals among the employees.

To achieve this goal and create an efficient human resources management system

The reasons to select this case study include:
- Ease of access to data
- A history of familiarity with the company and the space of human resources governing it
- Exposure to some organizational complications in the human resources area that can be related to EQ level of employees and their performance.

Among the complications observed at the organization level in the area of human resources, we can refer to the following cases:
- Non-transparency in the area of accountability and authorities among the employees and managers
  Due to intrinsic desire of individuals to obtain high authority and low accountability, instead of relying on meritocracy, defining the job identity and its adherence is determined by bargaining the power of individuals and their social skills in dealing with the employer and others employees. For this reason, accountability and authority in a job changes with changing the people.
- Uncertainty and feeling of job insecurity among employees
- Due to the lack of transparency in the measurement criteria of human resource performance and the use of some marginal supportive leverages, the key for retention in the organization is not transparent to the employees.
- Non-transparency of punishment and rewards of employees
- Employees’ relying on marginal capabilities such as bargaining when facing with problems and organizational mismatches, rather than taking responsibility and providing corrective and preventive strategies.
- The rule of the individual work spirit among employees rather than group work and lack of considering the shared group and organizational goals.
5.4. Statistical description

Based on the nature of the subject and by implementing Bar-On and Goleman Emotional Intelligence Questionnaires, the coding and analysis were performed. Descriptive statistics including frequency distribution table, percentage, mean and standard deviation were used and charts were plotted. Then, using descriptive statistics method, it was investigated using Spearman correlation method.

In this section, the characteristics of gender, age, and education of the 164 people were examined.

5-4-1-Gender

<table>
<thead>
<tr>
<th>gender</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>114</td>
<td>70%</td>
</tr>
<tr>
<td>female</td>
<td>50</td>
<td>30%</td>
</tr>
<tr>
<td>total</td>
<td>164</td>
<td>100%</td>
</tr>
</tbody>
</table>

Based on the above table, 70% of samples were male and 30% of them were female. These results have been summarized in the following Chart.

5-4-2-Age range

<table>
<thead>
<tr>
<th>Age range</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30 years</td>
<td>85</td>
<td>51.8</td>
</tr>
<tr>
<td>31-40 years</td>
<td>62</td>
<td>37.8</td>
</tr>
<tr>
<td>40-50 years</td>
<td>13</td>
<td>7.9</td>
</tr>
<tr>
<td>Over 50 years</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>100</td>
</tr>
</tbody>
</table>

As shown in the table above, the age range of the samples were in the four ranges of 20 to 30 years, 31 to 40 years, 41 to 50 years, and over 50 years.

The highest number of samples (51.8%) had an age between 20 and 30 years, 37.8% of them had an age between 31 and 40 years, 7.9% of them had an age between 41 and 50 years and 2.5% of them had an age over 50 years. These results have been shown in the following Chart.
Chart 2. Relative distribution of age range of samples

### 5-4-3-Education level

Table 3. Frequency distribution of educational level of samples

<table>
<thead>
<tr>
<th>Education level</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma and under diploma</td>
<td>75</td>
<td>45.7</td>
</tr>
<tr>
<td>associate</td>
<td>6</td>
<td>3.6</td>
</tr>
<tr>
<td>bachelor</td>
<td>60</td>
<td>36.7</td>
</tr>
<tr>
<td>master</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>total</td>
<td>164</td>
<td>100</td>
</tr>
</tbody>
</table>

The above table suggested that 36.3% of the sample had bachelor degree. This was about 14.4% for students with master degree and 3.6% for students with associate degree. Moreover, majority of the samples (45.7%) had a diploma or under diploma degree. The distribution of the education level of samples has been presented in the following chart.

### 5-4-4-Marital status

Table 4. Frequency distribution of marital status of samples

<table>
<thead>
<tr>
<th>Marital status</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>single</td>
<td>63</td>
<td>38%</td>
</tr>
<tr>
<td>married</td>
<td>101</td>
<td>62%</td>
</tr>
<tr>
<td>total</td>
<td>164</td>
<td>100%</td>
</tr>
</tbody>
</table>

According to the above table, 62.2% of the samples were married and 38% of them were single. These results have been summarized in the following chart.
5-5- Normality of variables:
Before using any test, the normality of data should be examined, since in selecting a test, we must decide whether to use parametric tests or nonparametric tests. The following steps were used to examine the normality of the data:

Step 1: Calculation of skewness and kurtosis
Step 2: Histogram chart
Step 3: Kolmogorov-Smirnov test or Shapiro-Wilk test

Normality of data means that it compares the distribution of a trait in a sample (for example, an emotional intelligence score among 100 sample employees) with a distribution that is assumed for a population (for example, emotional intelligence score of all employees). If the data have a normal distribution, it is possible to use the parametric test; otherwise, the nonparametric test should be used.

5-5-1- Calculation of Skewness and Kurtosis
First, the kurtosis and skewness of data was tested. Skewness is a criterion of symmetry or asymmetry of the distribution function. For a completely symmetric distribution, the skewness is zero and for an asymmetric distribution with a kurtosis toward higher values, the skewness is positive and for asymmetric distribution with a kurtosis to smaller values, the skewness is negative. Kurtosis represents the height of a distribution. In other words, kurtosis is a criterion of curve height at the maximum point and the kurtosis value for a normal distribution is 3. The positive kurtosis means that the considered distribution peak is higher than normal distribution and negative kurtosis indicates that peak is lower than normal distribution. For example, in the distribution t, in which the distribution of data is more than normal distribution, the height of the curve is shorter than the normal curve. In general, if the skewness and kurtosis are not in the range (-2, 2), the data do not have a normal distribution. Based on the skewness and kurtosis scores in the columns of Kurtosis and Skewness, all scores were in the range (-2, 2). Thus, based on this method, kurtosis and skewness were normal in all variables.

Histogram chart:
Using the SPSS software, we can easily plot the histogram with a normal curve display. The histogram chart has been presented separately for dependent and independent variables.
Based on the histogram charts, there was the possibility of non-normal data, for example in Bar-On EQ score and total performance. To ensure, the Kolmogorov-Smirnov test was used.

Kolmogorov-Smirnov test:
The Kolmogorov-Smirnov test is considered as one of the most important statistical tests in SPSS software.

One of the main criteria for determining the normality of the data is the Kolmogorov-Smirnov test. When examining the normality of the data, we test the null hypothesis, stating that the data distribution is normal, at the error level of 5%. Therefore, if the test statistic be greater than 0.05, there would be no reason to reject the null hypothesis stating that the data are normal. In other words, the distribution of data will be normal, if the significance of the test (p-value < 0.05), and the distribution not be normal then we must use the nonparametric test. To test the normality, the statistical hypotheses are presented as follows:

H0: The distribution of data for each of the variables is normal

H1: The distribution of data for each of the variables is not normal

Table 5 has summarized the results of Kolmogorov-Smirnov normality test.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistic</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>General performance evaluation</td>
<td>.050</td>
<td>164</td>
<td>.200*</td>
</tr>
<tr>
<td>Evaluation of specialized performance</td>
<td>.074</td>
<td>164</td>
<td>.030</td>
</tr>
<tr>
<td>Total performance evaluation</td>
<td>.073</td>
<td>164</td>
<td>.031</td>
</tr>
<tr>
<td>Bar-On1-general mood</td>
<td>.100</td>
<td>164</td>
<td>.000</td>
</tr>
<tr>
<td>Bar-On2-Stress Control</td>
<td>.061</td>
<td>164</td>
<td>.200*</td>
</tr>
<tr>
<td>Bar-On3-adaptability</td>
<td>.082</td>
<td>164</td>
<td>.009</td>
</tr>
<tr>
<td>Bar-On4- Interpersonal Relationship</td>
<td>.077</td>
<td>164</td>
<td>.019</td>
</tr>
<tr>
<td>Bar-On5- Intrapersonal relationship</td>
<td>.051</td>
<td>164</td>
<td>.200*</td>
</tr>
<tr>
<td>Total EQ Bar-On</td>
<td>.077</td>
<td>164</td>
<td>.019</td>
</tr>
<tr>
<td>Self- Awareness- Goleman 1</td>
<td>.104</td>
<td>164</td>
<td>.000</td>
</tr>
<tr>
<td>Self-motivation-Goleman 2</td>
<td>.099</td>
<td>164</td>
<td>.000</td>
</tr>
<tr>
<td>Impulse Control- Goleman 3</td>
<td>.077</td>
<td>164</td>
<td>.020</td>
</tr>
<tr>
<td>social skills-Goleman 4</td>
<td>.084</td>
<td>164</td>
<td>.007</td>
</tr>
<tr>
<td>Social consciousness -Goleman 5</td>
<td>.098</td>
<td>164</td>
<td>.001</td>
</tr>
<tr>
<td>Total EQ Goleman–Goleman</td>
<td>.055</td>
<td>164</td>
<td>.200*</td>
</tr>
</tbody>
</table>

Based on the significance level in the above test, Goleman emotional intelligence score, Bar-On interpersonal score, and Bar-On general mood score had normal distribution, and other cases had no normal distribution. Accordingly, nonparametric tests were used to continue the study process. For example, Spearman test was utilized instead of Pearson test in examining the significance of the relationship between independent and dependent variables.

5-6- Correlation analysis:

In this section, given the nature of research variables that most of them had non-normal distribution, the research hypotheses were tested by Spearman correlation methods.

Spearman correlation coefficient was introduced by Charles Spearman (1863-1945), an English psychologist and statistician in 1904. This correlation coefficient shows the level of correlation between the two ordinal variables. In other words, it is nonparametric equivalent of Pearson correlation coefficient. In this correlation coefficient, instead of using the values of variables, their ranks have been used. The relation related to Spearman correlation coefficient is defined as follows. The results of examining the relationship between the level of performance and the level of emotional intelligence have been presented in the following Table.
Table 6. Examining the relationship between performance level and other components of Goleman emotional intelligence

<table>
<thead>
<tr>
<th>Variable</th>
<th>Goleman1</th>
<th>Goleman2</th>
<th>Goleman3</th>
<th>Goleman4</th>
<th>Goleman5</th>
<th>Social skills</th>
<th>Social consciousness</th>
<th>GolemanEQ</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>General performance level</td>
<td>.037</td>
<td>.002</td>
<td>.367</td>
<td>.066</td>
<td>.011</td>
<td>.017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialized performance level</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.001</td>
<td>.002</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total performance level</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The null hypothesis in the correlation test is based on lack of significant correlation between the study variables and the hypotheses can be written as follows:

H0: There is no significant correlation between the variables studied.

H1: There is a significant correlation between the variables studied.

To reject the null hypothesis and confirm the significance of correlation, the significance level should be less than 0.05.

In the table above, the correlation coefficient has been written in the first row and the significance of correlation has been written in the second row. If the significance be less than 0.05, the correlation would be statistically significant. As seen, in some cases, the correlations between the independent and dependent variables were significant. A summary of significant relationships has been presented in the Table below.

Given the significance level of 0.05, the general performance level had a positive correlation with all five components of Goleman emotional intelligence. It is also true for the level of specialized performance. However, the relationship between general performance in two areas of social skills and self-control was not significant.

Table 7. Investigation of the relationship between performance level and Bar-On emotional intelligence components

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General performance level</td>
<td>.001</td>
<td>.002</td>
<td>.002</td>
<td>.007</td>
<td>.019</td>
<td>.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialized performance level</td>
<td>.000</td>
<td>.001</td>
<td>.223</td>
<td>.001</td>
<td>.119</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total performance level</td>
<td>.000</td>
<td>.000</td>
<td>.055</td>
<td>.000</td>
<td>.057</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5-7- Linear regression

Simple or Multiple Linear Regression is one of the most widely used statistical methods for analyzing data in various sciences. In regression analysis, the type of relationship between variables and whether a variable can affect other variables is examined.

In other words, "the main application of linear regression is to evaluate the factors influencing a numerical variable that has a normal distribution".

To use this statistical method, the following presumptions have been proposed:
1. Linearity of the relationship between independent and dependent variables
2. Normal distribution of error values
3. Independence of error values
4. Normal distribution of dependent variable
The challenging issue is to determine if the presumption is normal. The question is which one should be considered as the "initial presumption" of linear regression: normal distribution of a dependent variable or the normal distribution of error values? As stated, in some studies, the normal distribution of the "dependent variable" is expressed as a precondition for the use of linear regression. However, Kyani does not consider the normal distribution of dependent variable as a "necessary condition" for using linear regression and has considered the normal distribution of error values. This analysis seems to be closer to reality. Other studies have considered the use of linear regression as one of the "basic" preconditions for the use of linear regression and all agree that "if this precondition is not met, the regression cannot be used".

How the normal distribution of the dependent variable can be analyzed? It should be re-emphasized that the normal distribution of error values is the precondition (along with the independence of errors and the non-linearity of independent variables) for using simple or multiple linear regressions. The normal distribution of the variable as a secondary condition is proposed in non-normal distribution of error. Moreover, as stated, if the error values do not have normal distribution, the conversion of the dependent variable with traditional methods or the box-cox method might solve the problem. As seen, the terms "possible" and "dependent variable" have been used here. Thus, even with the normal distribution of the dependent variable (either from the beginning or through the conversion), it is possible to use linear regression (due to the absence of one of the three conditions for the normal distribution of error values, lack of multicollinearity between the independent variables and the independence of the errors). Therefore, for the use of linear regression, the distribution of error values must be normal. If this precondition is not met and the dependent variable has a normal distribution, it will be impossible to use this statistical method because it is not possible to use conversion. In the case of non-normal distribution of the dependent variable, there is the possibility of normalizing it to allow the distribution of error values to be normal and use linear regression (Behnam Far and Rasti, 2015).

In this study, linear regression to extract the explanatory level of variable of the general performance AK score as the dependent variable, based on the variables of the EQ score according to Goleman and Bar-On, has been estimated, separately. It should be noted that in the linear regression, Ln of the total performance variable is used due to the non-normality of the total performance score variable. The Model Summary table represents the summary of the model. This table shows the values of R and R2. The R value of 0.473 indicates a simple correlation between the two variables, that is, the intensity of the correlation between the two variables. As R value indicates, there is a strong correlation between two variables.

The R2 value indicates how much of the dependent variable (total performance level) can be explained by the independent variable (EQ level). Here, Goleman emotional intelligence variable could explain 22.4% of the variations in the variable of level of knowledge of all employees. The figure for the Bar-On emotional intelligence variable has been reduced to 16.3%.

<table>
<thead>
<tr>
<th>Model Summaryb- Golman EQ</th>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>.473a</td>
<td>.224</td>
<td>.219</td>
<td>.03108</td>
<td>1.930</td>
</tr>
<tr>
<td>a. Predictors: (Constant), Total Golman EQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Dependent Variable: Ln Total performance evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Summaryb-Baron EQ</th>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>.404a</td>
<td>.163</td>
<td>.158</td>
<td>.03228</td>
<td>1.918</td>
</tr>
<tr>
<td>a. Predictors: (Constant), Total Baron EQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Dependent Variable: Ln Total performance evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Results

According to the results of statistical analysis presented in above tables, the following results are obtained: Goleman:

Considering the significance level of 0.05, the general performance level had a significant and positive correlation with all five components of Goleman emotional intelligence. It is also true for specialized performance level.
However, the relationship between general performance in two areas of social and self-control skills was not significant.

Bar-On

Out of five main components of the Bar-On EQ measurement, three components of general mood, adaptability and interpersonal relationships with a probability of over 99% had a significant relationship with total performance. These three components had a significant relationship with both the general performance variable and the specialized performance variable.

The significance level of the relationship with the general performance was weaker in the components of intrapersonal and interpersonal relationships and its probability was 95%, but its relationship with specialized performance variable, the significance level of the relationship with the probability of more than 99% for all three components was increasing.

The components of stress control and interpersonal relationships with general performance had a significant relationship, but they did not show a significant relationship with the specialized performance and consequently, they had a significant relationship with the total performance.

All significant relationships identified between the variables of the Bar-On EQ five components and the general, specialized, and total performances were directly correlated. In other words, with the increasing of the independent variable, the dependent variable also increased, and vice versa.

Moreover, during the statistical analysis by the mentioned method, among all sub-components of EQ in the Bar-On questionnaire, all components, except for the following cases, had a significant relationship with the total performance variable:

- Self-control: It had a significant relationship (more than 99%) with general performance, but it did not have a significant relationship with specialized and total performance.

- Problem solving: It had no significant relationship with any of the general, specialized, and total performance variables.

- Responsibility: It had a significant relationship (more than 99%) with general performance, but it did not have a significant relationship with specialized and total performance.

- Empathy: It had no significant relationship with any of the general, specialized, and total performance variables.

According to the linear regression results, Goleman emotional intelligence level, compared to Bar-On emotional intelligence level, explained the greater share of the employees’ performance level.

References


