

Identification of Personality Traits Effective on Creativity and Innovation among the Staff of Sarkhon and Qeshm Gas Refinery Company

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ABSTRACT

The present research aimed to identify psychological and personality traits related to creativity and innovation among the staff of Sarkhon and Qeshm Gas Refinery Company. This research was of the descriptive studies and it was carried out through correlation method. The statistical population of research included all the staff of Sarkhon and Qeshm Gas Refinery Company. The statistical sample consisted of 225 people. They were selected through proportional stratified random sampling technique. Abedi Creativity Questionnaires, NEO-FFI personality traits, and SCL-25 Mental Health Questionnaire were used to collect the information required for the research. The research data were analyzed using Structural Equation Modeling (SEM). The research results showed that as far as mental factors are concerned, there is a relationship between somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, aggression, phobias, paranoid ideation and psychoses are related to creativity and innovation of the staff. Concerning personality traits, there is a relationship between neurosis, extraversion - introversion, conscientiousness, openness to experience, agreeableness and creativity and innovation.

KEYWORDS: Creativity and innovation - mental factors - personality traits - staff.

1. INTRODUCTION

When employees are creative in their affairs, they would be able to offer and apply new and useful ideas on products, performances, services with organization procedures [1]. Such ideas increase the probability that other staff apply them to their work. In addition, they may convey the ideas to other staffs so that they develop and apply them to their work. Therefore, creation and application of new ideas enable an organization to be consistent with variable conditions and to give response to threats and opportunities duly for growing and developing [2]. 'Creativity' is of the concepts for which no specific and accurate definition has been obtained in the field of psychology, but experts with different approaches have defined it in different ways. Here, we define seven theoretical perspectives [3, 4]. Pandey [5] studied the relationship between self-acceptance and social adjustment. His experiment showed that both those who abase or glorify themselves before others are not successful in their social lives [5]. The developed body of the research concerning the relationship between personality and creativity has provided stable findings. The meta-analysis studies showed that there is a positive relationship between neuroticism, extroversion, openness to experience, and creativity; however, there is a negative relationship between agreeableness and conscientiousness and creativity [6]. In addition, it was proved that there is a positive relationship between fluidity of divergent thinking and extroversion and openness to experience. There is a negative relationship between fluidity of divergent thinking and agreeableness [7].

Samdani [8] studied the relationship between personality traits and creativity of managers in Department of Education of Kerman, District 1. He concluded that there is no significant relationship between personality traits and creativity. It is not consistent with the earlier studies. Studying the factors effective in creativity of the staff of Iran's research institutes. Sam Khani [9] realized that personal factors, including personality traits, knowledge, and cognitive style are effective in creativity of researchers. Siadat [10] studied 'the personal and organizational factors effective in creativity of the staff of the presidency of the Islamic Republic of Iran'. The statistical analysis showed that the level of creativity of the staff of the presidency of the Islamic Republic of Iran is higher than the average. Three variables, including division of labor, development of educational system, and collaborative thinking had the most power to explain the staff's level of creativity. Based on results of previous studies, present study aims to identify personality traits effective on creativity and innovation among the staff of Sarkhon and Qeshm Gas Refinery Company.

2. MATERIALS AND METHODS

The present research was of the descriptive studies and it was carried out through correlation method. The statistical population of this research included all the staff of Sarkhon and Qeshm Gas Refinery Company.

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According to the HR department of Sarkhon and Qeshm Gas Refinery Company, there were totally 340 employees in the company. The statistical sample included 225 people who were selected through proportional stratified random sampling technique. Questionnaires were used for collecting the required information of the research. The questionnaires included

NEO-FFI Personality Traits Questionnaire: This questionnaire consists of 60 items that calculates five personality traits of people. Costa and McCrae studied correlation between personal reports and evaluation of peers in a 250-people sample to calculate test validity. They achieved the correlation between 0.3 and 0.65 [11].

Abedi Creativity Questionnaire: It is a 60-question 3-option test designed by O'Neil Abedi and Spielberger in 1996. In this test, *zero*, *one* and *two* scores are considered for options (A), (B) and (C), respectively. The total score indicate total creative thinking score of a person. Validity correlation coefficients between four scores of Torrance Test of Creative Thinking (TTCT) and four scores of Abedi Creativity Test are between 0.15 and 0.41. Validity of Abedi Creativity Test in its four subsidiaries is [12].

3. RESULTS

In this section, the descriptive indexes of research variables have been presented. Mean and standard deviation of personality traits are given in Table 1. Mean and standard deviation of creativity and its dimensions are given in Table 2.

As Table 1 shows, among the personality traits, the maximum mean score is related to ‘conscientiousness trait’ with mean and standard deviation of 3.97 and 0.495, respectively. The minimum mean score is related to neurosis with mean and standard deviation of 3.44 and 0.699, respectively.

As per Table 2, studying creativity index in the sample under study shows that the mean of creativity of the sample under study is 4.3 with standard deviation of 0.515, respectively. Among creativity aspects, maximum amount of mean for initiative was 4.2 and minimum mean amount for expansion aspect was 3.68. For fitness test, the proposed model was tested using Analysis of Moment Structures (AMOS_16). The results of the proposed model are explained subsequently.

Diagram 1 exhibits the results of the proposed model. As noticed, latent variables include mental factors and personality traits. Such latent variables are considered as exogenous variables and measured variable of creativity are considered as endogenous variable or criterion.

Table 1. Mean and standard deviation of personality traits

Traits	Mean	Standard Deviation
Neurosis	3.44	0.699
Extroversion - Introversion	3.79	.594
Openness to Experience	3.77	.636
Agreeableness	3.67	.653
Conscientiousness	3.97	.495

Table 2. Mean and standard deviation of creativity

Variable	Mean	Standard Deviation
Creativity	4.3	0.515
Fluidity	3.96	0.618
Expansion	3.68	0.264
Initiative	4.2	0.528
Flexibility	4.1	0.346

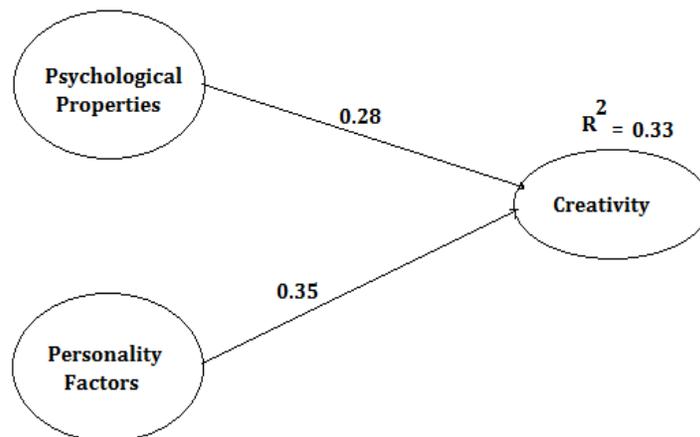


Diagram 1: Analyzed model for the traits related to promotion of creativity

According to the results obtained from analysis of the proposed model, the relationship of mental traits composed of nine factors with creativity with beta of 0.28. This is made of subscales with factor loadings including phobias, interpersonal relationships, paranoid, psychosis, depression, aggression, obsession, somatization, and anxiety. Generally, mental factors, as predictor variables, explained 0.33 of variance of creativity as a criterion variable.

In addition, the results achieved from the proposed model shows that the relationship of personality traits comprising five factors with creativity has beta of 0.35. This factor is made of some subscales, which had factor loadings including conscientiousness, agreeableness, openness to experience, extroversion – introversion, and neurosis. Generally, personality traits, as predictor factors, explained 0.33 of creativity variance as a criterion variable.

The values of fitness indices in the following table show that this model enjoys a desired fitness. According to the following table, the results of the proposed model show that the indices coefficients of Root Mean Square Error of Approximation (RMSEA) are equal to 0.09. Comparative Fit Index (CFI) and Goodness of Fit Indicators (GFI) were achieved as 0.94 and 0.87, respectively. The other indices also had acceptable values, which indicate the favorable fitness of the model and the data.

Table 3. Fitness indices of analysis of the proposed model

Fitness Indices	Quantity
Chi-square test (χ^2)	221.43
Significance Level	0.001≤
Degree of Freedom (df)	75
Chi-square to degrees of freedom (χ^2/df)	2.95
Goodness of Fit Indicators (GFI)	0.87
Adjusted Goodness of Fit Index (AGFI)	0.82
Normalized Fitness Index (NFI)	0.92
Comparative Fit Index (CFI)	0.94
Incremental fit index (IFI)	0.94
Tucker-Lewis Index (TLI)	0.93
Root Mean Square Error Of Approximation (RMSEA)	0.09

4. DISCUSSION AND CONCLUSION

The results of hypothesis II of the research showed that personality traits have roles in creativity and innovations of the staff. The findings in regression model analysis also indicated that none of the aspects of personality traits has a significant prediction of creativity and innovations of the staff. The results obtained in this concern are inconsistent with the ones achieved by former researches [13, 14, 15]. The results of this study indicate that none of aspects of personality traits has a role in creativity and innovation of the staff; whereas, the meta-analysis studies showed that there is a positive relationship between neuroticism, extroversion, openness to experience and creativity; there is a negative relationship between agreeableness and conscientiousness.

Creativity consists of a series of abilities and features that lead to creative thinking (creativity in terms of personality). Creativity is formation of associative factors as new combination that is compatible with specific requirements or useful in a way. The more the new combination factors are dissimilar, the more creative is the solving process (creativity in terms of process).

In spite of the differences between the results of this research and other studies, there is a positive relationship between neuroticism, extroversion, openness to experience and creativity. However, there is a negative relationship between agreeability and consciousness and creativity [6]. It was also shown that there is a positive relationship between fluidity of divergent thinking and extroversion and openness to experience; there is a negative relationship between divergent thinking and agreeability [14]. In fact, they indicate the role of mental and personality traits in explaining creativity and innovation. There are different theories that believe we can teach people to think the unusual ways, solve problems through divergent thinking, and achieve appropriate solutions. This way, we teach them to be creative people. In other words, we should allow trainers to think about this field because creativity flow is not a pre-made process, but a generative and changeable method [15]. With respect to the role of mental and personality traits in creativity and innovation, it seems that training people should be based on mental and personality issues.

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