

The Appraisal of the Effect of Staffs' Entrepreneurial Spirit on the Quality Development of Human Capital (Case Study: Shahid Hashemi Nejad Gas Refining Company)

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Abstract: The present research intends to appraise the effect of staffs' entrepreneurial spirit on the quality development of human capital. It is an applied research which has been accomplished through a descriptive method. The statistical universe of the research is consisting of 700 staffs of Shahid Hashemi Nejad Gas Refining Company. The researcher, on the basis of research method and simple random sampling, has considered 247 of the staffs as the statistical sample. The instruments which have been applied to assemble the data have been standard questionnaire and data analysis in the direction of descriptive and correlation (regression) methods. Software SPSS has also been used to analyze the data, correlations and regression tables and ILSREL has been applied to data fitting through a conceptual model. Considering the analysis of research data, whole hypotheses of the research have been averred. The final results indicate that engendering a spirit of entrepreneurship apropos of the quality of human capital (consisting of innovation level, risk propensity, meeting success, concentration on the decision-making, self-confidence and the capacity ambiguity resolution) can augment the quality of human capital and such possibilities can promote the level of productivity and final efficiency of the organization. Therefore, educating the organization's staffs on the entrepreneurship principles can be considered as an efficacious strategy.

Key words: Entrepreneurship • Productivity • Human Capital

INTRODUCTION

Entrepreneurship is the process or concept in which the entrepreneur, through engendering innovative and novel ideas and opportunities and also mobilizing the resources, attempts to drum up new businesses, growing companies and organizations. In 1964, Robert Katz said that the organizations whose objectives had been prognosticated on the basis of their staffs' innovation spirit would found more successful social systems and those organizations would be more amenable and knowledge oriented [1]. Entrepreneurship is undeniably required and its necessity is controvertible. Entrepreneurs are at the frontline of technological and economic development. Education is one of the fundamental aspects of improving entrepreneurship which should be noticed. In the earliest stages of commencing their task,

entrepreneurs try to take opportunities beyond home markets which are a significant principle in marketing [2]. Entrepreneurship subjects are nowadays taught throughout the universities and institutes of higher education. As it is mentioned in most of the researches, entrepreneurship has nowadays a great influence on the economic infrastructures and managers' success. It also is effective in the staffs' conception of today's organizations [3]. Shahid Hashemi Nejad Gas Refining Company has had a continual struggle to enhance the educational and scientific knowledge of the staffs in order to improve the quality level of their efficiency. The organization also has intended to develop the programming, management, recognition, knowledge and worthiness of human capital in the direction of the application of the third criteria of EFQM. This research aims to reply the question that whether entrepreneurial

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spirit can be a distinctive element in the enhancement of the level of innovation, self-confidence, risk propensity, meeting success and finally the augmentation of productivity and whether it can help the organization to achieve its goals and objectives. The present research seeks to appraise the effect of entrepreneurial spirit on the enhancement of the staffs' level of innovation, risk propensity, self-confidence, concentration on the decision-making, ambiguity tolerance and meeting success. The staffs of Shahid Hashemi Nejad Gas Refining Company, which is one of the dependent organizations of National Iranian Gas Company (NIGC) and its main activity is in the field of refining natural gas, have been studied in this research.

Review of Literature: The word entrepreneurship, which means being responsible for a task, has derived from French. Entrepreneur is someone who is responsible for the managing and organizing new businesses which accompany many risks. Entrepreneur in French had been applied for the person who leads a music group or other recreational and amusement activities. Then, at the beginning of 16th c. this concept was used for the people who were dispatched to military missions. In 17th c. the scope of its application gradually was augmented and the word has been used in various engineering activities such as building and trench construction. At the beginning of the 18th c. the word has been applied for economic activities. Through this framework, entrepreneurship has been brought up in different activities and from various viewpoints [4]. Researchers have accomplished many studies apropos of the effect of innovation and creativity on several service sections which indicate the improvement of outputs' quality in this industry [5]. Some of these studies are the efficacious attributes of the new products' success in comparison with the older samples [6]. The behavior of the market-oriented and entrepreneurs are alike. Both of these behaviors play the role of development boundaries for the organization. Both behaviors have interaction with the environment which has surrounded the organization and require risk propensity and entrusting in the organization. These organizations also need the experienced staffs with the great spirit of business to encounter abstruse spaces [2]. Entrepreneurship is so significant in different cultures which have been known as panacea (cure-all for every illness) in economics and managers and staffs refer to it as the principal element of countries' development. It is an axiom that there is a positive and significant relationship between entrepreneurship and economic growth [7].

Entrepreneurship has some benefits such as achieving autonomy, satisfaction, financial reward and self-esteem [8]. According to different experts, there are various divisions for entrepreneurship among which the foremost ones are the individual (autonomous) entrepreneurship and organizational (internal organizational) entrepreneurship [4]. An autonomous entrepreneur is a person who is responsible for providing the rudimentary equipment of commencing a new business and the main factor of entrepreneurship is innovation [9]. Organizational entrepreneurship is consisting of developing the entrepreneurial behavior in the organization which has been established in advance and is the process of engendering the innovative outputs (services) or processes through creating an entrepreneurial culture in the organization [4]. The most considerable attributes of entrepreneurship can be as follows: positive thinking, seeking success, taking risk, trending creativity and innovation, having invincible spirit, self-control, independence, future ambitions and ambiguity resolution [8, 10]. We carry on with the investigation of accomplished research in this field. In 2010, Hayati Jafar Beigi had studied the relationship between the entrepreneurial attributes of staffs and human capital efficiency in a field research. Its findings indicated that there was a significant relationship between the attributes of risk propensity, self-control, seeking success, ambiguity resolution and the component of human capital efficiency, but there was no significant relationship between creativity and human capital efficiency [11]. The results of other researches done by Jahromi, Boudlayi and Narimani have indicated that there is a positive and significant relationship between the organizational factors (such as manager's support, encouragement, rewarding, entrusting, opportunities and organizational structure) and organizational entrepreneurship in Pars Oil and Gas Company [12]. Nikou Maram Zade and Heidar Zade, through examining the quoted companies, have concluded that entrepreneurial tendency does not have a positive and direct relationship with marketing and on the contrary, it has a negative effect through the grouping reduction. It is also proved that there is no difference between the results of administrative entrepreneurial tendency either at the time of marketing's modification or marketing's non-modification [13]. The findings of another research in Iran Khodro Company shows that there is a significant relationship between the staffs' skill and capability and organizational entrepreneurship and also the amount of organizational entrepreneurship is different based on the

variables of gender, age, education level and years of service [14]. Another research in Shahid Beheshti University indicates that organizational structure is in positive and direct relation with the organizational entrepreneurship and there is an inverse relation between the components of organizational structure (officialdom, abstruseness and concentration) and organizational entrepreneurship [15]. In 2010, Wenhong and Linying have averred in a research that entrepreneurs have an effective influence on the economics and the enhancement of profitability. People who were optimistic and had a strong tendency toward entrepreneurship could meet great success and it is concluded that entrepreneurship is accompanied by a high spirit of risk propensity [16]. In 2006, Heinonen and Poikkijoki came to the conclusion that people who possess the rudimentary attributes of entrepreneurship should be taught and trained at the basic levels of education and from the early age to be capable of achieving an entrepreneurial spirit and behavior and benefiting from the opportunities in markets [17].

Research Methodology: In this research, the effect of independent variable of entrepreneurial spirit has been investigated on 6 strategic elements of marketing (such as innovation, meeting success, concentration on decision-making, risk propensity, ambiguity resolution and self-confidence) as dependent variables. The research is applied and descriptive. A questionnaire has been applied to ascertain the data and library studies have been used as the instrument of assembling information. Questionnaire's reliability has been calculated through Cronbach's Alpha method and distributing 30 questionnaires. The questionnaires have been analyzed through SPSS software and Cronbach's value has been 0.834 which avers research's reliability. Adroit and experts have confirmed the validity of questionnaire's content. Descriptive and correlation (regression) methods and SPSS and LISREL¹ software have been used for data processing. SPSS software has been applied to analyze the data, correlations and regression tables and LISREL software has been utilized for data fitting through a conceptual model. The statistical universe of the research is consisting of 700 staffs of Shahid Hashemi Nejad Gas Refining Company. On the basis of the following formula and simple random sampling, 247 staffs have been chosen as the statistical sample.

$$\text{Morgan Formula } n = \frac{N.t^2.p(1-p)}{N.d^2 + t^2.p(1-p)}$$

- n = sample's volume
- N = The whole number of statistical universe
- t² = T student amount when significance level is less than 0.05
- d² = Estimation of statistical universe's parameter which is equal with 0.052
- p = Probability of attribute's existing
- (1-p) = Probability of attribute's non-existing [18].

$$n = \frac{700 \times 1.96^2 \times 0.5(1-0.5)}{700 \times 0.05^2 + 1.96^2 \times 0.5(1-0.5)} = 247$$

Research Hypotheses and Descriptive Model:

- There is a relationship between entrepreneurial spirit and the enhancement of staffs' innovation.
- There is a relationship between entrepreneurial spirit and the enhancement of staffs' success.
- There is a relationship between entrepreneurial spirit and the enhancement of staffs' concentration on decision-making.
- There is a relationship between entrepreneurial spirit and the enhancement of staffs' risk propensity.
- There is a relationship between entrepreneurial spirit and the enhancement of staffs' ambiguity resolution.
- There is a relationship between entrepreneurial spirit and the enhancement of staffs' self-confidence.

Research Hypotheses Testing: To apply the opposite statistical method, first of all, the hypotheses have been investigated to be employed in the hypotheses testing. Due to the fact that research's variables are distance, regression tests and path analysis have been utilized. Significance level has been considered (p<0.05) and two dimensional for the statistical comparisons. If we assume that:

- X : Independent variable of existing entrepreneurial spirit in the staffs
- Y : Dependent variable

Hypothesis 1: entrepreneurial spirit will produce innovation in staffs and managers.

The results of variance analysis and statistical regression attributes (on the basis of coding) and the effect of staffs' entrepreneurial spirit on their innovation have been shown in Table 7-4. According to these findings, the amount of observed f (145.911) is significant (p<0.001), correlation coefficient is 0.66 between the two variables and 0.436 of the alterations related to staffs' and

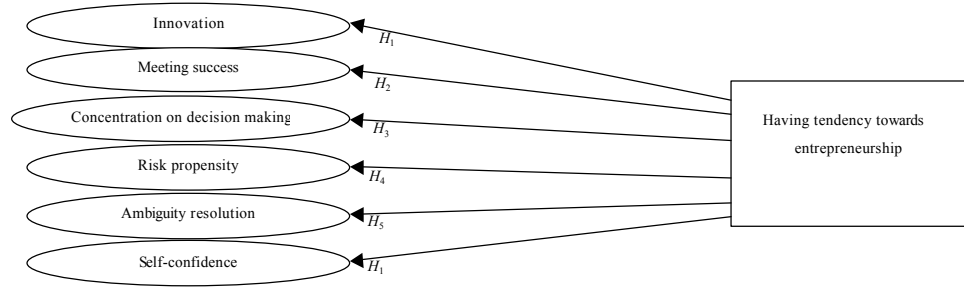


Fig. 1: Research's variables

Table 1: The synopsis of determining linear relationship between the independent variable of existing entrepreneurial spirit in staffs and managers and dependent variable of innovation

Model	SS	Df	MS	F	P	R	R ²
Regression	32.128	1	32.128	145.911	0.000	0.66	0.436
Residuals	41.616	189	0.22				
Total	73.744	190					

Table 2: The coefficient of the effect of having entrepreneurial spirit on innovation in staffs and managers on the basis of regression equation

Indicator Variable		B	SE	Beta	T	Sig.
Staffs' and managers' innovation	B0	0.07	0.082		0.855	0.394
	B1	0.924	0.076	0.66	12.079	0.000

Table 3: The synopsis of determining linear relationship between the independent variable of existing entrepreneurial spirit in staffs and managers and dependent variable of meeting success

Model	SS	Df	MS	F	P	R	R ²
Regression	27.166	1	27.116	66.386	0.000	0.506	0.256
Residuals	78.831	193	0.408				
Total	105.947	194					

Table 4: The coefficient of the effect of having entrepreneurial spirit on meeting success in staffs and managers on the basis of regression equation

Indicator Variable		B	SE	Beta	T	Sig.
Staffs' and managers' need to success	B0	0.131	0.109		1.194	0.234
	B1	0.829	0.102	0.506	8.148	0.000

Table 5: The synopsis of determining linear relationship between the independent variable of existing entrepreneurial spirit in staffs and managers and dependent variable of concentration on decision-making

Model	SS	Df	MS	F	P	R	R ²
Regression	25.013	1	25.013	65.154	0.000	0.502	0.252
Residuals	74.095	193	0.384				
Total	99.109	194					

Table 6: The coefficient of the effect of having entrepreneurial spirit on concentration on decision-making in staffs and managers on the basis of regression equation

Indicator Variable		B	SE	Beta	T	Sig.
Staffs' and managers' concentration on decision-making	B0	-0.042	0.105		-0.398	0.691
	B1	0.794	0.098	0.502	8.072	0.000

Table 7: The synopsis of determining linear relationship between the independent variable of existing entrepreneurial spirit in staffs and managers and dependent variable of risk propensity

Model	SS	Df	MS	F	P	R	R ²
Regression	28.834	1	28.834	72.838	0.000	0.521	0.271
Residuals	77.59	196	0.396				
Total	106.424	197					

Table 8: The coefficient of the effect of having entrepreneurial spirit on risk propensity in staffs and managers on the basis of regression equation

Indicator Variable		B	SE	Beta	T	Sig.
Staffs' and managers' risk propensity	B0	-0.167	0.106		-1.572	0.117
	B1	0.848	0.099	0.521	8.535	0.000

managers' innovation is based on the staffs' entrepreneurial spirit. The variable's regression coefficients indicate that the staffs' entrepreneurial spirit can amplify the changes with regard to the staffs' and managers' innovation in a significant way, meaning that there is linear relationship between the variables. The mathematical model for the above variables can be as follows:

$$Y = B0 + B1X$$

Staffs' and managers' innovation = $0.07 + 0.924$ (staffs' entrepreneurial spirit).

Hypothesis 2: having an entrepreneurial spirit leads to meeting success.

The results of variance analysis and statistical regression attributes (on the basis of coding) and the effect of staffs' entrepreneurial spirit on their need to success have been shown in Table 9-4. Considering these findings, the amount of observed f (66.386) is significant ($p < 0.001$), correlation coefficient is 0.506 between the two variables and 0.256 of the alterations related to staffs' and managers' needing success is based on the staffs' entrepreneurial spirit. The variable's regression coefficients show that the staffs' entrepreneurial spirit can aver the changes regarding the staffs' and managers' need to success significantly. It means that there is linear relationship between the variables. The mathematical model for the above variables can be considered as follows:

$$Y = B0 + B1X$$

Needing to success = $0.131 + 0.829$ (staffs' entrepreneurial spirit).

Hypothesis 3: having an entrepreneurial spirit leads to concentration on decision-making.

The findings of variance analysis and statistical regression attributes (on the basis of coding) and the effect of staffs' entrepreneurial spirit on their concentration on decision-making have been shown in Table 11-4. Based on these findings, the amount of observed f (65.154) is significant ($p < 0.001$), correlation coefficient is 0.502 between the two variables and 0.252 of

the alterations related to staffs' and managers' concentration on decision-making is based on the staffs' entrepreneurial spirit. The variable's regression coefficients show that the staffs' entrepreneurial spirit can verify the variations related to the staffs' and managers' concentration on decision-making in a significant way. It means that there is linear relationship between the variables. The mathematical model for the above variables can be as follows:

$$Y = B0 + B1X$$

Concentration on decision-making = $-0.042 + 0.794$ (staffs' entrepreneurial spirit).

Hypothesis 4: having an entrepreneurial spirit will make risk propensity.

The findings of variance analysis and statistical regression attributes (on the basis of coding) and the effect of staffs' entrepreneurial spirit on their risk propensity have been shown in Table 13-4. Based on these findings, the amount of observed f (72.838) is significant ($p < 0.001$), correlation coefficient is 0.521 between the two variables and 0.271 of the alterations related to staffs' and managers' risk propensity is based on the staffs' entrepreneurial spirit. The variable's regression coefficients show that the staffs' entrepreneurial spirit can prove the changes related to the staffs' and managers' risk propensity in a significant way. It means that there is linear relationship between the variables. The mathematical model for the above variables can be as follows:

$$Y = B0 + B1X$$

Risk propensity = $-0.167 + 0.848$ (staffs' entrepreneurial spirit).

Hypothesis 5: having an entrepreneurial spirit will augment the capability of ambiguity resolution.

The results of variance analysis and statistical regression attributes (on the basis of coding) and the effect of staffs' entrepreneurial spirit on their capability of ambiguity resolution have been shown in Table 15-4. Based on these findings, the amount of observed f (30.122) is significant ($p < 0.001$), correlation coefficient is

Table 9: The synopsis of determining linear relationship between the independent variable of existing entrepreneurial spirit in staffs and managers and dependent variable of ambiguity resolution

Model	SS	Df	MS	F	P	R	R ²
Regression	10.681	1	68110	30.122	0.000	0.371	0.137
Residuals	67.019	189	0.355				
Total	77.7	190					

Table 10: The coefficient of the effect of having entrepreneurial spirit on ambiguity resolution in staffs and managers on the basis of regression equation

Indicator Variable		B	SE	Beta	T	Sig.
Staffs' and managers' capability of ambiguity resolution	B0	-0.12	0.103		-1.172	0.243
	B1	0.525	0.096	0.371	5.488	0.00

Table 11: The synopsis of determining linear relationship between the independent variable of existing entrepreneurial spirit in staffs and managers and dependent variable of self-confidence

Model	SS	Df	MS	F	P	R	R ²
Regression	20.302	1	20.302	25.547	0.000	0.463	0.214
Residuals	74.566	193	0.386				
Total	94.868	194					

Table 12: The coefficient of the effect of having entrepreneurial spirit on self-confidence in staffs and managers on the basis of regression equation

Indicator Variable		B	SE	Beta	T	Sig.
Staffs' and managers' self-confidence	B0	0.175	0.106		-1.165	0.101
	B1	0.723	0.1	0.463	7.249	0.000

Table 13: Ranking the coefficient of determining the dependent variables

Variable	R	R ²	P	F
Innovation	0.66	0.436	0.000	145.911
Risk propensity	0.521	0.271	0.000	72.838
Need to success	0.506	0.256	0.002	66.386
Concentration on decision-making	0.502	0.252	0.000	65.154
Self-confidence	0.463	0.214	0.000	25.547
Capability of ambiguity resolution	0.371	0.137	0.000	30.122

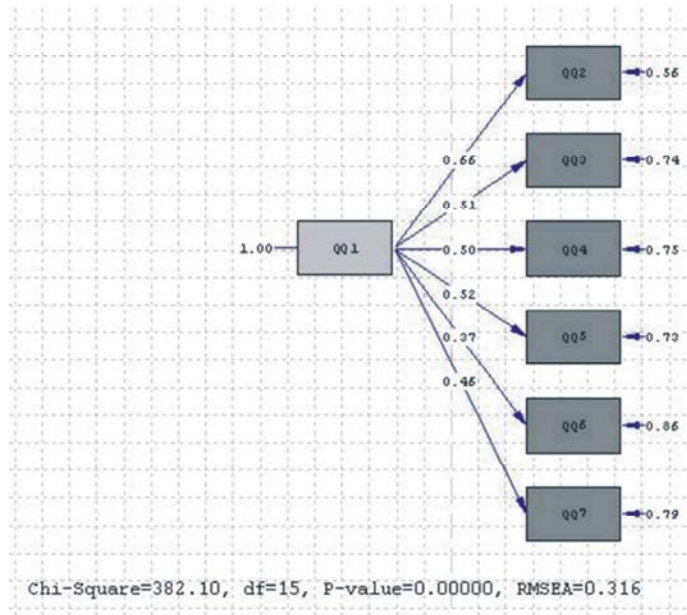


Fig. 2: Path analysis diagram of the independent variable of having entrepreneurial spirit with the other dependent variables

0.371 between the two variables and 0.137 of the alterations related to staffs' and managers' capability of ambiguity resolution is based on the staffs' entrepreneurial spirit. The variable's regression coefficients show that the staffs' entrepreneurial spirit can verify the changes related to the staffs' and managers' ambiguity resolution in a significant way. It means that there is linear relationship between the variables. The mathematical model for the above variables can be as follows:

$$Y = B_0 + B_1X$$

The capability of ambiguity resolution = $-0.12 + 0.525$ (staffs' entrepreneurial spirit).

Hypothesis 6: entrepreneurial spirit will increase self-confidence.

The results of variance analysis and statistical regression attributes (on the basis of coding) and the effect of staffs' entrepreneurial spirit on their self-confidence have been shown in Table 17-4. According to these findings, the amount of observed f (52.547) is significant ($p < 0.001$), correlation coefficient is 0.463 between the two variables and 0.214 of the changes related to staffs' and managers' self-confidence is based on the staffs' entrepreneurial spirit. The variable's regression coefficients show that the staffs' entrepreneurial spirit can verify the changes related to the staffs' and managers' self-confidence in a significant way. It means that there is linear relationship between the variables. The mathematical model for the above variables can be as follows:

$$Y = B_0 + B_1X$$

Self-confidence = $-0.175 + 0.723$ (staffs' entrepreneurial spirit).

Now, according to the achieved findings of testing the hypotheses 1 to 6, we can reply to a general question which is "what kind of mixed linear relationship exists between the independent variable of entrepreneurial spirit in staffs and managers and dependent variables?" this question can be answered through LISREL software. If we assume that:

QQ1: Independent variable of having entrepreneurial spirit.

QQ2: Dependent variable of staffs' and managers' innovation.

QQ3: Dependent variable of needing to meet success.

QQ4: Dependent variable of concentration on making decision.

QQ5: Dependent variable of risk propensity.

QQ6: Dependent variable of the capability of ambiguity resolution.

QQ7: Dependent variable of self-confidence.

Considering the above diagram and assembled information about the mixed model and due to the fact that chi square is 382.1, the degree of freedom is 15 and significance level is equal with 0, it can be concluded that the above model can be confirmed. (If significance level was more than 0.05, the conceptual model would not be averred and it should be noticed that if even one of the linear relationships (the hypotheses) was not significant, the conceptual mode could not be confirmed).

On the basis of the accomplished analyses, the amount of dependent variables' changes due to the independent variable can be summarily prioritized with regard to the following table:

RESULTS AND DISCUSSION

Finding of the Table 1-5 of the present research indicate that there is a positive and significant relationship between the entrepreneurial spirit and augmentation of innovation, needing to meet success, risk propensity, self-confidence, capability of ambiguity resolution and concentration on decision-making between the staffs of Shahid Hashemi Nejad Gas Refining Company. By and large, the highest effect of entrepreneurship is on the innovation, with 0.436 coefficient of determination and its lowest effect is on ambiguity resolution with 0.137 coefficient of determination. This result can be due to the partnership system of the organization and its manager's support to produce an environment which is apposite for the staffs' creativity and innovation. Low effect of entrepreneurship on ambiguity resolution can be attributed to the fact that the organization is governmental and there are some strict rules and laws from the authorities which can confine the

staffs' entrepreneurship when encountering ambiguity. In spite of these adversities, we can still see some effects of entrepreneurship on the ambiguity resolution. Therefore, if entrepreneurial spirit enhances, the innovation level will be considerably enhanced. Additionally, the effect of this variable on the other variables such as meeting success, concentration on decision-making, risk propensity, ambiguity resolution and self-confidence can introduce entrepreneurship as a strategic element in ameliorating the organization's operation and its transformation into a pioneer business in the present competitive circumstances. Considering the research's results, following suggestions can be proposed:

- A committee is suggested to be established on entrepreneurship to define the objectives and strategies of human capital with the help of consultants.
- Pondering the research's findings, which indicate the effectiveness of entrepreneurship on innovation with the coefficient correlation of 0.66 and 0.436 coefficients of determination and in the present circumstances of global economy, entrepreneurship can be a competitive benefit. Educational courses in the direction of creativity and innovation in the organization are so efficacious along with entrepreneurial training courses. Entrepreneurship enhancement in the staffs can remove the adversities, which exist due to boycotts of rudimentary instruments and spare parts, through the innovative and creative actions. It also can produce a stable market. It is suggested to execute the training courses under the supervision of experts who are proficient and have an acquaintance with the industry.
- According to the hypothesis 2 which indicates the effect of entrepreneurship on meeting success with the coefficient correlation of 0.506 and 0.256 coefficient of determination, it is proposed to augment the managers' and staffs' need of success through entrepreneurial training development. It can also ameliorate the staffs' motivation and expectancy which are the fundamental factors of efficiency development and organizational effectiveness. This issue can cause the staffs' perseverance in the adversities and their operational amendment. These factors can improve human capital efficiency in the operational areas of gas and oil.
- Decision making means to choose the best alternative among the existing ones. If the entrepreneurial spirit is increased, the capability of decision-making will be enhanced. This principle can be confirmed based on the present research which indicates the effect of entrepreneurship on decision-making with the coefficient correlation of 0.502 and 0.252 coefficient of determination. So, in addition to the entrepreneurial training courses, it is suggested to make an entrusting system in the organization to improve the staffs' capability of making decision and approach the organization's objectives.
- Self-confidence improves when the staffs know that the managers support them in their creative and innovative operations. It is suggested that the managers avert from the confined activities and always second them to achieve the organization's purposes. If managers accept this issue as an efficacious index of organization's operation, more development can be accessible in education and entrepreneurial enhancement, since the research's findings show the effect of entrepreneurship on the augmentation of staffs' and managers' self-confidence.
- Sometimes, on the process of doing the organizational activities, the staffs may encounter some ambiguities and adversities which are increasing every day with regard to the changing structures of the organization. Improving the entrepreneurial spirit is proposed to keep the staffs away from this difficulty and help them at the time of encountering organizational ambiguities.

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