



Evaluation of Entrepreneurship among PNU Academic Managers in Tehran Province

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ABSTRACT: The current study is intended to enhance entrepreneurship among the academic directors of Payam-E-Noor University (PNU) in Tehran Province and in order to offer the needed recommendations to top managers for election and appointment of efficient and entrepreneur managers. This investigation comprises of three questions (To what extent is managers' entrepreneurship effective? What is the hierarchy of 14- variables of managers' entrepreneurship in the community? Does entrepreneurship relate to individual characteristics of the managers?). To measure entrepreneurial variables, a self- evaluation inventory, which has been prepared and published by "Western Economic Diversification of Canada (WD)", was adopted and therefore it has adequately valid. Reliability of researching tool was estimated by means of Cronbach Alpha Coefficient at level of 0.8464. In this study, descriptive semi- empirical survey and correlation have been employed as methodology. Statistical sample of this study includes 61 participants from PNU academic directors at Tehran Province, who were elected typically, and questionnaire was distributed among them. Study findings indicated that among managers of PNU University, as an absolute concept (TOT), entrepreneurship has been reported together with some variables including motive for growth and achievement, energetic (energy leadership), persistence and perseverance, interior control, social skills, adaptation, creativity and innovation, attempt for achievement (success), insight, self- confidence, determination in decision- making, and fluidity (flexibility) greater than average level and higher, variable opportunism at average level, and variable independence lower than average level and weak. Hierarchy of managers' entrepreneurial variables in the studied population is as follows: 1- Energy leadership, 2- Persistence and perseverance, 3- Growth and achievement motive, 4- Fluidity, 5- Insight, 6- Interior control, 7- Social skills, 8- Determination in decision-making, 9- Adaptation, 10- Attempt for success, 11- Self-confidence, 12- Creativity and innovation, 13- Opportunism, and 14- Independence. The minor results came from this study showed that there was no significant relationship among gender (sex), education, employment status and technique, and executive position of managers' entrepreneurship.

Keywords: Entrepreneurship, Energy Leadership, Persistence and Perseverance

ORIGINAL ARTICLE

INTRODUCTION

The present study was carried out based on the research priorities and by means of financial credited that granted by PNU University at Tehran Province. This study is aimed at promotion of entrepreneurship among academic managers through evaluation of their entrepreneurship with response to tertiary questions: 1- To what extent is managers' entrepreneurship effective? ; 2- What is the hierarchy of 14- variables of managers' entrepreneurship in the community? ; and 3- Does entrepreneurship relate to individual characteristics of the managers? At the same time, it includes the needed recommendations and suggestions to the top academic directors for election and appointment of entrepreneurial managers.

Entrepreneurship concept has been placed in human life of yore and has reflected its impacts on cultural, social and economic developments; however, with respect to the recent impressions from this concept, entrepreneurship topic has seriously entered into scientific issues since 1985 and drawn attention

by experts in management sciences and economists. Of some important reasons for paying attention to this subject, one may refer to accelerating changes occurred in surrounding environment of organizations and communities in which they were involved and it has deprived them this possibility to be able to solve today and or yesterday problems by this means. At the same time, it is argued that no one can find a solution for these problems by predication of future as well, but all of their efforts should be made and focused on pre- construction of the future and in other words they should accept playing an active role for building of the future instead of being exposed to these problems passively.

Regarding the relationship between entrepreneurship with individual characteristics of managers, this issue may be raised that whether entrepreneurship stems in individuals' nature and or it is instinctive; and or it relates to sex, education, experience, employment status, and occupation. In other words, to what extent is it affected by their individual characteristics?

Is it possible to predict and measure his entrepreneurship by means of manager's individual characteristics and to take them into consideration in selection and appointment of post managers?

Term "entrepreneurship" is derived from French word "Entreprendre", which stands for "to undertake". According to definition derived from Webster's New Collegiate Dictionary, Entrepreneur is a person, who is undertaken to manage, organize and incur risks of an economic activity (AhmadpourDarani, 2004:4).

In Arianpour Dictionary, the meaning which has been written before the aforesaid term is: "Brave in doing important and risky and venture tasks and to take risk and being pioneer in establishment of Venture Company". Term entrepreneurship was coined in French Language for the first time. In early 16th century, those ones, who commanded military operations, were called entrepreneurs. Since by 1700, French people used term "entrepreneur" frequently for governmental contractors, who were responsible for construction of road, bridge, port and fortifications (Karbasi et al, 2002:27).

More than two century has not yet passed that term entrepreneurship entered into literature of management and economy and like other words it has been dramatically changed and growingly developed.

There are different theories in their special schools where each of which tries to introduce the most influential entrepreneurial persons. Overall, these schools are divided into three groups. A special classification has been considered in any group where one definition and classification in one group may be overlapped by some definitions from other groups.

School theories of first group:

I) Human school, II) Environmental school, III) School of idea for setup a new business

School theories of second group:

So far, several studies have been carried out diffusively about this subject. In our country, many studies have also been conducted as academic theses concerning to entrepreneurship. Here some of investigations, which have been conducted in this regard, are implied.

"Design and interpretation of model for training of entrepreneur managers in industry" is a study, which has been purposed by AhmadpourDarani (1998) as a pamphlet in PhD management course. Benefitted from theoretical findings in research literature in this survey, he has achieved a native (local) model for entrepreneurship. It has been tried in this study to review their growth trend from childhood to achievement in task with respect to personality, demographic characteristics, education, trainings,

Development trend of economic activists or entrepreneurs indicates that entrepreneurship has been realized in economic theories and it has been placed within the center of different economic schools since 15th century (Hashemi, 2003: 182).

Following to exiting entrepreneurs from economic theories field and along with improvement of entrepreneurs' role in economic development, psychologists have dealt with survey on entrepreneurs' psychological characteristics in order to purpose theories based on personality characteristics and distinguishing among entrepreneurs with managers and non-entrepreneurs. Focusing on approach of characteristics, this group of researchers ascribed many characteristics to entrepreneurs where some of their agreed foremost specifications are given in Table-1 (Darani et al, 1998:126).

Peter Drucker states: "Entrepreneur manager is a person, who trusts in his/ her abilities and benefits from opportunities for change and innovation." He/ she are different from bureaucratic managers, who feel sense of threatening from change and may be anxious by uncertainty, so he/ she prefers expectancy and tends to keep the status quo." (Vares, 1999:14).

I) Theories of personality, II) Behavioral theories, III) Economic theories, IV) Sociological theories, and V) Communal theories

School theories of third group: This group has been divided into six subgroups based on definition that they purposed for entrepreneur and entrepreneurship. They include school of famous entrepreneurs (Great Figures), school of psychological characteristics, classic school, school of management, school of leadership and school of organizational entrepreneur where these schools are introduced and compared according to Table -2 (Ostadzadeh, 2003:73-75).

dispositions and successes in entrepreneurial managers; meanwhile, an appropriate model has been designed for training of entrepreneurial and successful managers.

In some part of study which has been done by Moghimi (2004), in order to evaluate the rate of entrepreneurship among managers from IR governmental organizations which are considered as cornerstone- entrepreneurship in these organizations, eight important personality characteristics have been utilized, including 1) Changeability and opportunism, 2) Bravery and risk- taking, 3) Ability of doing hourly work for long time, 4) Creativity and innovation, 5) Prospectus and tendency to being pioneer, 6) To welcome to challenges and teamwork, 7) To have

appropriate organizational skill, and 8) Ability for negotiation.

Study results indicated that although mean characteristics of managers have the better condition than personnel's but they are far from the optimal level anyway. Among managers' characteristics, variables of ability to do tasks for longer hourly working and ability for negotiation are placed in better condition than other variables while variables of bravery, risk-taking and changeability and opportunism play important role but they are not at reasonable level. Furthermore, this research showed that managers' characteristics relate to organizational entrepreneurship. Besides, the results of a survey which has been conducted in social and cultural organizations suggested this point that although managers had the more suitable characteristics than personnel, but managers' characteristics might not act as entrepreneurial factors in system of socio-cultural and governmental organizations.

In another study that was carried out by Khosravi (2004) under title of "An exploration into rate of managers' entrepreneurship in a governmental organization", the following results were derived: The rate of managers' entrepreneurship in this governmental organization does not depend on their gender, education level and occupational experience and at the same time the subsidiary findings from this study also showed that no relationship might be found among rate of managers' entrepreneurship and their organizational position and age.

In a study, called "Review the rate of managers' entrepreneurship in State Management and Planning Organization (MPO) and its affiliate agencies", which was done by Ozari (2005) on sample group from 217 managers, it was concluded that there is no significant relationship between managers' entrepreneurship with their gender, education, servicing experience, age and organizational position.

In an study that was conducted by Azadi (2005) on 200 managers for "Evaluation of managers' entrepreneurship in headquarter of Water and Wastewater Company from Ministry of Energy", the results of this survey suggested that there was no relationship between managers' entrepreneurship with their age, sex, education and servicing experience. In other findings came from this study, managers' entrepreneurship related to their organizational position but rate of correlation is very low. At the same time, rate of managers' entrepreneurship was measured in this study and it was concluded that rate of managers' entrepreneurship in headquarter of Water and Wastewater Company was greater than average level and high.

Also in an investigation done by Mohammadnejad (2005) under title of "Relationship between entrepreneurship with managers' personality characteristics from Ministry of Agricultural Jihad" on 100 directors, the results indicated that there is no relationship between managers' entrepreneurship with their gender, age, servicing experience, organizational position and education level.

In his study, which called "Comparison between managers' entrepreneurship in headquarters of State Civil Aviation Organization (ICAO) and directors from headquarters in Ministry of Agricultural Jihad", Azizian (2006) concluded in that rate of managers' entrepreneurship in ICAO had average rate of 229.87 and at higher than average state while rate of managers' entrepreneurship in affiliate organization of Ministry of Agricultural Jihad was 226.30 and higher than mean level so this suggested the appropriate condition in these organizations. The minor findings of this study also showed that there was no significant relationship between rate of managers' entrepreneurship and demographic variables (education level, organizational rank, age and servicing experience). And results reflected that none of the above factors related to managers' entrepreneurship.

Haghani (2007) conducted an investigation under title of "Review the relationship between entrepreneurship with values system taken by chancellors of Public Universities and directors from Vali-Ye- Faghih (Islamic Jurisprudent) Representation Institution in Public Universities of Iran" and about entrepreneurship he concluded that entrepreneurship is greater than average level and high among chancellors of universities and directors from Vail-Ye-Fagin Representation Institution within the studied population. Similarly there was no relationship between entrepreneurship in both groups with individual characteristics like age, servicing experience and education.

In a study done by Same (2007) under title of "The relationship between entrepreneurship and manager's value system in Shahid Beheshti University", he came to the result that relationship between entrepreneurship (as a total concept) with 10 variables of growth and achievement motive, energetic nature (energy leadership), persistence and perseverance, interior control, social skills, adaptation, attempt for success, insight, determination in decision-making, fluidity is greater than average level and high in the studied population, but this rate is at average level in four variables of opportunism, creativity and innovation, self-confidence, and independence. At the same time, hierarchy of managers' entrepreneurship variables in directors of Shahid Beheshti University is as follows: 1- Growth

and achievement motive, 2- Fluidity, 3- Interior control, 4- Persistence- perseverance, 5- Energetic nature (energy leadership), 6- Social skills, 7- Adaptation, 8- Determination in decision- making, 9- Attempt for success, 10- Insight, 11- Independence, 12- Creativity and innovation, 13- Opportunism, and 14- Self-confidence.

Development is one of the serious and inevitable requirements in an Islamic nation, which has been accepted as its definite fate by toady world and State Comprehensive Development is one of the foremost and most essential objectives of universities (Ekrami, 2003; p55). To realize development, many factors may play role including manpower, management, administrative system, budget and facilities. The presence of entrepreneurs as impetus for development of the country is one of the foremost factors in this regard. According to what it expressed, with respect to general tasks which have been on entrepreneurs' onus, prosperous directors with the aforesaid characteristics may play essential role in development, thriving and job creation in community and this requires their support and creation of appropriate and learning atmosphere to accept change and transformation, training and expansion of entrepreneurial skills.

As it shown by theoretical bases and review of research literature, entrepreneurship has various definitions and interpretations. Particularly, in researching reports that have been purposed, entrepreneurship is not an integrated and simple concept and it comprises of several factors at least and to the extent that researcher knows, study on entrepreneurship has not been yet reported in PNU University at Tehran Province; thus, the present research is carried out and give answers to these questions that: 1) To what extent is managers' entrepreneurship effective as an absolute concept and at any levels in the studied population? 2) What is the hierarchy of managers' entrepreneurship variables in the studied community? And 3) is there any relationship between managers' entrepreneurship with their individual characteristics?

MATERIALS AND METHODS

Since it has been considered to evaluate entrepreneurship as total concept (TOT) and entrepreneurship 14 variables therefore this study is of single- variant type.

On the other hand, the relationship between these variables are studied and determined with individual attributes like gender, education, employment status and method, and executive position of the managers and this study is of correlation type.

In this survey, the studied statistical population comprises of managers from PNU University at Tehran Province and or those managers, who are stationed in 40 units and centers of towns and cities throughout Tehran Province. If 5 participants are considered as an average for each academic unit/ center (Chancellor, vice- chancellor, group director, director, and head of department), statistical population will be 200. Based on Morgan's Table, 50 members is sufficient as sample space, but questionnaire was administered for 65 managers. It is usually a very difficult task to administer questionnaire for managers and for this reason it is impossible to elect managers randomly. For this purpose, through coordination with chancellor of PNU University of Tehran Province and provincial research director in one of the sessions that were held with heads of academic units and centers on 04/05/2009, the given questionnaire was administered and gathered. After review of answer sheets, 4 answer sheets were omitted from calculations for various reasons and 61 answer sheets, which were at appropriate and perfect conditions, included in calculations.

Entrepreneurship Self- Evaluation Questionnaire was utilized in this study. Content items in this questionnaire were extracted from research literature. This questionnaire consists of two sections: First part includes general specifications in such a way that sex (1 for male and 2 for female), education level (1 for BA and lower, 2 for MA, 3 for PhD, 4 for religious seminary education, and 5 for other educational courses), employment status (1 for academic fellowship, 2 for scientific assistant, and 3 for employee), and employment method (1 denotes by agreement, 2 for contractual, and 3 for official), executive position (1 for dean of academic unit/ center, 2 for deputy, 3 for group director, 4 for director, and 5 for head of department, 7 for chairman of provincial bureau, 8 for provincial manager, 9 for provincial vice- manager, and 6 for other jobs). The second part comprises of 75 items of four choice tests including totally wrong, relatively wrong, relatively correct, and totally correct, which have constituted options from 1 to 4 correspondingly. In this questionnaire, entrepreneurship is purposed as total concept (TOT) and 14 variables of entrepreneurship have been measured respectively: Growth and achievement motive (13 items with symbol F1), Hunting of opportunity/ opportunism (5 items with symbol F2), Energetic/ energy leadership (6 items with symbol F3), Persistence and perseverance (7 items with symbol F4), Interior control (6 items with symbol F5), Social skills (5 items with symbol F6), Adaptation (3 items with symbol F7), Creativity and innovation (6 items with symbol F8), Attempt for success (4 items

with symbol F9), Insight (3 items with symbol F10), Self-confidence (3 items with symbol F11), Determination in decision-making (4 items with symbol F12), Independence (5 items with symbol F13), and Fluidity (5 items with symbol F14). Participant's score in any part of this test includes average rate of the selected choices by participant in the same part of test. Accordingly, participant's score will be among 1-4 in any part of test.

Validity means that measurement tool evaluates something for which it has been utilized. It denotes appropriateness, meaningfulness and usefulness of certain inferences from which the resulting scores are obtained. Validity has a simple and unique meaning and in order to verify such inferences, it requires collecting some evidences that are called validation in terminology of psychometrics. When we ask about validity of a test; in fact, we ask about this question that what kind of logical generalizations may be implemented about the resultant scores came from execution of the aforesaid tool. For more extended aspects of generalizability, we are exposed to questions like the following: 1) to what extent does the given typical behavior denote a reference that its referent nature is considerable? 2) What is the meaning of this behavioral sample so far it related to individual's latent (basic) traits? And 3) To what extent could real performance of life that we considered it particularly in most of occasions as type of training program or success in certain job be expectable by asking questions about measurement tools?

These three questions correspond to three validity types, which called Content Validity, Construct Validity and Predictive Validity respectively. According to traditional basis, different tools of validation evidences have been classified into three categories: Content-based evidences, Criterion-based evidences and Construct-based evidences. In the current study, evidences relating to content validity have been collected.

Another type validity that is used is Convergent - Divergent (Diagnostic) Validity (Homan, 2000). This type of validity has been derived by means of correlation matrix coefficients of 14 entrepreneurship variables (F1-F14) that are given in Table-3. As it shown in Table- 3, correlation coefficients of variables F1, F3, F4, F5, F8, F10, F12 and F14 are highly significant at level 0.001. These variables relate to common infrastructural fields. This type of validity called convergent validity. On the other hand, variables F2, F6, F7, F11 and F13 are rarely correlated with entrepreneurship variables (at significance level: 0.001). It can be concluded that these variables may measure independent and different areas. This type of validity is called divergent or diagnostic validity.

It is derived from results of measurement that resulting outcome from measurement should be adequately reliable. This means that if we test the given object or person for the second time under similar conditions, similar results will be derived.

In order to estimate reliability rate in this study, Cronbach's Alpha Coefficient has been utilized. Rather than this fact that it requires using execution of measurement tools only once, a coefficient is derived from this method that is in fact parameter of Internal Consistency or Homogeneity namely arte of interference among set of contents in terms of measurement of one construct or certain trait. 75 items of entrepreneurship questionnaire was executed on 61 participants from managers of PNU University at Tehran Province and final reliability was estimated as $\alpha = 0.846$.

In the current research, the studied variables are as follows: Managers' entrepreneurship as an absolute concept, 14 entrepreneurship variables, sex, education degree, employment status and method, and managers' executive position. After data collection, it requires initially describing participants and following this trend, data to be described and then analyzed. Data description is done by data frequency distribution table, central tendency indices and diagrams and discrepancy of managers' entrepreneurship as an absolute concept, and 14 variables of managers' entrepreneurship are studied. To analyze data, single sample T- model is used to answer first question of study (In general and at any level, to what extent is managers' entrepreneurship effective?). Friedman Model was utilized to give response to second question of research (What is the hierarchy of managers' entrepreneurship factors in the studied community?), and Chi- Square Goodness-of-fit Model is adopted to answer to third question of this study (Is there any relationship between managers' entrepreneurship with their individual characteristics?). And in response to third question in this study, concurrent multivariate regression model is used.

RESULTS

Some of important descriptive traits in the studied sample group are frequency distribution of participants based on sex, education degree, type of employment (academic fellowship- employee), way of employment (by agreement, contractual- official), and their executive position. In this study, 42 males (68.9%) and 17 females (27.9%) and two persons, who did not characterize their identities, participated. 3 participants had BA and lower degrees (4.9%), 35 of them with MA degree (57.4%), and 21 participants had PhD degree (34.4%) and 2 participants have not

identified their education degree (3.3%). 23 participants (37.7%) were members of academic fellowship, 10 (16.4%) were scientific assistants, 10 (16.4%) were employees, and also 18 participants (29.5%) have not implied type of their employment. Way of employment of participants included 17 (44.3%) by agreement, 7 (11.5%) as contractual and 17 participants (27.9%) of them as official personnel while 10 participants (16.4%) never identified way of their employment. Executive positions of participants comprised of 23 (37.7%) as deans of academic unit/center, 3 (4.9%) as deputies, 7 (11.5%) as training group directors, 4 (6.6%) as directors, 6 (9.8%) as provincial managers, 1 (1.6%) as provincial vice-manager, 9 (14.8%) in other jobs and 8 participants (13.1%) have not declared their executive position.

The resulting data have been collected by administration of entrepreneurship questionnaire on managers of the studied sample group and by means of the relevant sub- programs in SPSS software package, central tendency and discrepancy indices of entrepreneurship variables were identified and are shown in Table- 4.

In table-4, a comparison of scores range indicates that the minimum score of managers at entrepreneurship 4- degree scale (in total concept) and maximum score are 2.59 and 3.57 respectively. Given that rate of standard deviation of this distribution is 0.21 (and thus the mean rate of standard deviation in this population is 0.02), if we accept hypothesis of randomly election of participants in sample group, it can be concluded that confidence difference (distance) in entrepreneurship mean value (as total concept) out of which population including 61 managers of the studied group have been derived, is large at extremely high level of confidence (greater than 99%) from 2.97- 3.12 i.e. higher than average level and greater. Indices of central tendency (mean) indicate that managers' entrepreneurship (as total concept) is close to normal distribution to great extent. Nevertheless, skewness of distribution (-0.07) shows that in general scores distribution is inclined to left side. By study on Table- 4 the following results are derived:

1- Distribution of scores relating to entrepreneurship factors is almost similar to normal distribution. While skewness rates are negative for most of factors but these values are not so considerable. Meanwhile, factors creativity and

As it indicated in Table -5, in population from which sample group has been extracted, the value of variable opportunism (F2) is at average level while variable independence (F13) is at lower value than average level and weak; although, value of creativity and innovation (F8) is also a little higher than average

innovation (F8) and fluidity (F14) with maximum rate of skewness (-0.06) and factor of determination in decision making (F12) with minimum rate of skewness(-0.58) are the least similar to normal distribution in this sense.

2- The relatively identical values of indices of central tendency in all factors also indicate that distribution of scores is almost normal. Difference among the maximum mean value (3.37 belongs to factor energetic of energy leadership) and the minimum mean value (2.38 belongs to factor independence) is not noticeable.

3- While standard values of factors are low and identical, but their comparison may show that the relevant scores to factor adaptation with standard deviation (0.55) and scores from factor growth and achievement growth with standard deviation value (0.25) have the maximum and minimum discrepancies among other factors respectively.

4- Minimum and maximum scores indicate that the lowest score among managers is 1.2 that belongs to factor independence and the highest score i.e. 4 belongs to factors of opportunism, energy leadership, persistence, interior control, social skills, adaptation, attempt for success, insight, and fluidity.

As it implied before, in order to give answer to first question of this study (To what extent is managers' entrepreneurship effective in general and at any level?), t- single sample model was utilized for 15 times. In execution of this model, statistical hypotheses are as follows:

: Mean value of variable is 2.5 in the studied population; and

: Mean value of variable is not 2.5 in the studied population.

Theoretical mean was selected as 2.5 since if choices 1-4 are selected quite randomly for questionnaire items and or perfectly identical then number of any choices will become the same. In other words, theoretical mean value for any item and thus for any variable is one fourth of sum of figures 1-4 (10) or 2.5. Therefore, if null hypothesis () is not rejected it means that selection of choices is identical and variables are at mean level. However, if is rejected, it could concluded that rate of variable in population is lesser than average (if sample mean is lower than 2.5) and or greater than average and high (if sample mean is higher than 2.5). This test is executed by STATG software package and its results are shown in Table -5. and high. This also applies to variable of self-confidence (F11) more or less. And the position of variables may be indicated better in response to second question of this study.

To give answer to the second question of this study (What is the hierarchy of manager's

entrepreneurship factors in the studied population?), Freidman Model is adopted and the result are given in Table- 6.

As it characterized in Table- 6, in statistical population of managers of PNU University at Tehran Province, variable of energetic/ energy leadership (F3) is the strongest trait from entrepreneurship attributes with highest rank while trait of independence (F13) has the lowest rank and other variables are order from second to thirteenth rank.

Non- parametric models are utilized to give response to second (minor) question of study (Is there any relationship between entrepreneurship with managers' individual characteristics?). The studied individual characteristics in the present survey (sex, education, employment status and method, and executive position) are at nominal (contextual) scale. Thus, it necessitates converting entrepreneurship variables into some classes as well contextually. For this purpose, Chi- Square Goodness-of-fit Model is utilized. Based on the hypotheses of this model, theoretical frequency of any square should not be lesser than 1 and also theoretical frequency of more than 20% of squares should not be less than 5; unless, it requires merging frequencies of similar squares together. First, by means of points of 25%, 50% and 75% each of entrepreneurship variables were divided into four classes that lesser than 25% (1), 25-50% (2), and 50-75% (3) and the rest into class (4) and Chi-Square Goodness-of-fit Model was executed on them and it was observed practically that it required merging both entrepreneurship variables and individual characteristics . The last merging was done as follows:

Managers from both groups with Master's degree and lower (symbol 1) and PhD (symbol 2) were divided into some classes: Also in terms of employment status into two groups of academic fellowship member (symbol 1) and non- member of academic fellowship (symbol 3); in terms of employment method into two groups of by-agreement (symbol 1) and contractual and official (symbol 3); and based on executive position into two groups of dean of academic unit/ center (symbol 1) and the others (symbol 6). As it shown in tables, for entrepreneurship variables, managers were also divided into two groups: Lower than median value (symbol 1) and higher than median value (symbol 4).

After adjustment of classes of individual characteristics and entrepreneurship variables, Chi-Square Goodness-of-fit Model was executed 75 times by means of SPSS software package and their results are briefly given in Table-8. If individuals are present randomly or identically in these squares, it is expected that the frequency of individuals to be the same in

these squares proportional to their population. This means that if frequency of individuals is not proportional to their population, it may be concluded that frequency of individuals is not randomly; namely, there is a relationship among variables in rows and columns. Accordingly, statistical hypotheses of Chi-Square Goodness-of-fit Model are expressed as follows:

H_0 : The observed frequency of squares is the same as theoretical frequency.

H_A : The observed frequency of squares differs from theoretical frequency.

If null hypothesis is rejected, it is implicitly concluded that there is relationship among variable.

The following items are derived from the squares of Table- 8:

1) As it observed in right column of Table- 8, managers' gender relates to entrepreneurship as total concept (TOT) as well as variables of interior control (F5) and social skills (F6) while there is no relationship among this variable and other 12 (entrepreneurship) variables. In other words, there is no difference in 12 entrepreneurship variables (out of 14 ones) among female and male directors within the studied population. 2) Entrepreneurship does not relate to managers' education i.e. there is no difference in entrepreneurship among managers with Master's degree (and lower) and ones with PhD's degree in entrepreneurship. 3) There is no relation between entrepreneurship and employment type in managers; namely, there is no difference in entrepreneurship among managers as member of academic fellowship and of non- academic fellowship. 4) No relation exists in employment method among managers; in other words, entrepreneurship does not vary among by-agreement employed managers and official/ contractual directors. 5) There is no relation between entrepreneurship with managers' executive position so that no difference exists in entrepreneurship among managers with position of dean of academic unit/ center and ones with other positions.

As it implied before, Chi- Square Goodness-of-fit Model of entrepreneurship with total concept (TOT) confirmed variables of interior control (F5) and social skills (F6) among managers with their gender, but this model might not indicate direction of this relation. For this purpose, in order to determine the relationship of independent variables (including sex) with each of three above- said tertiary variables, simultaneous regression model is used. In this regressive model, independent variables (sex, education, employment status and method and managers' executive position) are converted into binary values (0, 1) and each of entrepreneurship variables as total concept (TOT) and variables of interior control (F5) and social skills (F6)

enter into this model as dependent variable (at the same distance scale) and accordingly regressive model is executed simultaneously three times and the results are shown in Table- 9.

As it seen in Table- 9, in each of three regression equations, independent variables (including gender) are at very high level of significance ($p > 0.05$) and this shows that none of variables of gender, education, employment status and method and executive positions of managers do not relate to variables of interior control (F5) and social skills (F6) and absolute entrepreneurship (TOT). As a result, the relationship between variable of gender with three above- said variables is not verified in regressive model. Basically, due to interval nature of dependent variable, results of executing parametric model (e.g. regression) is more reliable than non- parametric models (e.g. Chi-Square Goodness-of-fit Model) that only relies on squares frequency. Thus, according to findings of the present study, there is no relationship among entrepreneurship as an absolute concept (TOT) and 14 entrepreneurship variables with manager's gender, education, employment status and method and executive position.

DISCUSSION

Results indicate that among managers of PNU University of Tehran Province, entrepreneurship as an absolute concept, and variables of growth and achievement motive, energetic (energy leadership), persistence- perseverance, interior control, social skills, adaptation, creativity and innovation, attempt for success, insight, self-confidence, determination in decision making, and fluidity have been reported greater than average level and high while variables opportunism and independence have been expressed lower than the average level and weak in this study. This finding is relatively complied with the results that have been derived from study done by Samaei to which it was referred in review of background. Namely, in survey that was conducted by Samaei, managers were reported at greater level than average value and high in variables of growth and achievement motive, energetic (energy leadership), persistence-perseverance, interior control, social skills, adaptation, attempt for success, insight, determination in decision making, and fluidity while in variables of opportunism, creativity and innovation, independence and self-confidence they were reported at average level.

Finally, it can be implied that mean scores of variable of managers' entrepreneurship as an absolute concept is greater than average level and high in community from which the sample case study has been extracted so this signifies establishing entrepreneurship appropriate condition. But this does

not mean that they display entrepreneurial behaviors, so it means that manager have some capacities and abilities in entrepreneurship field that exists potentially among them. As it reflected these results, it requires university official making some efforts to strengthen opportunism trait and to amend independence trait among their managers.

Question II: What is entrepreneurship hierarchy among managers in the community of case study?

Entrepreneurship variables have been ranked by means of Freidman Formula. From this ranking, it is concluded that managers of PNU University at Tehran Province are extremely energetic. These variables denotes potential for development among managers so if they enter into advancement path and university officials provide an appropriate ground to flourish entrepreneurial talents, this potential will come into practice.

Persistence- perseverance is second factor; namely, managers of PNU University at Tehran Province possess strong will and are resistant so they never let failure to bother them and continue to their persistence and insistence.

Third rank belongs to motive for growth and achievement. This trait leads managers toward their development and excellence and the given university. A comparison between results of the present research (TPNU) with findings from Samaei (SBU) about ranking of managers in Shahid Beheshti is shown in Table- 10.

As it shown in Table- 10, hierarchy of entrepreneurship variables is relatively similar both in Shahid Beheshti University (SBU) and Tehran Province PNU (TPNU) University. In these two universities variables of growth and achievement motive, persistence- perseverance, fluidity, energetic (energy leadership) are the strongest entrepreneurship variables while opportunism, independence, self-confidence, creativity and innovation are the weakest variables in this survey.

Question III: Is there any relationship between entrepreneurship with managers' characteristics?

Results of the current study show that there is no relationship among entrepreneurship and variables of sex, education (Master's degree and lower- PhD), employment status (academic fellowship member- nonacademic fellowship), method of employment (by agreement- contractual and official), and executive position (dean of academic unit/ center- etc.).

Similarly, minor findings indicated that there is no significant relationship among rate of managers' entrepreneurship and demographic variables (education degree, organizational rank). These findings correspond to findings of studies done by Azizian (2006), Ozari (2005), Khosravi (2004), Aghili

(2003) and Mohammadnejad (2005). In other words, it seems that entrepreneurship is in itself an independent trait and attribute from other characteristics and specifications and it is an instinctive and inherent phenomenon.

In conducting a scientific study, researcher may be exposed to some factors and barriers which challenge and or threaten study results; therefore, it requires noting them as limitations.

1- A great number of items of questionnaires (75 items) may be out of context and irrelevant for participants so they might not answer to them carefully and eventually this may affect on quality of results negatively. 2- With respect to special characteristics of managers, including lack of interest or sufficient time, a great quantity of work and tasks, these factors may hinder them to give accurate responses to the given questions and thereby results of research might be threatened. 3- Election of participants and administration of questionnaire were done based on participant's agreement to fill out questionnaire; therefore, sampling is of accessible sample type; as a result, it requires generalizing cautiously research results to population of case study. 4- Although the tool, which has been utilized in this study, is adequately valid and reliable and its result can be generalized to population of case study, but it should be considered that results of this survey should be generalized more cautiously to other communities. 5- Entrepreneurship variable are not a comprehensive and broad-based list in this study and this point is one of the basic limitations of questionnaires. 6- Due to special characteristics of academic managers (fellowship members) as well as having certain various organizational cultures, this study should be more cautiously generalized to other public organizations and private sectors with great care.

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