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## Look at the Dominant Preferences of Entrepreneurial Individual Components of Student by the Grounded Theory Method

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### Abstract

**Purpose:** The purpose of the present study was to investigate the individual entrepreneurial components of students from the perspective of university lecturers.

**Methodology:** The present study is based on a data-base research method that was conducted through interviews with 12 experts including a combination of university professors and members of the profession including various professional disciplines using purposive sampling method. Selected. Data categorization, interviews were analyzed based on the first two stages of the three-stage Strauss and Corbin system, namely open and axial coding and categorical coding. Subcategories and categories were obtained and finally They were divided into main categories that are more general and conceptual. After collecting the questionnaires, 50 raw data were identified which converted this raw data into 17 common codes and 17 common codes were presented in 9 classification concepts, then 9 concepts were classified into 4 categories. In this study, the main variables extracted from the data and their subcategories were investigated.

**Findings:** Data content analysis resulted in the extraction of 4 main themes (subcategories) and 9 sub-themes (concepts) as follows: Creativity with sub-themes: desire for innovation and initiative and fluidity; meta-cognitive beliefs with Sub-themes: Tolerance of ambiguity and flexibility; Self-esteem with sub-themes: Self-esteem and self-assurance; Sub-themes of thinking style: General and partial thinking.

**Conclusion:** The increasing importance of entrepreneurship education and its ability to improve economic growth and job opportunities is evident in some universities at both academic and non-academic levels.

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## 1. Introduction

One of the most important and valuable institutions that society has for development is the university, on the one hand, as a carrier of cultural heritage and values that govern the community and on the other hand meet the social needs for knowledge acquisition, dissemination and development. And technology is their primary task is to identify and provide solutions to society's problems (Jami, 2011). In today's knowledge-driven world, all efforts are made to nurture people with the capacity for creativity and innovation. It is no longer enough to raise students with knowledge, but to train students to manipulate science and produce new knowledge. These challenges require universities and higher education centers to provide educational opportunities for students to develop the creative capacity to produce knowledge (Barrett, 2010). Nowadays it is increasingly recognized that individual and social development depends on education, and especially on the quality of teaching and learning (Seif, 2011).

By identifying students' entrepreneurial abilities and components, one can gain an effective understanding of their morale and readiness to launch entrepreneurial businesses and identify the need for university training to empower students and enhance their entrepreneurial components. Based on purposeful and actionable planning, they expanded their capabilities in the channel of business development with innovation. Therefore, Entrepreneurship and Entrepreneurial Components is one of the most important topics in the society that includes employment. To be examined. It is clear to all of us what entrepreneurship is and what it comes to. The first bulb that comes to the minds of most listeners after hearing this word is the employment bulb. There is, of course, some criticism of this subjective tendency towards this concept. Unfortunately, the word Entrepreneurship, which is a translation of the word Entrepreneurship, has meant that the word "job creation" or "job creation" can only be understood. Whereas entrepreneurship has other important and positive consequences, such as: fostering creativity, encouraging innovation and development, increasing self-esteem, creating and developing technology, producing wealth in society, and increasing public welfare, if only Employment Generation, we will miss the other consequences (Amjadi, 2013).

The idea of academic entrepreneurship has been defined in different ways over time and has been explored on the basis of different perspectives that are known today as academic entrepreneurship. In general, academic entrepreneurship is a broad term that refers to the efforts and actions that universities and their industrial partners make to commercialize their academic research output (OShea, et al., 2004). Given this growing growth as well as the importance of academic entrepreneurship, some of the most prominent academic entrepreneurs in the field of academic entrepreneurship, such as Agrawal (2006), Shane (2004), are noted to be seeking models for they are the successful conversion of academic innovation and the commercialization of their knowledge. The literature on academic entrepreneurship has been somewhat fragmented, and most research studies have been done on specific parts of the business process (Berkowitz, et al., 2010). Entrepreneurship University is referred to as a university that broadens its internal system for the commercialization of knowledge and provides a wide range of new anecdotal infrastructure to foster entrepreneurship at the university (Jacob, Lundqvist, Hellsmark, 2003). Peterson Scholl believes that entrepreneurship is a university that must accomplish two tasks: first, it has to train future entrepreneurs, people to create businesses, and develop entrepreneurial spirit in students in all fields. Second, it has to be entrepreneurial in itself, organize business growth centers, create technology parks and the like, engage students in the organization and through them help students and graduates create businesses. To help and finally to be financially independent (Peter Schulte 2004: Quoted by Salari, 2013).

The education system will be effective if it is able to foster entrepreneurial spirit in the human resources being trained (Matviuk, 2010). Nurturing Entrepreneurs and Self-Employed Thinking as Appropriate Solutions for Economic Policymakers and Managers Today's economic situation requires us to find solutions in the economic field, and to have appropriate models and solutions for optimal training,

education and use. Active and entrepreneurial forces in communities and programs are needed to encourage students to become entrepreneurs and to identify the factors and decision-making processes that lead to their entrepreneurship (Tayebi and Fakhri, 2010).

In a survey of entrepreneurial personality traits in five districts of Tehran, five main characteristics of internal control center, high achievement motivation, high creativity, balanced risk taking and high ambiguity tolerance were identified as the main entrepreneurial personality traits. According to Dracker, anyone can become an entrepreneur and behave entrepreneurially because entrepreneurship is neither personality traits nor the basis of entrepreneurship is based on concept and theory, not on intuition. It exploits economic unbalance; gathers the necessary resources and strives for profitability with risk taking and initiative (Hijam, et al., 2016). In such an environment, entrepreneurship is cited as one of the factors of growth, development and one of the influential indicators in observing the desirable outlook of any society that has a great role to play in challenging modern-day humans (Clark, 1998). Among the strategic measures for growth and development of entrepreneurship, entrepreneurship education, especially in the field of entrepreneurship education, can be one of the most effective ways to transfer the graduated population to the labor market. Studies have shown that such training has made individuals more responsible and transformed them into entrepreneurs or entrepreneurs in the field of entrepreneurship (Urbano, Ferri, Alvarez, Noguera, 2017).

In fact, the entrepreneurial process has at its heart certain cultures and components, the main elements of which are: (1) understanding and embracing change and transformation, and preparing for and adapting to incremental change; (2) creating and transcending stereotypes. Conventional Tradition and False Taboos and Red Lines, Standing and Moving to the Unknown based on Predictive Prediction (3) Dynamic Adaptation and Pluralism and Orbital Diversity with Preserving Fundamental Identity (4) Global Insights with Situation Contingency (local and domestic action in the aftermath of global insight) (5) Synergistic partnerships and partnerships to achieve a win-win situation (6) Non-network dynamic communication Hierarchy (7) dialogue and understanding based on dialogue and consultation, on the essence of empathy, on friendship, on socialization and on mutual trust and respect (8) on creativity, discovery, innovation and innovation (9) on independence, autonomy and self. Strategic (10) Commitment Accountability and Responsibility (11) Meritocracy (12) Risk (13) Continuous learning (14) the desire for ever-increasing progress in the pursuit of rational, idealistic and realistic aspirations and truthful expediency (14). 15) Knowledge of rationality and rationality based on continuous, up-to-date information, comprehensive, analytical and critical thinking (16). Racial and Social (17) Desire for Value, Benefit, and Productivity (18) Legal democracy and legitimate freedoms guarantee social justice, equality and non-discrimination (gender, ethnic, racial, etc.) in access and exploitation. From Resources and Opportunities (19) Ecology, Opportunity and Choices, and Timely and Timely Decision Making (20) Purposeful and Meaningful Life in Balanced Material and Spiritual Growth for the Promotion of Talents and the Development of Human Capacities with Ultimate Excellence Human kind (Sharifi, Asadi, Rezai, Adeli, 2010).

It is essential for the university to institutionalize the entrepreneurship, entrepreneurial culture and growth of the entrepreneurial components of its students. This is done through the identification, support and development of creative talents, the development of a working culture among faculty and staff, the reinforcement of learning, the transformation of values and beliefs, and the promotion of collective participation (Rasekhi, Ghanbari, Ali Beeigi, 2016). Psychologists' efforts to understand the characteristics of entrepreneurs provide a list of many behavioral traits. This list, compiled during the Applied Entrepreneurship Forum in Honolulu, USA, lists 19 key attributes for entrepreneurs; Resilience, passion for great things, guided behavior, humanity, criticism, ingenuity, resilience, expertise, ingenuity, ingenuity, modesty, prudence (Hassan Moradi, 2006). Psychologists have assumed that the characteristics

of entrepreneurs are not obtainable through education, but rather that they are natural attributes and originate from within individuals (Wolf, 1999, Quoted by Ahmadpourdarani, 2002).

By further studying these traits, the researchers concluded that not all of these nineteen traits exist in all entrepreneurs. But there are traits such as self-esteem, risk-taking, need for success, self-esteem, and softness in most entrepreneurs. Hornaday (1982) also summarizes these features and presents 22 of these characteristics as follows: confidence, determination, energy and perseverance, talent, leadership, dynamics Keywords: nasal, adaptability (knowledge, production, market), production (technology and machinery), ability to penetrate Others, Opportunity, Compatibility, Flexibility, Intelligence, Greater Targeting, responding to Challenges, Responding to Suggestions, Criticism, Rapid Responsibility (13). In spite of all the efforts made in this field, a credible model for identifying successful entrepreneurs has not been achieved (Hassan Moradi, 2006). In fact, behavioral scholars intend to identify more and more entrepreneurial entrepreneurs by recognizing the intrinsic characteristics of the "personality approach" and the acquisition characteristics of the "behavioral approach" of the larger community of entrepreneurs, Because nowadays, creative and innovative individuals as entrepreneurs have been the source of great developments in the field of industry, education and services (Saghari, Ali Esmaili, Hosseinzadeh, 2018).

The purpose of this study was to investigate the entrepreneurial components of students. The questions that the researcher is trying to answer are: Describe the entrepreneurial behavior and academic entrepreneurship components of students, and then describe your experiences and perceptions regarding the selection of individual academic entrepreneurship components of students in higher education. Askari Far, Ebrahimi, Alavi (2018), in a study entitled Presentation of an Educational Model for Developing Entrepreneurial Abilities, mediated personality traits to determine entrepreneurial personality traits and provided an educational model for developing these characteristics. Research findings show that participatory management approach in teaching programs, modeling for students, purposeful encouragement and positive emotional relationship with them along with activities such as phonics and performing arts, educational and imitation games, and developing verbal communication skills and meaningful impact planning. Have personality traits and the development of entrepreneurial abilities in students.

Ehsani, et all (2015), in a study entitled The Relationship between Entrepreneurial Personality Characteristics and the Creation of Small and Medium-sized Businesses in Sport, examined the personality dimensions of some sports industry owners in job creation and sports entrepreneurship. The results showed that entrepreneurial personality was positively and positively associated with business creation, except for the dimension of ambiguity; other dimensions of entrepreneurial personality were significantly associated with the creation of small and medium sized businesses. The findings of the study emphasized the importance of entrepreneurial personality traits in the success of small and medium-sized sports businesses.

Research Findings Haddad Adel (2000) showed that as age decreases, the likelihood of entrepreneurship increases. There is no significant relationship between gender and entrepreneurship, with increasing levels of education, especially at higher levels of the bachelor degree, entrepreneurship significantly increased; overseas university graduates were more entrepreneurial than domestic university graduates, and parental education. Entrepreneurs (especially fathers) were more educated than non-entrepreneurs' parents. He also found that in the Entrepreneurship group, there was a significantly greater need for development, independence, creativity, risk taking, determination, and willingness than non-entrepreneurs.

Safari, Samizadeh (2011) in an article entitled Needs Assessment of Knowledge and Entrepreneurship Training in Humanities have identified the status of Entrepreneurship Education and Needs Assessment of Entrepreneurship Education. The first research on entrepreneurship was done by McClelland in (1976) on motivation for progress. A study by Rasheed (2000) found that individuals who received entrepreneurship

training achieved higher scores on motivation for development, internal control, self-esteem, and creativity. Howard (2004) has conducted a research on entrepreneurship that examined the impact of developing entrepreneurial capabilities, independence, and risk-taking, motivation for development, internal control, self-esteem, courage and creativity on their entrepreneurship. The results show a direct relationship between these capabilities and people's entrepreneurial ability. Another study was done by Raymond (2003) on "Entrepreneurs' Learning Needs" in Latin America. The purpose of this study was to evaluate the learning needs and preferences of growing entrepreneurs using questionnaire tools.

## 2. Methodology

The research method was descriptive and applied. In terms of purpose and subject, this research is applied in purpose because it aims to obtain the results of the findings to solve existing problems on academic entrepreneurship, the factors affecting it are descriptive and in nature descriptive because they are the actual expression of the subject, Research and description of the topic through descriptive data gathering and in terms of information analysis method. This research is also a survey method as most of the information is collected using questionnaires.

Steps to Conduct Research and Preparing the Qualitative Questionnaire for Academic Entrepreneurship Components: The analysis of the present study was carried out according to the type of research and was performed in three stages as follows: Participants were asked to describe the words entrepreneurial behavior and academic entrepreneurship and then describe their experiences and perceptions of the factors affecting academic entrepreneurship in higher education. For example, they were asked to cite examples of their experiences that were seen in the student environment during the semester and which influenced entrepreneurial components. Then, the following questions were asked which factors influenced the students' academic entrepreneurship spirit or goals or played a facilitating or hindering role.

After each focused discussion session, all conversations were word-for-word and typed. Typed texts were then managed and coded. Qualitative content analysis method was used to interpret and analyze the data entered into the software. In this way, codes and themes were identified through systematic classification of data. Content analysis is more than just the extraction of objective data and helps to uncover hidden issues and patterns within the data. In this study, data content analysis was performed using the grounded theory approach.

**Table1.** The steps of analyzing the research data based on the model are as follows

levels	Activity
start point	Conduct interviews with 12 experts
Step 1	Frequent review of texts and articles
Step 2	Extract semantic units from texts
Step 3	Generate codes based on the summary of semantic units
Step 4	Review and compare the codes and create sub-themes
Step 5	Compare sub-texts with each other and with the original text to create exclusive themes
Step 6	Independent analysis of texts by two researchers and discussion of content and reaching consensus on themes

Accordingly, explicit and hidden concepts were identified, coded, summarized and categorized according to the description of the participants, and then the main themes were extracted. Codes were based on semantic units adapted from participants' descriptions and categorized according to similarities and differences. To increase the accuracy and reliability of the data collected at this stage of the study, four criteria proposed by Lincoln and Cuba, including acceptability, generalizability, reliability, and verifiability, were used. To this end, the researcher, by devoting sufficient time to gathering data and communicating with participants, attempted to obtain real data. The participants' review method was also

used to confirm the accuracy of the results and to agree with the findings. In addition, to ensure that the data were accepted, the conversations, codes, and results were provided to the additional three scholars who had a similar understanding of the subject and method of work to draw additional comments. In order to examine the similarity of reliability in quantitative research and in fact reflect data consistency at similar times and conditions, randomly assigned two group discussion sessions to a person who was not related to the research and was an external observer. Similar results were obtained. It should be noted, however, that in qualitative methods, the emphasis is on the exclusivity of experiences and perspectives, and even when all conditions are the same, one should not expect completely similar results. In order to ensure generalizability, the study also attempted to select participants with the most diversity in terms of characteristics such as gender, work experience, age, and so on. In the second step, to analyze the data obtained for the designed model fit, the collected data were entered into SPSS software. Then the file created in SPSS software was transferred to LISREL software to perform structural equation modeling calculations. The observed and hidden variables were named in it. Next, in order to check the fit of the model, we calculated the model fit indices. Both the interviewees' own words and the words developed by the researcher were used to construct concepts and categories. The categories are formed in the human mind and are the product of human intelligence and are not part of the objective nature of things. It is therefore not possible to obtain definitive categories, and the categories of the c.

Interviewer selection, at this stage, 12 experts including a combination of university professors and members of the profession with different professional backgrounds were selected by purposeful sampling method. The purposeful sample is one that the researcher needs to answer his or her research questions. The researcher cannot randomly interview a group, as individuals in a random sample may have no lived experience of the phenomenon studied and may not provide useful data. Categories do not, by themselves, represent the fundamental characteristic of statements classified in this way.

**Table2.** Experts in this research

Row	group	Number
1	Faculty members with more than 6 years' experience	8
2	University administrators and deputies	2
3	Referees Growth Centers	2

Data categorization, interviews were analyzed based on the first two stages of the three-stage system of Strauss and Corbin, namely open and axial coding and categorical coding. Subcategories and categories were obtained. The codes were classified according to semantic and semantic similarity and as small as possible. The process of downgrading data flowed across all units of analysis and subcategories. Finally, the data were categorized into more general and conceptual categories. The major difference with Strauss and Corbin's method was that instead of being subjected to subcategories under the heading "conditions," "consequences," and "strategies," the whole work was put into this format, the opposite of the main categories. These are the three cases. The layout of the material has changed several times so that it has a rational procedure and does not appear as messy material from interviews with different people and starts from the right place and ends with strategy and results. In the Strauss and Corbin method, "concepts" refer to the mental labels used for the events, events, and materials cited by the interviewees. 'Category' refers to the classification of concepts, and is more abstract than concepts, when concepts are compared to one another and they appear to be related to similar phenomena, categories are discovered. Open coding is the process of crushing, comparing, conceptualizing and categorizing data. In "axial coding" the subcategories are acquired. In axial coding we rely on identifying a category and the conditions that lead to it. And those conditions are the context in which the category is located and the specific characteristics of a phenomenon or series of conditions that affect the interaction / interaction strategies by which the category is managed and controlled, and the consequences that result from the interaction / interaction.

### 3. Findings

In this study, the main variables extracted from the data and their subcategories were investigated. Content analysis of the data led to the extraction of 4 main themes (categories) and 9 sub themes (concepts) as follows. Creativity with sub-themes: the tendency for innovation, ingenuity, and fluidity; metacognitive beliefs with sub-themes: tolerance of ambiguity and flexibility; Sub-themes: general thinking style and partial thinking and creative thinking. Conceptualization stage: After collecting the questionnaires, 50 raw data were identified which converted this raw data into 17 common codes and 17 common codes were presented in 9 classification concepts, then 9 concepts were classified into 4 categories. In this table, as noted above, several codes that address a common aspect of the phenomenon under consideration are compared to codes. The following table presents the results:

**Table3.** Conceptualizing Common Codes

Common Codes	concepts
Do not stop by and ask questions in class activities and presentations if asked	
After answering challenging questions in class, comment and express interest and enjoyment	The power of producing ideas and
Has the ability to open booklet exams using the resources available at the meeting and to communicate with knowledge and questions	Plenty of answers (Fluid)
The questions posed by the class to other students are difficult or interesting or out of their mind	
Expresses his ideas and preferences for the classroom environment or how to teach it in the right words.	
They are aware of their good qualities and have a positive attitude towards their abilities	
Throughout class and group activities, the semester lengths try to show a sense of usefulness	
They do not interrupt the teacher while they are teaching, wait for their question until the subject is completed.	Ability to change the thinking direction or variety of ideas (flexibility)
After receiving the new syllabus, they examine the different perspectives and theories that are relevant	Self-esteem
Performs the presentation if the file is not open or not present during class presentation	
Provides various reasons for submitting suggestions or how to teach or how to take end-of-class exams.	
They are not worried about judging or laughing at other students and expressing their opinions	Tolerance of ambiguity
Focus on the general aspects of the subject matter and classroom presentations and present the overall purpose of the idea in their talk and writing.	
When answering exercises, class projects and questions seek to gather detailed information and focus more on the subject and subject when teaching.	Ability to generate previously unseen ideas (initiative)
The excitement of breaking the rules and doing unexpected things.	
Have the ability to relate the separate content of various sessions during the semester.	Confidence in your beliefs
It uses its existing capabilities to innovate	General thinking
He is interested in creativity and innovation and supports innovative and innovative teaching methods	
They are not satisfied with the teacher's answers in class until the next session is looking for a more complete or appropriate answer	

**Categorization Stage:** In this step we categorize the concepts discovered in the previous step. We have presented nine concepts in the form of 4 categories, the results of which are as follows:

**Table4.** Common Concepts Forming Categories

Common concepts	Category
Desire to innovate fluid initiative	Creativity
Bear in the ambiguity of flexibility	Metacognitive Belief
Self-esteem reassuring your beliefs	Self-esteem
General thinking Partial thinking Creative thinking	Thinking style

Based on the research literature as well as the expert opinion, we examine 9 concepts in the form of 4 categories to determine which of the identified factors is currently effective in academic entrepreneurship and entrepreneurial spirit, given the available facilities and infrastructure. For each individual factor analysis factors are taken which at this stage, factors that are unrelated and with low correlation are eliminated. 40-item questionnaire was designed to answer each question on a 5-point scale. This questionnaire is scored using the Likert scale with scores (1, 2, 3, 4, 5) for each option and since some respondents may give irrational answers to the questions and simply give the questionnaire no attention. Marking the contents of the items and actually not even looking at the questions, inverse questions have also been used to help prevent any bias. Answer the questions and repeat to get answers from the Grounded Theory panel. After developing the initial questionnaire, which is the result of the initial study and interviewing the experts, it is time to form the Grand Theory Panel. Individuals are chosen to apply their knowledge to specific problems based on indicators that stem from the nature of the research topic and problem. Therefore, a total of 12 experts including a combination of university professors and members of the profession were selected from various professional disciplines and factors mentioned above. Professional members are required to have at least 6 years of work experience, in addition to selecting university professors, to seek the views of individuals who have (albeit little) academic entrepreneurship background in addition to academic experience.

In this section, experts were asked to state their opinion on how effective these factors are on academic entrepreneurship. To this end, the experts were asked to say "I disagree" on the basis of a pair of "I agree".

Validity: Content analysis was used to determine the validity of this questionnaire. After receiving the response from the subjects, trivial to moderate zero and significant and very important were given one. The first step in determining test validity is to check the content validity. Content validity depends on the rational analysis of the content of a test and its determination is based on individual and subjective judgment. In this way, the test questions are given to the experts or some of the subjects and they are asked to determine whether the test questions measure the attribute in question and whether the questions cover the whole content of the test, Or not. If there is agreement between different people on the validity of the test, that test has a content validity. Content Validity Ratio Index (CVR): This index is designed by Lawch. To calculate this index, expert opinions on the content of the test are used, explaining the purpose of the test to them and providing operational definitions of the content of the questions to which they are asked to base each question. Likert's three-part spectrum is categorized as "essential," "useful, but not essential," and "not essential." Then, based on the following formula, the content validity ratio is calculated:

Based on the number of experts evaluating the questions, the questions calculated for their CVR lower than the target number given the number of experts evaluating the question should be excluded because of the content validity index. , Have no acceptable content validity. Due to the high content coefficients (above 0.7) and the fact that the experts did not specify other factors and the factors presented by them were duplicate, the specified questionnaire was confirmed. The minimum CVR value based on the number of scoring experts given that for the 12 evaluators, The minimum content validity index for the confirmation indices is 0.83. As shown above, the coefficient of all extracted themes is higher than 0.83 and it can be concluded that all the evaluators have identified all important themes. Holstein coefficient was used to evaluate coders' agreement. The formula is:

$$PAO = 2M / (n1 + n2) \quad 2 \times 311 / (336+327) = 0.942$$

Agreement coefficient Percentage of agreement observed (reliability coefficient), M is the number of agreements in the two coding stages, n1 is the number of units coded in the first stage, and n2 is the number of units coded in the second stage. This number varies between zero (no agreements) to one (full agreement). The Holstein coefficient is 0.942, indicating acceptable reliability and agreement in coding homology. After formulation of the training package for validation, the form of comment on the validity of



the package was then presented to 8 professors and experts for comment. Krippendorff coefficient statistic was used to evaluate the agreement among different evaluators. The analysis was performed in R software. The appropriate coefficient of determination for agreement between the evaluators shall at least be greater than 0.67. According to the obtained coefficient of 0.83, it is concluded that the level of agreement between the evaluators on the questionnaire is high. And the design dimension is credible.

Statistical population consists of all individuals who share one or more traits in a given geographic scale (global or regional). The statistical population consisted of 12 experts in the qualitative sector. The reason for selecting 12 people for the interview was to achieve theoretical saturation in the extractive codes of the interview. The statistical population of the quantitative section is all students of Ferdowsi University of Mashhad with a total population of over 20,000, divided into 3 engineering groups (Faculty of Engineering, Agriculture and), Basic Sciences (Basic Sciences and Mathematical Sciences) and Humanities (Literature, Education, Administrative Sciences, Law and Theology) were studying.

A) In this research, due to the small number of experts and the availability of the members of the non-probabilistic and expert sampling method, the researcher community was selected for this survey (in this method the researcher was asked to obtain opinions on the research subject both fundamental and applied to the group). Refer to specialists, experts and experts in the subject of research and examine all or part of the statistical population of that specialty)

B) In this research, students of Ferdowsi University of Mashhad were selected by probabilistic and quota sampling (proportional class) (quota sampling is a type of probability sampling that the researcher uses with his knowledge and knowledge about Some reference society variables execute the sampling design so that the sample structure for the same variables above is similar to the reference society structure, so that the researcher divides the reference society into classes based on his knowledge of these variables. Samples will be identified and delivered along with interview and questionnaire instructions for personal use. And his field of study subjects according to the number that was given to choose from and interviews with them to collect the necessary information).

Cochran method was used to determine the sample size of students of Ferdowsi University of Mashhad with a flower number of 20,000. Determining the appropriate sample size is important in all studies, if the sample is too large it will waste time and resources. While small samples will lead to inaccurate results, therefore, selecting the appropriate sample size for each research depends on the acceptable or acceptable error rate. When sample data are collected and results, such as the mean of a particular parameter, are calculated, the sample estimate will have a significant difference with the mean of the population, with a maximum difference of 5% in the research being allowed. The sample will increase. It is therefore time consuming and costly. In the Cochran sample size estimation method, a preliminary sample size of at least 25 people is selected from the statistical population and calculates the variance of the total of the questionnaire questions. We have the following formulas:

N: The total volume of the population under study was,  $Z = 1.96$  corresponding to the first type error of the normal table

$S^2$ : Variance of Questionnaire Summary Questionnaire, n: Sample Size Required for Research, d: The tolerable error limit.

In the present study, the variance of the total number of questionnaire questions in preliminary sample number 1125 has been determined. And also the population volume of 20,000 and the tolerable error rate of 4.2 which are calculated as follow:

$$d = \frac{1}{2} (Max - Min) * 0.05 = \frac{1}{2} (42 * 5 - 42 * 1) * 0.05 = 4.2$$

$$n_o = \frac{(1.96)^2 * 1125}{(4.2)^2} = 245$$

$$n = \frac{248}{1 + \frac{248}{20000}} = 245$$

$$\left\{ \begin{array}{l} n_o = \frac{z^2 S^2}{d^2} \\ n = \frac{n_o}{1 + \frac{n_o}{N}} \end{array} \right.$$

Therefore, we can proceed with the selection of 245 students from Ferdowsi University of Mashhad. Therefore, according to simple random sampling method and consulting with supervisor, and determining the sampling frame, 270 people were selected and distributed questionnaires which after a lot of follow-up and in total 245 questionnaires completed as sample. The finalists were selected.

It is very important to collect data in a stepwise method that tests the hypotheses based on the accuracy of the data gathering. Before collecting data, answering the following questions can be helpful. According to the objectives of the study, the best way to collect information was using a questionnaire. After numerous studies and interviews with individuals and experts, a researcher-made and standard questionnaire for research was identified. The research questionnaire consists of several parts:

B) Academic Entrepreneurship Questionnaire: A researcher-made questionnaire was used in this study. This questionnaire, as previously mentioned, was developed using Grounded Theory technique and has good validity. It has 42 questions in 4 main components and 9 subscales. The items related to each question are scored on a multiple choice scale. The items related to each question are scored on a 5-point scale as follows. Strongly Disagree (1), Disagree (2), Disagree (3), Agree (4), Strongly Agree (5). Also questions 19-21-23-25-27-30 were reversed. The questions related to each of the chapters are as follows.

**Table5.** Factors Related to Research Indicators on Academic Entrepreneurship

	Factor	Number of related questions
Creativity	innovation	1, 9, 18, 19 , 35
	Fluid	2, 10, 20, 21, 36
Self-cognitive belief	The desire to innovate	11, 22, 23, 37
	Tolerance of ambiguity	3, 12, 24, 25, 38
Self-esteem	flexibility	4, 13, 26 , 27
	Self-esteem	5, 14, 28 , 39
Thinking style	Self-assurance	6, 15, 29, 30, 40
	General thinking	7, 16, 31, 32, 41
	Partial thinking	8, 17, 33, 34, 42

Then, using SPSS software Cronbach's alpha, the results are presented in the following table.

**Table6.** Level Cronbach's alpha

Key variables	Cronbach's alpha	Alpha Acceptable Limit	Confirm / disapprove
Academic Entrepreneurship	0.7944	Above 0.7	Reliability verification

Cronbach's alpha for all variables as well as the whole questionnaire indicates that the questions are mutually correlated and it can be stated that if again using this questionnaire and using the same respondents ( Generally under the same conditions) to measure the trait of the research we will not notice a significant difference in the responses provided. Therefore, the overall reliability and reliability of the variables in this study were established.

In this study, both descriptive and inferential statistics were used to analyze the data obtained from the samples. Descriptive statistics and descriptive statistics indices such as central indices (mean, fashion and median) and dispersion indices (standard deviation and variance) were used to examine the characteristics of the respondents. To analyze the data and test the research hypotheses, one-sample t-test statistical methods were used to identify the status of the research variables and confirmatory factor analysis was used to measure the measurement models. Finally, the structural equation was used to test the research hypotheses. SPSS 23 and Lisrel statistical software were used for this analysis.

Kolmogorov-Smirnov test to check for normality of variables:

This test is one of the most valid tests for assessing the normality of data. If the significance level of the test (sig) obtained for testing the variables is below 0.05, the assumption H0 is confirmed, and the distribution of the data is not normal, but if the significance level of the test obtained (sig) for testing the variables, Is above 0.05, the hypothesis H0 is rejected, and its data distribution is a normal variable. This

test has the following hypotheses in examining whether or not the variables in the statistical sample are normal:

H0: Data distribution is not normal. H1: The distribution of data is normal.

**Table7.** Kolmogorov-Smirnov test and its dimensions in the sample

row	Research variables	Kolmogorov-Smirnov test		result
		Z statistic	meaningful level	
1	Academic Entrepreneurship			
1-1	innovation	1/292	0/071	normal
1-2	Fluid	1/126	0/158	normal
1-3	The desire to innovate	1/343	0/054	normal
1-4	Tolerance of ambiguity	1/027	0/243	normal
1-5	flexibility	1/219	0/102	normal
1-6	Self-esteem	0/891	0/406	normal
1-7	Confidence	1/283	0/074	normal
1-8	General thinking	0/961	0/314	normal
1-9	Partial thinking	0/902	0/39	normal

Since the significance level of test (sig) obtained in software output for all variables is above 0.05, consequently H1 assumption is accepted and claim of abnormal distribution of research data on research variables is not accepted. Therefore, the distribution of the data for each variable in this study was normal and the precondition of the data for each variable was parametric for performing structural equations. Confirmatory factor analysis to investigate constructs validity for explicit variables (observed)

In this section, the results of confirmatory factor analysis of each research variable are presented separately for each variable by LISREL software. The key question to consider in each model is whether these models are appropriate. In other words, does the research data fit the conceptual model?

There are generally two types of indicators to test model fit. 1- Good indicators and 2- bad indicators. There are indicators of goodness such as GFI, AGF, NFI, etc. The higher they are the better. The suggested value for such indices is 0.9. Also bad indicators include  $df / 2x$  and RMSEA which the lower the value, the better fit the model. The limit of  $df / 2x$  is 3 and the limit of RMSEA is 0.10.

To answer the question of fitting the model good and bad indicators ( $df / 2x$ , RMSEA, AGFI, AGFI, NFI and CFI) have to be examined. Factor analysis of the research questionnaire

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**Table 8.** Factor analysis for the research questionnaire

Present variables	Observable variables	Factor load	Acceptable limit	Significant coefficient	Result	Present variables	Observable variables	Factor load	Acceptable limit	Significant coefficient	Result
Academic Entrepreneurship	1	0.63	>0.5	0/000	Agent confirmation	Academic Entrepreneurship	23	0.68	>0.5	0/000	Agent confirmation
	2	0.77	>0.5	0/000	Agent confirmation		24	0.65	>0.5	0/000	Agent confirmation
	3	0.76	>0.5	0/000	Agent confirmation		25	0.75	>0.5	0/000	Agent confirmation
	4	0.75	>0.5	0/000	Agent confirmation		26	0.73	>0.5	0/000	Agent confirmation
	5	0.7	>0.5	0/000	Agent confirmation		27	0.75	>0.5	0/000	Agent confirmation
	6	0.82	>0.5	0/000	Agent confirmation		28	0.69	>0.5	0/000	Agent confirmation
	7	0.87	>0.5	0/000	Agent confirmation		29	0.74	>0.5	0/000	Agent confirmation
	8	0.8	>0.5	0/000	Agent confirmation		30	0.7	>0.5	0/000	Agent confirmation
	9	0.78	>0.5	0/000	Agent confirmation		31	0.67	>0.5	0/000	Agent confirmation
	10	0.75	>0.5	0/000	Agent confirmation		32	0.68	>0.5	0/000	Agent confirmation
	11	0.8	>0.5	0/000	Agent confirmation		33	0.71	>0.5	0/000	Agent confirmation
	12	0.81	>0.5	0/000	Agent confirmation		34	0.7	>0.5	0/000	Agent confirmation
	13	0.82	>0.5	0/000	Agent confirmation		35	0.76	>0.5	0/000	Agent confirmation
	14	0.76	>0.5	0/000	Agent confirmation		36	0.74	>0.5	0/000	Agent confirmation
	15	0.82	>0.5	0/000	Agent confirmation		37	0.77	>0.5	0/000	Agent confirmation
	16	0.69	>0.5	0/000	Agent confirmation		38	0.81	>0.5	0/000	Agent confirmation
	17	0.72	>0.5	0/000	Agent confirmation		39	0.85	>0.5	0/000	Agent confirmation

18	0.76	>0.5	0/000	Agent confirmat ion	40	0.77	>0.5	0/000	Agent confirmat ion
19	0.62	>0.5	0/000	Agent confirmat ion	41	0.8	>0.5	0/000	Agent confirmat ion
20	0.68	>0.5	0/000	Agent confirmat ion	42	0.7	>0.5	0/000	Agent confirmat ion
21	0.75	>0.5	0/000	Agent confirmat ion	43	0.68	>0.5	0/000	Agent confirmat ion
22	0.75	>0.5	0/000	Agent confirmat ion	44	0.65	>0.5	0/000	Agent confirmat ion

As expected, the sample adequacy (KMO) of the research questionnaire was 0.84 and the significance of Bartlett's sample sphericity test in exploratory factor analysis by SPSS was respectively 4652/397 and 0/0001, respectively. Sample size is suitable for factor analysis. It should be noted that these 9 factors account for about 56% of the variance related to the academic entrepreneurship variable.

Confirmatory Factor Analysis of Academic Entrepreneurship Questionnaire: The following figure shows the results of confirmatory factor analysis for the variable of academic entrepreneurship questionnaire in standard estimation mode.

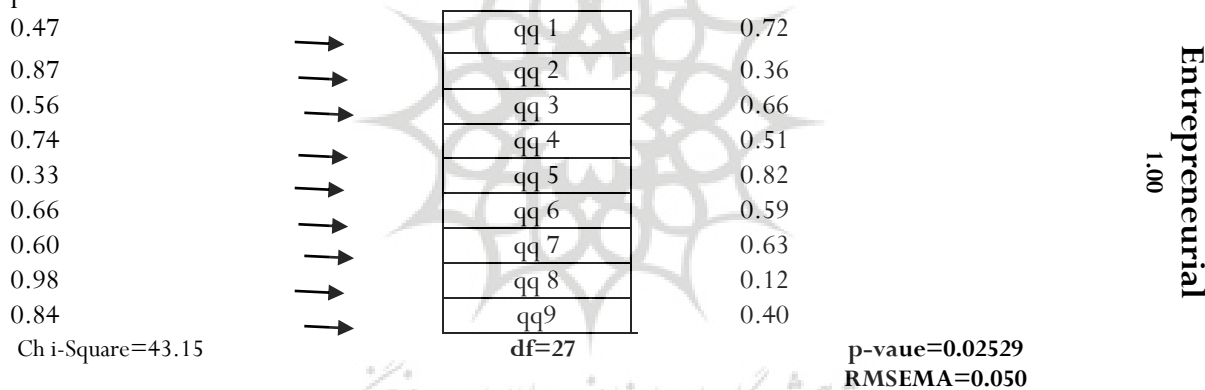


Figure 1: Confirmatory factor analysis

In the diagrams the rectangles represent the observed (observed) variables. The same questionnaire questions are related to academic entrepreneurship, the circles represent the factors (hidden, latent or present variables) and arrows related to The explicit variables represent the amount of variance associated with each explicit variable, and the one-way arrows of the variable now represent the effects of one variable on the other variable (factor load), in the factor analysis the researcher always assumes that the hidden variables Causes are explicit variables, which is why arrows originate from hidden variables and end up with explicit variables. The strength of the relationship between the factor (the hidden variable) and the variable visible is represented by the factor load. The factor load is a value between zero and one. If a factor load is less than 0.3, a weak relationship is considered and ignored, a factor load of between 0.3 and 0.6 is acceptable, and if it is greater than 0.6, it is highly desirable. The presence of negative loads on the factor load of some variables represents the opposite of what is specified by the agent, the negative loads can help the researcher interpret the factors, give positive loads on the nature of the agent in question, and Negative loads help clarify the interpretation of what is not the case. The number 1 also indicates the current variable variance. In Lisrel, the hidden variable is defined by default as the standard

variable, the standard variable having a variance of 1 (Karshki, 2012). The results of confirmatory factor analysis of academic entrepreneurship questionnaire questions show that the fit index is equal to 1.59 and the value is less than 3, indicating that the theoretical model fits with the data and is confirmed with these data, And shows that it has the necessary reliability. The RMSEA is equivalent to 0.05 (the root of the variance estimation of the approximation error or the deviation test of each degree of freedom) used by Steger (1990) as the difference measure for each degree of freedom. A value of  $0.08 < \text{RMSEA} < 0.03$  indicates good model fit. On the other hand, the p-value (significance level) is 0.025, which is less than 0.05. The results of confirmatory factor analysis of the variable crisis management questions show that the factor loadings obtained are more than 0.3 and 3 related components the academic entrepreneurship variable can be categorized into a single factor. Therefore, the data for this variable are now calculated from the average of the questions. Therefore, 95% confidence in confirmatory factor analysis of academic entrepreneurship is accepted.

The researcher prepared a survey form with 9 dimensions and 50 items by studying various articles and interviewing experts on the dimensions of academic entrepreneurship. Thirty experts and experts, including professors, PhD students, were selected, experts and experts in each of their posts giving a score of 1-5 to the specified factors. The researcher then determined the significance using a one-way t-test, since the variable assigns values between 1 and 5, thus assigning values less than 3 as no impact and more than or equal to 3 as We consider the impact as it can be seen, from the experts' point of view, out of the 9 previously specified dimensions, all dimensions are confirmed. The initial analysis of the degree of importance of the dimensions of academic entrepreneurship is as follows:

**Table9.** Preliminary analysis of the degree of importance of the dimensions of academic entrepreneurship

	Variables	Mean	SD	t	significance	result
1	innovation	3/2	0/71	2/11	0/02	Confirmation
2	Fluid	3/26	0/54	7/61	0/0001	Confirmation
3	The desire to innovate	3/4	0/78	8/03	0/0001	Confirmation
4	Tolerance of ambiguity	3/3	0/65	7/23	0/0001	Confirmation
5	flexibility	3/17	0/8	3/43	0/0001	Confirmation
6	Self-esteem	3/67	0/75	13/9	0/0001	Confirmation
7	Confidence	3/5	0/64	12/26	0/0001	Confirmation
8	General thinking	3/18	0/53	5/32	0/0001	Confirmation
9	Partial thinking	3/12	0/66	2/97	0/015	Confirmation

Status of Academic Entrepreneurship Dimensions by Field of Study

**Table10.** Frequency Distribution of Academic Entrepreneurship Dimensions by Field of Study

Field of Study	variable	Mean	standard deviation	minimum	maximum
Engineering	innovation	3/13	0/77	1/6	4/8
	Fluid	3/18	0/83	1/75	4/5
	The desire to innovate	3/11	0/68	2/2	4/8
	Bear the ambiguity	3/43	0/68	2/2	4/8
	flexibility	2/95	0/86	1/5	1/75
	Self-esteem	3/54	0/79	2/25	4/75
	Confidence	3/41	0/67	5	4/2
	General thinking	3/17	0/43	2	4/2
	Partial thinking	3/11	0/66	1/4	4/6
Science	innovation	3/12	0/51	2	4/4
	Fluid	3/35	0/47	2	4/4
	The desire to innovate	3/52	0/62	2/25	5
	Bear the ambiguity	3/2	0/65	2	4/4
	flexibility	3/37	0/72	1/5	4/75
	Self-esteem	3/7	0/67	2	5

	Confidence	3/58	0/53	2/2	4/8
	General thinking	3/15	0/52	2/2	4/6
	Partial thinking	3/19	0/6	1/2	4/2
Humanities	innovation	3/11	0/8	1	4/4
	Fluid	3/25	0/67	1	4/8
	desire to innovate	3/59	0/78	1	5
	Tolerance of ambiguity	3/26	0/6	1/8	4/6
	flexibility	3/21	0/75	1/75	5
	Self-esteem	3/78	0/78	2	5
	Confidence	3/53	0/71	1/4	5
	General thinking	3/21	0/64	1/4	4/2
	Partial thinking	3/06	0/71	1/8	4/8
Total	innovation	3/2	0/71	1	4/8
	Fluid	3/26	0/54	1	4/8
	desire to innovate	3/4	0/78	1	5
	Tolerance of ambiguity	3/3	0/65	1/8	4/8
	flexibility	3/17	0/8	1/5	5
	Self-esteem	3/67	0/75	2	5
	Confidence	3/5	0/64	1/4	5
	General thinking	3/18	0/53	1/4	4/6
	Partial thinking	3/12	0/66	1/2	4/8

#### 4. Discussion

As shown in Table 6, the average number of engineering students in self-esteem is higher than in other categories, and in terms of flexibility, the tendency to innovate needs to be reinforced. There are many variations in the career path. In contrast, the concepts of self-esteem, tolerance of ambiguity and reassurance of their beliefs are more intense than other concepts in this group. Students in basic science are confident in their self-esteem and keen to innovate in the field of creativity, and there is a need to nurture the concept of initiative in this group. In fact, nurturing is the ability to produce new and innovative ideas or products, that is, responses from a person who has never been seen before and is new. Students in the humanities group have a higher average self-esteem and tendency to innovate than the creative one, in contrast to the partial thinking style that needs to be nurtured, because creative people pay more attention to the details of an idea and the ability to pay attention to the details. The idea is essential in the career path. The findings showed that academic entrepreneurship has four dimensions: "creativity, metacognitive belief, self-esteem and thinking style". This finding is in line with the results of Zhang (2002) research, which states that Torrance's thinking is cognitive-oriented and that ethical thinking styles are divided into three main analytic, holistic, and combinational groups, divided into three levels: high, medium, and low. And Sharifi et al. (2010), in the context of the entrepreneurship process, encompasses certain cultures and components whose major elements are the characteristics of creativity, innovation, innovation, and flexibility. The findings of Haddad Adel (2000) study also showed that in the group of entrepreneurs, the need for development, independence, creativity, risk taking, determination and will were significantly higher than non-entrepreneurs and the results of Howard (2004) The impact of developing entrepreneurial capabilities, independence, risk-taking, development motivation, internal control, self-esteem, boldness and creativity on entrepreneurship resulted in a direct relationship between these capabilities and individuals' entrepreneurial ability. According to Gagne (2015), the high learning capacity of humans allows for remarkable differences in behavior patterns as well as remarkable adaptation to change. It may help to adapt the individual to society. School and university can repair the deficiencies and gaps in society and correct the misconceptions that exist in society and thereby change the wrong

habits, generally resulting in students of all degrees of self-esteem. Most of them are self-esteem, since self-esteem is a person's view of himself or herself and is a very good tool for growth through the evaluation of one's own behaviors, appearance, intelligence, and social success and through the evaluation of others. Other efficient components will be in person.

Through recognizing entrepreneurial categories, concepts, and components, entrepreneurship can revitalize and enhance business behavior in universities. Understanding the growth and underdevelopment of entrepreneurial components is a powerful and effective guide. It is important for the individual to understand himself / herself and his / her abilities and to communicate effectively with his / her field of study and career path because in the context of individual factors the most important factor is the characteristics of entrepreneurial behavior. The increasing importance of entrepreneurship education and its ability to improve economic growth and job opportunities has been emphasized in some universities at both academic and non-academic levels. Universities should incorporate entrepreneurship training into their programs, staff training system and use of systems for evaluation (Zou, 2015).

There is also a relationship between entrepreneurial characteristics and the success of growth centers, according to Etzkowitz (2012) study. Entrepreneurship development to achieve economic development in addition to the concept of increasing the number of new companies with entrepreneurial individuals and promoting productive entrepreneurial activities to enhance skills Entrepreneurial activities and entrepreneurial knowledge and understanding are needed. Today's learning should include - Learning to learn because the future is open only to those who are ready for it (Ardyan, 2020). Entrepreneurial factors contribute to the technology-based competitive advantage of young companies (Tornikoski, 2017). This research is a simple representation of the potential and actual components of effective individual entrepreneurship and its results are a tool for analysis, analysis and recognition that help to understand the reality and needs and to examine specific individual and occupational aspects. We find out.



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