



## Identifying and Prioritization Effective Factors on Organizational Entrepreneurship Using AHP Approach

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### ABSTRACT

Organizational entrepreneurship is the process whereby an individual or group working within an existing organization creates a new organization or instigates renewal or innovation within that organization. The purpose of the paper is to use analytic hierarchy process (AHP) to ranking the effective factors on organizational entrepreneurship. This research designed questionnaire for AHP. Questionnaires sent to fifteen professional experts of large organizations in Iran. From the AHP results, we can understand that most important effective factor on organizational entrepreneurship is Organizational culture. Moreover, the less important effective factor on is Attractive and friendly working environment.

**KEYWORDS:** Entrepreneurship, Structural factors, underlying factors, Operational factors, AHP.

### 1. INTRODUCTION

In recent years, the high competition among firms and the changes in the industry have forced companies to innovate constantly in order to compete successfully in markets (Huse et al., 2005). Currently, to be successful, firms must improve their flexibility, competitiveness, and reactivity (Carrier, 1996) as well as nurture entrepreneurship through their operations (Sathe, 2003). The importance of entrepreneurship in a rapidly changing world has attracted increasing attention over the last decade (OECD, 2006), with the belief that individuals with entrepreneurial skills and abilities will create benefits at different levels of society. In recent years, CE has received considerable attention because of the new competitive orientation that firms must adopt in order to survive in a dynamic and global economy. For managing the complexity of current environment, firms become more entrepreneurial in order to identify and exploit new opportunities (Cuervo, 2005). Entrepreneurship is a dynamic process involving opportunities, individuals, organizations, risks, and resources (Sciascia et al., 2006). Corporate entrepreneurship has been defined as a process by which individuals inside organizations pursue opportunities independent of the resources they currently control, engage themselves at doing new things, and, are willing to escape from routine in order to pursue opportunities (Morris and Jones, 1999).

Nowadays, entrepreneurship is commonly considered to be a stimulus to create value as a result of the actions of individual firms (Peng, 2001). It has been deemed to be the instrument to cope with the new competitive landscape and its enormous speed of change (Hitt and Reed, 2000). Entrepreneurship is a vital source for economic growth, economic competitiveness, job creation and the advancement of societal interests (Linˆan et al., 2005). Hence, academics, practitioners and policy makers have increased their efforts in promoting an entrepreneurial mindset within society. Entrepreneurship has never been more important than it is currently, and one of the major challenges facing all economies is the “need to develop a more entrepreneurial culture and develop the necessary skills, attitudes and behaviors to prepare young people and others to pursue opportunities” (Wilson, 2009). Entrepreneurial values support the development of new activities within the firm and the renewal of ongoing business activities that have become stagnant or in need of progress. Entrepreneurial activities have also resulted in important consequences for economic growth and national development worldwide during recent decades (Szyliowicz and Galvin, 2010). Previous research results have demonstrated that entrepreneurship represents an interdisciplinary and multifaceted process (Kuratko et al., 2004), which should not be confined to the private sector. Entrepreneurship holds the potential to flourish in social, non-profit and public sector organizations (Caruana et al., 2002; Thompson, 2002; Zerbinati and Souitaris, 2005).

The aim of this study is Identifying and Prioritization Effective factors on organizational Entrepreneurship using AHP approach in Iranian organization. The AHP methodology, which was developed by Saaty (1980), is a powerful tool in solving complex decision problems. AHP integrates experts’ opinions and evaluation scores, and devises the complex decision-making system into a simple elementary hierarchy system.

The remainder of this paper is organized as follows: Section 2 discusses the Literature review. Effective factors on organizational Entrepreneurship are presented in Section 3. Section 4 outlines an empirical study to show the process of AHP method to priorities the Effective factors on organizational Entrepreneurship. Section 5 carries our conclusions and suggestions.

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## 2. LITERATURE REVIEW

### 2.1. Entrepreneurship

Entrepreneurship is a field of research which has its theoretical roots in the eighteenth century, when the Irish banker Richard Cantillon (1755) used this term to differentiate self-employed entrepreneurs from employed workers. In defining entrepreneurship, Shane and Venkataraman (2000) emphasize that it is a “nexus” that involves entrepreneurial individuals seizing and exploiting lucrative opportunities: “the field involves the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them”. Worldwide, entrepreneurship has been embraced by all players in the economy as a means for creating new value, ranging from economic growth and increased work satisfaction to increased living standards and improved consumer products and services (European Commission, 2003). Entrepreneurship is an action-based phenomena demanding education outcomes targeted on the ability to apply learning, enhancing capability to take action and behave, rather than focusing purely on the conventional delivery, testing and critical assessment of knowledge inputs.

Entrepreneurship is the practice of starting new organizations or revitalizing mature organizations, particularly new businesses generally in response to identified opportunities. Entrepreneurship as a mechanism that converts economic knowledge into economic growth, (Carlsson et al., 2009) may contribute to growth through a diverse range of behaviours of entrepreneurs, including exploitation of innovation and purely imitative ventures that harness under-used resources (Minniti and Levesque ,2006) , also through combination of resources and increased competitive pressures. Entrepreneurial behaviour has become more and more common, calling for better entrepreneurial skills and abilities for dealing with current challenges and an uncertain future. An innovative approach to problem solving, high readiness for change, self-confidence, and creativity – all attributes related to entrepreneurship – constitute a viable platform for economic development in any society. The entrepreneurial process includes different activities necessary for identifying a business opportunity, but also to define a business concept and acquire needed resources for the business venture.

### 2.2. Analytic hierarchy process (AHP)

The AHP was developed by Thomas L. Saaty at the Wharton School of Business in 1970s. It is an effective decision-making technique based on multi-criteria decision-making methodology. The AHP is perhaps, the most widely used decision-making approach in the world and its validity is based on the many thousands of actual applications in which the AHP results were accepted and used by the cognizant decision makers (Saaty, 1994). AHP has been applied more recently in construction research (Li et al., 2000). Pairwise comparisons are basic to the AHP methodology. For pairwise comparisons, this paper uses the nine-point scale developed by Saaty (1980) and it is shown in Table 1. In the above original AHP scale, weak was subsequently changed to moderate and absolute changed to extreme. The intermediate values 2, 4, 6, and 8 are defined as weak or slight, moderate plus, strong plus, and very-very strong, respectively.

| <b>Table 1. Pairwise comparison scale</b>    |  |   |
|--|--|---|
| <b>Intensity of importance</b>               | <b>Definition</b>  | <b>Explanation</b>  |
| <b>1</b>                                     | Equal importance   | Two activities contribute equally to the objective  |
| <b>3</b>                                     | Weak importance of one over another  | Experience and judgment slightly favor one activity over another                                |
| <b>5</b>                                     | Essential or strong importance   | Experience and judgment strongly favor one activity over another                                |
| <b>7</b>                                     | Very strong or demonstrated importance   | An activity is very strongly favored over another. Its dominance is demonstrated in practice    |
| <b>9</b>                                     | Absolute importance  | The evidence favoring one activity over another is of the highest possible order of affirmation |
| <b>2, 4, 6, 8</b>                            | Intermediate values between adjacent scale values  | For use when compromise is needed   |
| <b>Reciprocals of above non-zero numbers</b> | If the activity i has one of the above non-zero numbers assigned to it when compared with activity j, then j has the reciprocal value when compared to i | A reasonable assumption   |
| <b>Source: Saaty (1980)</b>                  |  |   |

2.2.1. AHP methodology

AHP is a hierarchical representation of a system. A hierarchy is an abstraction of the structure of the system as a result of the decomposition of the complexity of the system into different levels, which represent functional interactions of its elements and their impacts on the entire system (Saaty, 1980). AHP requires three steps:

- (1) Establishing evaluation criteria hierarchy;
- (2) Assessing the decision maker evaluations by pairwise comparisons; and
- (3) Using the eigenvector method to derive weights for criteria and alternatives.

In AHP, logical consistency is also considered by evaluating the validity of the pairwise comparison process obtained from decision makers' preferences. The AHP procedure consists of the following steps (Saaty, 1980, 1994; Chan et al., 2006; and Wu et al., 2009).

**Step1.** Establish a pairwise comparison decision matrix (A). Let  $C_1, C_2, \dots, C_n$  denote the set of elements, while  $a_{ij}$  represents a quantified judgment on a pair of elements  $C_i, C_j$ . The relative importance of two elements is rated using a measurement scale with the values 1, 3, 5, 7, and 9 this yields an n-by-n comparison matrix A as follows:

$$A = [a_{ij}] = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \dots & \vdots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{bmatrix} \tag{1}$$

$$A = [a_{ij}] = \begin{bmatrix} \frac{w_1}{w_1} & \frac{w_1}{w_2} & \dots & \frac{w_1}{w_n} \\ \frac{w_2}{w_1} & \frac{w_2}{w_2} & \dots & \frac{w_2}{w_n} \\ \vdots & \vdots & \dots & \vdots \\ \frac{w_n}{w_1} & \frac{w_n}{w_2} & \dots & \frac{w_n}{w_n} \end{bmatrix} \tag{2}$$

If matrix A is consistent, then we have  $a_{ij} = w_i/w_j = 1/a_{ji}$  and  $a_{ii} = 1$  with  $i, j = 1, 2, \dots, n$ .

**Step2.** Normalize the decision matrix and calculate the priorities of this matrix.

Before all the calculations of vector of priorities, the comparison matrix has to be normalized. For this purpose, each set of column values is summed. Then, each value is divided by its respective column total value. Finally, the average of rows is calculated and the relative weights of criteria  $w_1, w_2, \dots, w_i$  are obtained.

**Step3.** Do consistency checks. The relative weights, which would also present the eigenvalues of criteria, should verify:

$$A * w_i = \lambda_{max} * w_i \quad i = 1, 2, \dots, n \tag{3}$$

Where A represents the pairwise comparison decision matrix and  $\lambda_{max}$  gives the highest eigenvalue. Then consistency index (CI), which measures the inconsistencies of pairwise comparisons is calculated as:

$$CI = \frac{\lambda_{max} - n}{n - 1} \tag{4}$$

The last ratio that has to be calculated is CR. Generally, if CR is less than 0.1, the judgments are consistent and acceptable, so the derived weights can be used (Chan et al., 2006). The formulation of CR is:

$$CR = \frac{CI}{RI} \tag{5}$$

**3. EFFECTIVE FACTORS ON ORGANIZATIONAL ENTREPRENEURSHIP**

Organizational entrepreneurship is critical to a firm's success, particularly in today's dynamic environment. Managers need to understand what factors are associated with successful OE that they can change their management strategies to encourage an entrepreneurial spirit to ensure long-term success of the firms. Policymakers, academics, and researchers agree that entrepreneurship is a vital route to economic advancement for both developed and developing

economies (Zealelem et al., 2004).Motivation for entrepreneurship is seemingly complex and involves the dynamic interaction of a number of factors (Nabi et al., 2006).

Entrepreneurial firms tend to make systematic investments in employee skills particularly group skills and capabilities, through training programs (Hayton, 2005).

Based on the previous literatures, we focus on fifteen Effective factors on organizational entrepreneurship. The factors used in relevant literatures are listed in Table 2.

| Table 2. Effective factors on organizational entrepreneurship. |   |
|--|---|
| factors  | Reference   |
| Organizational culture   | Morris and kartko (2002)                          |
| Flexible structure   | Morris and kartko (2002)                          |
| Shared vision  | Hisrich and peters (2002), Choonwoo et.al (2004)  |
| Human Resource Development                                     | Bartik , Timothy (1995), Wikland (1999)           |
| Reward based on results  | Twomey and Harris (2000), Dess et al. (1997)      |
| Employment based on competence                                 | Dess et al. (1997), Zahra and Covin (1995)        |
| Creativity and innovation process                              | Simons (2000)                                     |
| Knowledge management   | Simons (2000), Fairbanks (1996)                   |
| Pervasive participation of employees                           | Dess et al. (1997), Birkinsaw (1997)              |
| Independent of organizational units                            | Wikland (1999), Bichard (1998)                    |
| Process to identify and prioritize opportunities               | Simons (2000), Covin (1991)                       |
| Support of senior managers                                     | Twomey and Harris (2000), Lumpkin and Dess (1996) |
| Attractive and friendly working environment                    | Zahra and Covin (1995), Uotila et al. (2004)      |
| Freedom at Work  | Fairbanks (1996), Twomey and Harris (2000)        |
| Training of organizational Leaders                             | Lumpkin and Dess (1996), Wikland (1999)           |

Based on the achieved criteria in the current research, Effective factors on organizational entrepreneurship are classified into 3 major criteria and 15 minor criteria, according which the decision tree hierarchy (Fig 1) is designed.

The Effective factors on organizational entrepreneurship symbols in this study are as follows: Organizational culture (A<sub>1</sub>), Flexible structure (A<sub>2</sub>), Shared vision (A<sub>3</sub>), Human Resource Development (A<sub>4</sub>), Reward based on results (A<sub>5</sub>), Employment based on competence (A<sub>6</sub>), Creativity and innovation process (A<sub>7</sub>), Knowledge management (A<sub>8</sub>), Pervasive participation of employees (A<sub>9</sub>), Independent of organizational units (A<sub>10</sub>), Process to identify and prioritize opportunities (A<sub>11</sub>), Support of senior managers (A<sub>12</sub>), Attractive and friendly working environment (A<sub>13</sub>), Freedom at Work (A<sub>14</sub>) and Training of organizational Leaders (A<sub>15</sub>).

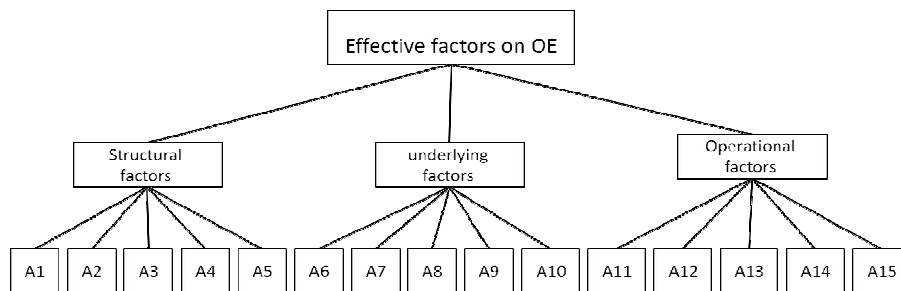


Figure1. AHP hierarchy for the Effective factors on organizational entrepreneurship

#### 4. DATA ANALYSIS

This study uses 3 major criteria and 15 minor criteria that are shown in figure 1. This study uses an expert interview method. The objects were professional experts of the large organization in Iran (15 experts). Data collected from the experts was analyzed with the AHP method. Here, the data achieved from Analytical Hierarchy Process (AHP) are depicted in the form of the following tables:

| Table 3: relative and total weight of three main criteria |                 |              |      |
|---|-----------------|--------------|------|
| criteria  | relative weight | total weight | rank |
| Structural factors  | 0.486           | 0.486        | 1    |
| underlying factors  | 0.312           | 0.312        | 2    |
| Operational factors                                       | 0.202           | 0.202        | 3    |

According to the results, experts believe that the most important effective factor on organizational entrepreneurship is Structural factors; whose total weight is 0.486, and it is shown in table 3, Underlying factors with total weight of 0.312 and Operational factors with total weight of 0.202 are known as the second and the third effective factor from experts' point of view.

**Table 4: relative and total weights of Structural factors sub-criteria**

| sub-criteria               | relative weight | total weight | rank |
|----------------------------|-----------------|--------------|------|
| Organizational culture     | 0.268           | 0.1302       | 1    |
| Flexible structure         | 0.168           | 0.0817       | 5    |
| Shared vision              | 0.214           | 0.1040       | 3    |
| Human Resource Development | 0.115           | 0.0559       | 9    |
| Reward based on results    | 0.235           | 0.1142       | 2    |

According to the results, the most important minor criterion in Structural factors subsidiary is Organizational culture. Reward based on results is also an important factor in organizational entrepreneurship. According to the experts, among Structural factors subdivisions, Human Resource Development is of less importance comparing to other subdivisions.

**Table 5: Relative and total weight of Underlying factors sub-criteria**

| sub-criteria                         | relative weight | total weight | rank |
|--------------------------------------|-----------------|--------------|------|
| Employment based on competence       | 0.158           | 0.0493       | 10   |
| Creativity and innovation process    | 0.263           | 0.0821       | 4    |
| Knowledge management                 | 0.241           | 0.0752       | 7    |
| Pervasive participation of employees | 0.140           | 0.0436       | 11   |
| Independent of organizational units  | 0.198           | 0.0618       | 8    |

In sub-criteria of underlying factors, Creativity and innovation process and Knowledge management are known as the most important effective factor on organizational entrepreneurship. According to the experts, Employment based on competence and Pervasive participation of employees is of less importance.

**Table 6: Relative and total weight of Operational factors sub-criteria**

| sub-criteria                                     | relative weight | total weight | rank |
|--|-----------------|--------------|------|
| Process to identify and prioritize opportunities | 0.214           | 0.0432       | 12   |
| Support of senior managers                       | 0.382           | 0.0772       | 6    |
| Attractive and friendly working environment      | 0.109           | 0.0220       | 15   |
| Freedom at Work                                  | 0.165           | 0.0333       | 13   |
| Training of organizational Leaders               | 0.130           | 0.0263       | 14   |

According to the experts, Support of senior managers is of most important effective factor on organizational entrepreneurship. This factor among 15 factors has the six ranks with weight of 0.0772. According to the experts, Attractive and friendly working environment is of less importance.

For better understanding of ranking the effective factor on organizational entrepreneurship, 3 main criteria and known 15 criteria along with their relative and total weights are depicted in table 7.

**Table 7: ranking the Effective factors on organizational entrepreneurship**

| main criteria       | Weight of the main criteria | sub-criteria                                     | Weigh criteria in sub group | total weight | rank |
|---------------------|-----------------------------|--|-----------------------------|--------------|------|
| Structural factors  | 0.486                       | Organizational culture                           | 0.268                       | 0.1302       | 1    |
|                     |                             | Flexible structure                               | 0.168                       | 0.0817       | 5    |
|                     |                             | Shared vision                                    | 0.214                       | 0.1040       | 3    |
|                     |                             | Human Resource Development                       | 0.115                       | 0.0559       | 9    |
|                     |                             | Reward based on results                          | 0.235                       | 0.1142       | 2    |
| underlying factors  | 0.312                       | Employment based on competence                   | 0.158                       | 0.0493       | 10   |
|                     |                             | Creativity and innovation process                | 0.263                       | 0.0821       | 4    |
|                     |                             | Knowledge management                             | 0.241                       | 0.0752       | 7    |
|                     |                             | Pervasive participation of employees             | 0.140                       | 0.0436       | 11   |
|                     |                             | Independent of organizational units              | 0.198                       | 0.0618       | 8    |
| Operational factors | 0.202                       | Process to identify and prioritize opportunities | 0.214                       | 0.0432       | 12   |
|                     |                             | Support of senior managers                       | 0.382                       | 0.0772       | 6    |
|                     |                             | Attractive and friendly working environment      | 0.109                       | 0.0220       | 15   |
|                     |                             | Freedom at Work                                  | 0.165                       | 0.0333       | 13   |
|                     |                             | Training of organizational Leaders               | 0.130                       | 0.0263       | 14   |

## 5. DISCUSSION AND CONCLUSION

Although past studies from (Amabil et al. 1996, Twomey and Harris 2000, Dess et al. 1997) have suggested the reward system plays a tremendous impact on entrepreneurial activity, both because it imminently increases such activity and it discourages innovation activity by rewarding other behavior. Also, Hornsby et al. (2002) suggested that fostering new and innovative ideas requires that individuals be afforded time to incubate these ideas. Employees' workload needs to be reasonable to allow sufficient time to work on long-term problem solving. This study supports the previous work from Morris and kartko (2002) that Organizational culture has important effect on organizational entrepreneurship. Many factors affect companies' success while using entrepreneurial actions to implement a OE strategy (Brazeal, 1993). The most important factors concern the firm's ability to establish a vision and get the top management support (MacMillan et al., 1986), to organize people and tasks in ways that make it possible for entrepreneurial actions to flourish (Hisrich and Peters, 1986), to have sufficient resources to support entrepreneurial actions, to use rewards and compensation systems that reinforce individuals' and teams' entrepreneurial actions (Block and Ornati, 1987). The management support dimension indicates the willingness of managers to facilitate and promote entrepreneurial activities (Sykes and Block, 1989). past studies from Slevin and Covin, have suggested the environment has a strong effect on entrepreneurial activity (Slevin and Covin, 1990). A consistent path of research has demonstrated that increased Freedom at Work is linked to improved work performance (Osterman, 1994) and organizational entrepreneurship (Fairbanks 1996, Twomey and Harris 2000) and managerial innovation (Kanter, 2004).

Company's incentive and control systems act as a critical success factor for stimulating entrepreneurial behavior (Hisrich and Peters, 1986; Block and Ornati, 1987). Consequently, Brazeal (1993) found that reward for entrepreneurial activities is important antecedent of OE. In general, intrinsic rewards based on the employee competitiveness motivate them to develop new ideas (Zenger and Marshall, 2000). Moreover, employees gain more satisfaction by being in control of their destiny and having ultimate responsibility for the success of projects with which they are involved (Stajkovic and Luthans, 2001). The organizations faced several challenges while pursuing the entrepreneurial efforts. The two major challenges include the Identifying Effective factors on organizational Entrepreneurship, and Prioritization Effective factors on organizational Entrepreneurship. Hence, this study using Review of previous research, has identified Effective factors on organizational Entrepreneurship. Also in this study AHP provides a ranking for Effective factors on organizational Entrepreneurship. Research in the entrepreneurship field is exceedingly difficult to do well because of the complex nature of the field. The difficulty involves the decisions related to the independent variables that should be studied, the ways these variables should be used, the most appropriate ways for gathering relevant data, and the techniques that should be used in analyzing the data within the field of entrepreneurship. This study uses the AHP method to analyze and ranking effective factors on organizational entrepreneurship. From the AHP results, we can understand that most important effective factor on organizational entrepreneurship is Organizational culture. Moreover, the less important effective factor on is Attractive and friendly working environment. Therefore this is important that managers know most important factor for the organizational entrepreneurship is Organizational culture, Hence They should attention to Organizational culture. Also, for creating of entrepreneurship, Shared vision and Reward based on results are very important. Managers must maximize the pursuit of new business opportunities while simultaneously maximizing the generation and application of temporary competitive advantages to sustainably create organizational value. In this paper, we present AHP as a generalized method to ranking effective factors on organizational entrepreneurship. Future study can identify and ranking effective factors on organizational entrepreneurship by different methods such as ELECTRE, TOPSIS and VIKOUR.

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