Identify and Prioritize the Factors affecting the Process of Opportunity Recognition in the Field of Information Technology Banking Industry

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ABSTRACT
Entrepreneurship, which is the process of identifying, evaluating and developing opportunities, has been recently identified as the most important element in the economic development of countries in various areas and industries, including banking industry. Since opportunity identification is the first step in entrepreneurship, the present research attempts to investigate and prioritize the individual, organizational and environmental factors affecting the identification of entrepreneurial opportunities in IT divisions of banking industry. The research population includes 100 experts, elites and entrepreneurs in IT divisions of banking industry in Tehran from which a sample of 80 has been selected. A descriptive and correlational method has been applied; questionnaires have been used to gather data; and their validity and reliability have been respectively tested through divergent and convergent validity and Cronbach’s alpha. The research findings indicate that organizational, industrial; macro environmental as well as individual psychological and non-psychological factors affect the process of entrepreneurial opportunities identification. Furthermore, the most effective and significant dimensions in banking industry are related to the industry and individual and organizational characteristics. It is also suggested that the role of other factors such as education and R & D in entrepreneurship to be investigated in further studies.

Keywords
ICT, identify opportunities, entrepreneurship, banking industry

Introduction
In today’s changing environment of businesses which is mainly characterized with globalization of markets, change of customers’ needs and increase of competition in markets, companies are obliged to constantly seek the improvement of their performance and search for environmental opportunities. Opportunity identification is a multi-dimensional concept which has recently received lots of attention in academic researches. Entrepreneurs are people who are gifted with the ability to identify opportunities due to their special characteristics, and it might be said that the most essential activity in entrepreneurship is the opportunity identification. In fact, entrepreneurship refers to the recognition and utilization of opportunities which have not been employed yet (Stevenson & Jarillo, 1990). In other words, opportunity identification is defined as the ability to recognize good ideas and transfer them to businesses in order to create value added and income (Corbett, 2007:100). Today, most organizations in developed countries seek for a change from bureaucratic to entrepreneurial conditions. A huge wave of economic and entrepreneurial activities together with the pervasive change in methods and attitudes during the recent period has made many governments to focus on the development and reinforcement of entrepreneurship, and many organizations to attract and nurture organizational entrepreneurs (Gavaran & Cinneide, 1994:3). Entrepreneurship has a significant role in economic growth and prosperity as well as job creation, and that’s why many governments seek its promotion (Chung, 2004: 1).

One of the ways of growth maintenance and even survival of organizations in this turbulent changing age is to use organizational entrepreneurship in which the main issue – just like the independent entrepreneurship – is the “opportunity” and “opportunity discovery” (Kordnaej, Zali & et al, 2010: 118). Entrepreneurial opportunities identification is considered as an important step in establishing and setting up new businesses. Opportunity is defined as an appropriate and suitable set of conditions which creates the need for a new product, service or business (Barringer, 2006). On the other hand, considering the strong competition between banks and their dependent businesses which results in the creation of competitive environment and increase of information technology, the move towards electronic banking has brought up new challenges for the banking industry and has extremely increased the necessity to pay attention and analyze internal and external en-
Environments to obtain competitive advantage and identify the available opportunities. Entrepreneurs and successful people in this regard are those who observe opportunities and employ them before others with the help of their individual characteristics, correct observation of industry and macro-environment as well as providing suitable grounds for their business and organization. In this regard, it is almost impossible to deny the role of banks and financial institutions as electronic financial intermediaries in realizing this goal. Information technology, in recent years, has been known as the most important element in the economic development of countries (Ozgen, 2003: 93). Considering the importance of information technology in the country’s economic growth and evolution, especially in the banking industry and the emergence of small and medium-size businesses in the banking industry as well as the emergence of new technologies, fintech companies and technology-based businesses, the most crucial issue in this regard is recognizing the factors that affect the opportunity identification process. Therefore, the present study attempts to investigate the individual, environmental and organizational factors affecting the recognition of entrepreneurial opportunities in the IT sections of the banking industry. The main question of the research is to identify the factors that affect opportunity identification in IT areas of the banking industry. In this regard, 5 main dimensions of psychological and non-psychological factors whose impacts on opportunity identification process have been mostly studied in entrepreneurial studies, as well as organizational factors, factors related to the industry under the question and the macro-environmental factors that have great effect on the entrepreneurial process have been considered as the main elements of the research and their impact on the opportunity identification process has been examined. Moreover, in order to identify the priority and importance of each of the above-mentioned variables in the opportunity identification process, they have been prioritized according to the level of their influence on the opportunity identification process.

**Literature Review**

**Concept of Entrepreneurship**

Entrepreneurship is considered as the process of identifying, evaluating and developing opportunities through which new products and services are produced (Shane & Venkataraman, 2000:221) by devoting the necessary time and effort, assuming the accompanying financial, psychic, and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence (Hisrich et al., 2002:34). There are other various definitions of entrepreneurship, but the most common definition is that of Hisrich that states that entrepreneurship is the process of creating something new with value by devoting the necessary time and effort, together with financial, social and psychological risks in order to receive monetary rewards and personal satisfaction and independence (Hisrich, 2005: 45). Entrepreneur is also a person who combines all production tools and bears the responsibility for the production value, return of all capital, fees value as well as the obtained profit (Ahmadpour Daryani, 2002: 31). The entrepreneurship process includes opportunity identification, its evaluation, decision making to employ it, endeavor to obtain resources in order to make new combinations and strategic development for the new business. These various activities affect individual, industrial and organizational factors (Koorani, Ahmadpour Daryani, 2011:11).

**Identification of Entrepreneurial Opportunities**

Entrepreneurial opportunities are the basis for the entrepreneurship process which create value through presenting modern frameworks in using the available or modern resources (Schumpeter, 1934:71). Opportunity identification is defined as the ability to identify great ideas and transfer them to businesses in order to create value added and income (Corbett, 2007:100). Opportunity identification is in fact the core of entrepreneurship and based on the metaphor for the window of opportunities, organizations deal with opportunities management during the period between opportunity discovery and entering new markets (Eliasi, 2008:66). Opportunity identification is the process through which people come to this conclusion that they have the potential to create new things which have the capacity to create economic value (Baron & Shane, 2005:76). Opportunity identification is the most important process in entrepreneurship which has been referred to through various terms; such as: opportunity discovery (Shane, 2000 & Krizner, 1985), opportunity creation (Ardichvil et al., 2003), and opportunity recognition (Gagliolo & Katz, 2001; Shepherd & Detienne, 2005); however, the most common term is opportunity identification which is the subject of this research.

**Some Effective Factors on Opportunity Identification**

Entrepreneur’s Prior Knowledge: Prior knowledge refers to the specific and distinct information of a person on a special subject which provides them with the ability to identify opportunities (Shane, 2000; Venkataraman, 1997). The researches which have been conducted on the role of prior knowledge in opportunity identification date back the Austrian economy; in Austrian economists’ viewpoint, people have different prior knowledge which enables them to identify opportunities (Venkataraman, 1997; Hayk, 1945). Although some researches have indicated the direct role of entrepreneur’s prior knowledge in the recognition of opportunities, more recent studies based
on the cognitive approach show that prior knowledge helps the entrepreneur attract new knowledge and identify opportunities through reinforcing cognitive structure. The cognitive approach emphasizes that whatever we do or think is under the influence of our mental processes (Chung, 2004: 37).

Perceived Self-Efficacy: Bandura considers 4 resources effective in the creation of self-efficacy which includes: one’s prior experiences, encouragement from the others, evaluation of physical and emotional conditions and behavioral patterns (KreitnerKinicki, translation of Farhangi and Safarzadeh, 2007: 171). The concept of self-efficacy has been paid special attention in entrepreneurship issues. Krueger (1989) has studied the role of perceived self-efficacy in opportunity identification and believes that the feedback from one’s performance results in a change in his/her self-efficacy and consequently leads to a change in the ability to identify opportunities and finally a change in their risk-taking behavior (Krueger, 1989).

Systematic Search for Opportunities: There are two general approaches in the literature of opportunities identification: the first approach knows opportunity identification as the product of systematic search for opportunities and the second one does not believe in systematic search in opportunities identification. The supporters of the second approach believe that unknown discoveries cannot be searched systematically (Venkatarman, 1997; Shane, 2000; Krizner, 1973). The Austrian school supports this viewpoint as well.

Strong & Weak Social Ties: Social networks are a set of communicative patterns between people, groups and organizations that can limit or ease the connection of entrepreneurs with resources, data and opportunities (Aldrich & Zimmer, 1986). Social networks provide entrepreneurs with useful information that can help them discover ideas and identify opportunities. The vaster these networks, the more opportunities the entrepreneurs can identify (Singh, 1998: 63).

Mentors: Mentors are those who provide entrepreneurs with the required guidance, consultation, knowledge and experience (Ozgen, 2003:67). Mentors have great value, because they help entrepreneurs prevent risks and traps on their way and gain valuable knowledge and skills.

Information Flows: Most studies conducted on opportunity identification indicate the fundamental role of information in this process. Different approaches and viewpoints have come to a consensus that in order to identify opportunities for creating new businesses, entrepreneurs must somehow collect, interpret and use information related to special industries, technology, markets, government policies and other related factors. Such information will have a significant role in the initial investigations for opportunities as well as in investigating the feasibility of discovered opportunity to create new business (Ozgen & Baron, 2006: 175).

Researches on entrepreneurial traits have distinguished the three individual, social and environmental factors effective on entrepreneurial behavior. The social factors examine characteristic and family background, life cycle, individual experiences and social groups. On the other hand, the environmental factors consider some characteristics in the environment content such as beliefs and values, environmental opportunities, indirect benefits, social evolutions, economic culture and social supports. The studies that are based on individual traits model, seek to find out who is called an entrepreneur and what the characteristics of successful or unsuccessful entrepreneurs are. Some other variables that are considered in the opportunities identification process in organizational entrepreneurship include:

Organizational Culture: Entrepreneurial-organizational culture emphasizes on insight, targeting, planning, innovation, cooperation, freedom of action and accountability. It is also based on a network approach and teamwork. Entrepreneurs’ organizational culture is a flexible culture that supports change, innovation, entrepreneurship, risk taking, organizational learning, foresight, teamwork, mutual trust and honesty, competitiveness and customer orientation. In Pinkat’s viewpoint (1986), the indices for entrepreneurial-organizational culture include freedom and independence, risk tolerance and nurturing multitasking teams.

Effective Communications: In the dynamic environment of organizations, the interactions between managers and employees are of great importance, especially to transfer the knowledge, new ideas and innovations. Communications in entrepreneurial organizations are mainly task-based and initiative. Direction of the communications is horizontal, vertical and multilateral. The communication channels include all available channels (face-to-face, telephone, …) and the communication style is also informal (Putnam, 2000).

Risk Taking: Risk taking is another dimension of organizational entrepreneurship which is also considered as the most important factor in entrepreneurship development. Risk is considered as the main characteristics of all activities based on innovation, new business and competition in organizations. Risk taking can be found in utilization
of opportunities, quick allocation of resources and employment of daring methods. This pioneering venture to search for opportunities and continuously gain experience can be considered among the entrepreneur’s traits in an organization. In other words, entrepreneurs welcome risks; but those which have been thoroughly assessed (Segal et al., 2005).

Long & McMullan (1984) believe that a set of factors under the following two categories of controllable and uncontrollable factors affect the opportunity identification by the entrepreneurs:

- Uncontrollable factors including cultural, social and economic variables as well as other macro variables.
- Controllable factors including all variable that can be changed by the entrepreneurs, such as the way of driving, expectations and personal experiences.

Another research (Dellabarca, 2002) has classified the controllable factors as social networks, experience, motivation and knowledge and the uncontrollable factors as cultural, economic, social variables. Shane (2003) has also categorized the effective factors on opportunity identification into individual factors including psychological and demographic variables and environmental factors including industry environment and macro-environment variables. Accordingly, the individual factors include psychological and non-psychological variables; the environmental factors include the available variables in the macro-environment as well as the industry environment; and the organizational factors can also affect the opportunities identification process in organizations. According to the performed studies, the conceptual model of the research is formed based on the mentioned elements.

Research Hypotheses
1- There is a significant relationship between individual factors (psychological and non-psychological) and entrepreneurial opportunities identification.
2- There is a significant relationship between environmental factors (industrial and macro-environment) and entrepreneurial opportunities identification.
3- There is a significant relationship between organizational factors and entrepreneurial opportunities identification.
4- There is a significant difference between average (effectiveness) score of main elements (individual, environmental and organizational factors).
5- There is a significant difference between average (effectiveness) score of main factors (individual, environmental and organizational).
6- There is a significant difference between average (effectiveness) score of the variables of main factors.

Methodology
The research is applied-developmental from the objective perspective and is descriptive-correlational in nature. The research population includes companies active in IT-based businesses in the banking industry in Tehran. According to the inquiries performed, the number of companies that have been active for at least two years and have provided the market with new ideas and services in IT divisions of the banking industry, reached around 100 companies. The simple random sampling has been used and the sample size has been determined as 80 people using Cochran’s sample size formula with a 0.05% margin of error.

Data Gathering Tools and Methods
To gather the required data, library and field research methods have been applied. Questionnaires, which have been used as the data gathering tool, were prepared by using valid scientific references as well as obtaining elites’ opinions. Accordingly, the three (individual, organizational and environmental) factors have been chosen as the effective factors on opportunities identification process, from among the various factors pointed out in the literature review.

In order to evaluate the relationship between the variables of the conceptual model, quantitative data have been gathered using a set of various questionnaires. The questionnaire used to gather the required data includes 5 sections and 35 items. To answer the questions, a five-point ordinal Likert scale with values “very little” to “very much” has been used.

Model Reliability
The reliability of the model has been tested through Composite Reliability and Cronbach’s alpha. The Cronbach’s alpha coefficient indicates the ability of questions in properly explaining their related dimensions. Furthermore, the combinational reliability coefficient specifies the correlation of questions of a dimension on another dimension in order to sufficiently fit the measurement models (Fornell & Larker, 1981).

<table>
<thead>
<tr>
<th>Structures</th>
<th>Cronbach’s alpha</th>
<th>Composite reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>0.855</td>
<td>0.896</td>
</tr>
<tr>
<td>Non psychological</td>
<td>0.867</td>
<td>0.889</td>
</tr>
<tr>
<td>Organization</td>
<td>0.820</td>
<td>0.853</td>
</tr>
<tr>
<td>Industry Environment</td>
<td>0.807</td>
<td>0.844</td>
</tr>
<tr>
<td>Macro environment</td>
<td>0.874</td>
<td>0.901</td>
</tr>
</tbody>
</table>

Table NO.1
As seen in the above table No.1, the coefficients for both Cronbach’s alpha and composite reliability of all 5 constructs are greater than the minimum acceptable amount. Therefore, the constructs under the study enjoy the appropriate reliability. Should the Cronbach’s alpha and composite reliability be higher than 0.7, it indicates that the model properly fits. The results of the current research confirm that these two criteria are also properly fitted.

**Divergent and Convergent Validity**

The validity of the questionnaire has been tested through the two divergent and convergent validity criteria which are peculiar to the structural equation modeling. The convergent validity indicates the degree to which the indices of a dimension can be explained in that dimension and the divergent validity indicates that the constructs of the research model shall have more correlation with their own questions rather than other constructs (Hulland, 1999). To evaluate the convergent validity, the Average Variance Extracted (AVE) criterion related to the first variables has been used. The results of this criterion are shown in the following table No.2:

<table>
<thead>
<tr>
<th>Structures</th>
<th>Psychological</th>
<th>Non-psychological</th>
<th>Organization</th>
<th>Industry Environment</th>
<th>Macro Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVE</td>
<td>0.852</td>
<td>0.691</td>
<td>0.539</td>
<td>0.839</td>
<td>0.437</td>
</tr>
</tbody>
</table>

The AVE indicates that all constructs enjoy the amounts higher than the minimum acceptable amount, which is 0.5 (Fornell & Larcker, 1981); therefore, the constructs under the study have a desirable convergent validity.

In the divergent validity, the amount of difference between the indices of a construct with the indices of other constructs is examined. This is calculated through the comparison of the square of AVE of each construct with the value of the correlation coefficients of constructs. If the constructs have more correlation with their own indices rather than other constructs, the appropriate divergent validity of the model is confirmed. To do so, a matrix must be formed in which the values on the main diagonal of the matrix represent the square of AVE coefficients of each construct and the values below the main diagonal represent the correlation coefficient of each construct with other constructs. This matrix is shown in the following table No.3:

<table>
<thead>
<tr>
<th></th>
<th>Psychological</th>
<th>Non-psychological</th>
<th>Organization</th>
<th>Industry Environment</th>
<th>Macro Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>0.923</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-psychological</td>
<td>0.444</td>
<td>0.831</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>0.484</td>
<td>0.319</td>
<td>0.734</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Environment</td>
<td>0.624</td>
<td>0.472</td>
<td>0.457</td>
<td>0.915</td>
<td></td>
</tr>
<tr>
<td>Macro Environment</td>
<td>0.532</td>
<td>0.399</td>
<td>0.420</td>
<td>0.502</td>
<td>0.661</td>
</tr>
</tbody>
</table>

To analyze the data, the SPSS was used to analyze the descriptive data and prioritize the variables and Smart PLS (the Structural Equation Modeling method) has been employed to examine the effect of variables mentioned in the hypotheses and test the final research model.

**Hypotheses Test**

In this stage of data analysis, the structural equation modeling was used and the Smart PLS was employed. First, the initial model was drawn with all its details; then, the coefficients of factor loadings of all items were examined in order to assess the fitness of the measurement model. The results show that the coefficients of factor loadings of all questions and relations were greater than the minimum acceptable amount, that is 0.4 (Hulland, 1999) which indicates the appropriateness of the variables. In the next stage, the fitness of research structural model was tested and the constructs and their relationships were examined. To do so, the most fundamental measure i.e. t-values was used. Based on the picture (1), the t coefficients of all 7 relations in the model were greater than 1.96 which indi-
To prioritize the effective factors on entrepreneurial opportunities identification, the Friedman test has been used. Employing this test and based on the given scores, the (5) constructs and their (35) key variables have been prioritized. The Friedman test is used to compare several groups by their average rank and determines whether the groups can be of a single population or not; therefore, it is employed for the two-way analysis of variance (ANOVA) through ranking as well as comparison of average ranking of various groups. The hypotheses of this test are as follows:

- There is a significant difference between the average effectiveness of the key factors affecting the entrepreneurial opportunities identification process.

H0: The average score of factors is equal.
H1: At least, the average of two indices is not equal.

Considering the above table as well as the level of significance of the test which is lower than 0.05, the test null hypothesis which indicates the equality of score average of dimensions’ significance is rejected. In other words, the research hypothesis which states that the significance of dimensions is different from one another is confirmed. Now that it is confirmed that the significance of the constructs is different from one another, the results of prioritizing the dimensions is of a great importance.

To prioritize all key factors, another Friedman test was used whose results are reflected in the following table:

<table>
<thead>
<tr>
<th>Fried- man test statistic (chi)</th>
<th>number of samples</th>
<th>Degrees of freedom</th>
<th>Significance level</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.800</td>
<td>80</td>
<td>4</td>
<td>0.00</td>
<td>REJECT H0</td>
</tr>
</tbody>
</table>

Table NO.3

After being determined that the environmental, organizational and individual factors have a significant effect on entrepreneurial opportunities identification, the intensity of the effects of the research constructs on entrepreneurial opportunities identification was examined. As observed in the picture (2) based on the standard coefficients of Smart PLS output, 63% of the opportunities identification changes are resulted from the environmental factors, 57% from the individual factors and 43% from the organizational factors. The causal coefficients of the directions between the two main constructs of the research show the effect of the environmental, organizational and individual factors on entrepreneurial opportunities identification. The other coefficients shown in picture (2) also confirm the appropriate adequacy of dimensions of the 3 main research constructs in explaining their related constructs.
Considering the above table as well as the level of significance of the test which is lower than 0.05, the test null hypothesis which indicates the equality of score average of the significance of key factors is rejected. In other words, the research hypothesis which states that the significance of key trends is different from one another is confirmed.

**Discussion and Conclusion**

In today’s evolving world, and considering the increase of environmental uncertainty, constant changes and great challenges, one of the effective strategies for organizations such as credit and financial institutes and banks to be able to adapt themselves with these rapid evolutions and survive is to move towards entrepreneurship and become entrepreneurial organizations. Many organizations have realized the importance and necessity of entrepreneurship and entrepreneurial attitude in organizations. Such changes in strategies are, in fact, the response to the needs which have emerged as a result of the vast evolutions and threats. Therefore, the societies and organizations that will move towards development and prosperity are those that can make use of their facing opportunities promptly and properly. In institutions such as banks which have various and mutual relationships with customers and financial and non-financial markets, the issue of entrepreneurship and opportunities identification in IT areas can help them improve their performance. Today, one of the effective and driving forces in this competitive world is information technology that can directly lead to innovations in products and processes which is considered as a significant dimension in entrepreneurial attitude. On the other hand, as mentioned earlier, the business environments have become more unpredictable, complex and dynamic. Therefore, in order to identify new opportunities for improving their performance and acting more actively prior to their competitors, organizations need to pay attention to the factors that affect the opportunities identification. So, in order for their staff to have traits and characteristics to be able to discover the facing opportunities, organizations shall concentrate more on their staff; in this way, they can employ their intangible assets in achieving greater entrepreneurial opportunities identification and creating competitive advantage in comparison with their competitors. In addition to concentrating and reinforcing the individual traits among their staff and human resources, organization shall examine other effective factors on entrepreneurial opportunities identification which can lead to their success.

In the first to the third research hypotheses, it was shown that in addition to the individual traits that have always been considered effective on opportunities identification process in the previously conducted researches, other factors such as industrial environment, macro environment (political, social, legal, cultural and ...) and organizational factors are also effective on opportunities identification process in organizations, especially financial institutes and banks. Besides studying the industrial environment and individual factors including risk taking, independence, prior knowledge and other variables alike, the organizational factors can have a great effect on identifying, creating and generating entrepreneurial opportunities. Organizational culture and organizational structure are also among the variables that can be studied as the facilitators or barriers of entrepreneurial activities.

In the fourth hypothesis, the extent of effectiveness and significance of each dimension was studies. In shall be noted that the opportunities identification is realized only when the various dimensions of the industry as one of the most significant variables is thoroughly examined. The banking industry is an industry that faces rapid and constant changes in IT; therefore, the opportunities identification process in this industry requires studying all its aspects, identifying promising areas and recognizing the modern technologies that emerge one after another due to the technological changes in this area.

Finally, there are the macro environment variables which are of significant importance in the opportunities identification process in technological businesses of the banking industry. In the banking industry, items such as legal supervisions, social issues, income inequality and etc. have significant effects on IT activities and make the entrepreneurs face big challenges in identifying and utilizing opportunities. Thus, considering the mentioned points, it is suggested to examine the role of other factors such as education, research and development in entrepreneurship areas of the banking industry in further studies. It is also suggested to separately examine the significance of all the indicators under the study which affect the opportunities identification, in further studies. It shall also be mentioned that information technology has brought many changes in all social activities, including the entrepreneurship and has been paid special attention as the most important modern entrepreneurial tool. Furthermore, there is a great deal of activities that can be done regarding the entrepreneurship in IT areas. On the other hand, the entrepreneurship is the requirement of technological development and entrepreneurial infrastructure. Therefore, we face a mutual interaction between information technology and entrepreneurship and based on the significance of the role of entrepreneurial facilitator, the responsibility of social and civil entities will be also specified.
References


