



Exploration of process and competitive factors of entrepreneurship in digital space

A multiple case study in Iran

Entrepreneurship
in digital space

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Abstract

Purpose – The purpose of this paper is to explore the process and competitive factors of entrepreneurship in digital space in Iran.

Design/methodology/approach – In the last decades, the development and advancement of information and communication technologies (ICTs) and the business innovations related to them have defined a new economy which is known as “digital economy”. Establishing and running businesses in this digital space means carrying out a kind of electronic commerce by exploiting the internet and other electronic networks. The new digital economy provides exceptional opportunities for many entrepreneurs to create new ventures in different business areas according to electronic commerce models. Given that researchers in Iran have not studied digital entrepreneurship and there is a great interest in digital entrepreneurship, further research is needed on this subject. According to research in Canada by Carrier *et al.* on cyber entrepreneurship, the authors used the same method and studied five cases that work in digital entrepreneurship in Iran. In this paper, the authors first review the literature of digital entrepreneurship – digital entrepreneurship framework that include a typology of digital ventures and their characteristics, characteristics of digital entrepreneurs, and the distinctions between digital and traditional entrepreneurship. Then five digital entrepreneurs in Iran were surveyed to explore the process of their entrepreneurship and competitive elements applied by them.

Findings – The most notable contribution of this research is the focus on the process of this type of entrepreneurship and the steps which were used by entrepreneurs. Unlike the traditional forms of entrepreneurship, the entrepreneurs in cyber space in Iran did not examine the feasibility of their projects; also, the identification of a business opportunity created business ideas. Another contribution is that the authors found ten factors as the internet-based entrepreneurs’ competitive elements in Iran, and also found interesting results about characteristics of internet-based entrepreneurs.

Originality/value – This paper provides an overview of internet-based entrepreneurship in Iran. According to collected information, the authors propose the process of internet-based entrepreneurship and its competitive elements, and establish a basis for future research.

Keywords Iran, Internet, Digital technology, Entrepreneurialism, Digital economy, Digital entrepreneurship, Internet-based entrepreneurs, Entrepreneurial process, Competitive element

Paper type Research paper



1. Introduction

Globalization of business and the dramatic changes in information and communication technology (ICT) has created a fundamental structural transformation in the world economy (Pohjola, 2002). In the last decades, the development and advancement of ICTs and the business innovations related to them have defined a new economy which is known by different names, including “post-industrial economy”, “knowledge economy”, “innovation economy”, “online economy”, “new economy” and “digital economy” (Cohen *et al.*, 2000). Relating to microeconomy, macroeconomy and also the theory of organization, the new economy is a complicated and new phenomenon (Orlikowski and Lacono, 2000).

The digital economy is considered as a new social, political and economical system, placed in an intelligent space framework whose factors are information, intelligence, information processing tools and needs the means of communications (Carley, 1999):

OECD (Organization for Economic Cooperation and Development) officially acknowledges digital economy as a new way of conducting business and recognizes that digital economy has the potential to radically alter economic activities and the social environment. Particularly, the enormous growth of digital economy along with the rapid development of information and technology (IT) is having a profound impact on the world economy. The digital economy allows regional businesses and economies to be less local and more global in keeping with long-term trends toward market liberalization and reduced trade barriers (Sung, 2009).

Establishing and running businesses in this digital space means carrying out a kind of electronic commerce by exploiting the internet and other electronic networks. The new digital economy provides exceptional opportunities for many entrepreneurs to create new ventures in different business areas according to electronic commerce models (Turban *et al.*, 2008).

It seems that digital entrepreneurship presents an assurance for people who want to use the potentials of new ICTs. Pivotal elements in entrepreneurship are just identification and exploitation of special opportunities that lead to profits (Shane and Venkataraman, 2000). So, we can say that digital entrepreneurship in its remarkable meaning is typical of entrepreneurship (Carrier *et al.*, 2004).

Researches in the field of entrepreneurship especially in Iran have focused on traditional form of entrepreneurship, while there is a great interest in digital entrepreneurship and many entrepreneurs are beginning their business based upon technology and internet. The growth of “internet penetration rate” and “IT development” in Iran has created the basis for emerging digital entrepreneurship. E-commerce firms, ISPs, and even centers that work on e-banking and e-learning all are active in creating a digital business in various areas.

So, digital entrepreneurship in Iran is in beginning stages and there is more to know about this phenomenon, its elements and success factors. In this paper, we first review the literature of digital entrepreneurship – digital entrepreneurship framework that include a typology of digital ventures and their characteristics, characteristics of digital entrepreneurs, and the distinctions between digital entrepreneurship and traditional one. We will explain that digital entrepreneurship categorizes into three forms and in this paper, we focus on the third type of digital entrepreneurship or internet-based entrepreneurship. Then, we survey five digital entrepreneurs in Iran to explore the process of their entrepreneurship and competitive elements applied by them.

2. Literature review

2.1 *Entrepreneurship and digital entrepreneurship*

Afuah and Tucci (2003) suggested that any organization based on or influenced by the internet should have a dedicated business model. In fact, virtual businesses use a completely different business model (Waker, 2006). This fundamental difference should be considered or the business fails or misses profitable opportunities.

One major distinction between digital entrepreneurship and its traditional form is due to the way an entrepreneur markets its product. The product itself (a good or service) forms another factor. Another factor that brings about crucial differences between digital and traditional entrepreneurship is the workplace. Digital ventures can use computerized technologies as the main means of communications within their organization, between the organization and their key stakeholders (for example, suppliers and customers), or both (DeSanctis and Monge, 1999). This reduces the need to locate working teams physically, so they can have much more control on their costs (Okkonen, 2004).

According to Hull *et al.* (2007):

Entrepreneurship involves recognizing and seizing opportunities, transforming those opportunities into marketable goods or services, assuming risk, and realizing rewards, and may occur in a variety of settings, including new and old ventures, non-profit institutions, and the public sector. In short, new value creation is the defining Characteristic of entrepreneurship. Digital entrepreneurship is a subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitized.

Hull *et al.* (2007) also mentioned that the degree of digitalization can be derived through the following factors:

- the degree of digital marketing undertaken by a firm;
- a firm's digital selling;
- the digital nature of a firm's good or service;
- the digital distribution potential of a good or service;
- the potential digital interactions with key external stakeholders within the value chain; and
- the digital potential of virtual internal activities associated with a firm's operation.

2.2 *Types of digital entrepreneurship*

According to Hull *et al.* (2007), digital entrepreneurship can be categorized into three types:

- (1) venturing into the digital economy as a supplement or complement to traditional setting is called mild digital entrepreneurship;
- (2) venturing into the digital economy that requires "a significant focus on digital products, digital delivery, or other digital components of the business" is called moderate digital entrepreneurship. Moderate digital entrepreneurship is founded upon the basis of the digital infrastructure; and
- (3) venturing into the digital economy in which "the entire venture is digital, including production, the goods or services themselves, advertising, distribution, and the customers", is called extreme digital entrepreneurship.

Seven factors that make distinction between digital entrepreneurship and traditional entrepreneurship and also among these types of digital entrepreneurship (Hull *et al.*, 2007), are presented in Table I.

2.3 Technology and internet-based entrepreneurs

Previous researches have attempted to identify specific characteristics of technology-based entrepreneurs. We summarize the findings of the researches, which have been cited by Carrier *et al.* (2004) in their paper, in Table II. As you can see, different authors have explored various characteristics and we can categorize them as: age and experience, personal characteristics, previous experience, education, aim or motivation

Context of difference	Description
“Ease of entry”	Creating small business ventures takes only hours and some companies provide this opportunity for individuals. So, regardless of its quality, venturing in digital environment is easy and takes little time
“Ease of manufacturing and storing”	In digital world, inventory is meaningless and manufacturing is not cost-intensive. Mild digital entrepreneurs may not take advantages regarding costs of manufacturing and storage. But moderate and extreme digital entrepreneurship enjoy benefits in addition to lower costs
“Ease of distribution in the digital marketplace”	Distribution of products in digital world is much quicker and cheaper. All three types of digital entrepreneurs can benefit from this
“Digital workplace”	According to Okkonen (2004), the internet enables digital entrepreneurs to hire their employees from anywhere and make partnerships around the world without relocating them geographically. Locating and hiring talents, controlling cultural diversity and increasing responsiveness and flexibility are all products of global virtual teams (Waker, 2006). But managing virtual teams creates new challenges. These advantages and challenges mostly affect extreme digital entrepreneurs
“Digital goods”	In addition to the advantages mentioned so far, digital goods have other benefits. Modification of the products and even fundamental innovations can be established without critically interrupting the production and selling process
“Digital services”	Although the digital services may be conducting through an automated procedure or program and not costing greatly, this service may be of great value to the customer
“Digital commitment”	Although in digital environment, the line between virtual and real is not defined, the difference between real and virtual commitment is clear. Development of commitment in virtual companies may be harder than in physical companies

Table I.
Distinction factors between digital entrepreneurship and traditional entrepreneurship and also among three types of digital entrepreneurship

Source: Adopted from Hull *et al.* (2007)

Characteristic	Research by	Findings
Age and experience	Kisfalvi (2002), Blais and Toulouse (1992), Colombo and Delmastro (2001)	According to Kisfalvi, “age and experience” are among entrepreneurs’ characteristics that affect “strategic choices” in creating a new venture. The entrepreneurs’ average age is around 30 when they start their new business, so they are rather young. And in contrast to high-tech entrepreneurs, in technical domains they are generally “younger and less educated”
Personal characteristics	Blais and Toulouse (1992, cited in Carrier <i>et al.</i> , 2004)	Technopreneurs are stubborn enough to make innovations and enthusiastic about new technology
Previous experience	Roure and Keeley (1990), Colombo and Delmastro (2001)	According to Roure and Keeley, the success of an entrepreneur in a new technology-based venture is related to his/her previous similar experiences. In Colombo and Delmastro’s research, in majority of the cases, establishing a firm based on internet was their “first professional experience”. In cases that the entrepreneurs had previous experience, it was in other industries rather than ICT
Education	Siu (2002), Colombo and Delmastro (2001)	Siu found that internet-based entrepreneurs in comparison with traditional entrepreneurs are more educated in marketing areas. Colombo and Delmastro found that in contrast to high-tech entrepreneurs, in technical domains they are generally “younger and less educated”
Aim or motivation of technology-based entrepreneurs	Blanchflower and Oswald (1998), Reid and Smith (2000), Colombo and Delmastro (2001)	Blanchflower and Oswald emphasised that aim or motivation of technology-based entrepreneurs are vital elements of the process of entrepreneurship Satisfying a need for achievement or finding an alternative to unemployment are mentioned as motivators of most technopreneurs by Reid and Smith “The potential for higher income, the intrinsic desire to innovate, and autonomous management of working time related to an aversion to corporate cultures”, were the main motivators according to Colombo and Delmastro
Perceptions of market needs	Blais and Toulouse (1992, cited in Carrier <i>et al.</i> , 2004)	According to Blais and Toulouse technology-based entrepreneurs have perceptive understanding of market demands and needs and are able to develop practical ideas to cover those demands and needs

Source: Adopted from Carrier *et al.* (2004)

Table II.
Characteristics of
technology-based
entrepreneurs

of technology-based entrepreneurs, perceptions of market needs. In Table II, we explain more about each of these characteristics.

3. Research method

We already mentioned that digital entrepreneurship in Iran is in its emergent phase and there are signs of growth and development. But researchers yet have not surveyed this category of entrepreneurship systematically and comprehensively. In such a context, it seems appropriate to use an exploratory type of research, so that we can get greater knowledge on digital entrepreneurship, its process and competitive elements in Iran. As Eisenhardt (1989) states, "where the target research object is already new, an inductive strategy based on the observation of a given element appears to be necessary."

Also we selected the multiple case study method in order to document the experience of entrepreneurs studied, in great detail. According to Pires (1997), multiple case study method can help us identify convergent and divergent elements. Also, as Eisenhardt (1989), Maxwell (1998) and Yin (1994) stated "cases should be selected according to how well they represent the phenomenon under consideration". A variety of cases was selected to represent different sectors in the field of digital entrepreneurship.

We selected five entrepreneurs in different activity areas and business models (B2B, B2C, etc.). The criteria for selecting the cases was appropriateness of them and we did not use probabilistic sampling. First, we selected different fields of business that were static and dynamic (content) advertising, dynamic brokering, e-learning, and e-commerce infrastructure. Then, we selected web sites in those fields according to their popularity. Despite high internet penetration ratio in Iran (0.48), cyber enterprises do not have long history and we were familiar with these web sites.

To collect data from cases, we used questionnaire and interviews. Our questionnaire included three parts. The first part questioned the entrepreneurial process, the second part questioned 12 competitive factors and in the last part, business and entrepreneur's profile were questioned. To check the validity of our questionnaire, we sent it to five experts in fields of e-commerce and entrepreneurship and asked for their opinions. Then, we revised the questionnaire and added experts' comments to it. To check the reliability, we perform the reliability analysis and the Cronbach's α from the factors of this research was 0.83 which showed high reliability for designed measurement scale. According to Rubin and Rubin (1995), in exploratory researches, semi-structured interview is an appropriate approach, because such open-ended questions enabled us to promote our understanding of digital entrepreneurship, its process and competitive elements in Iran to higher levels.

4. Discussion and results

We collected data by sending questionnaire and conducting semi-structured interviews. Tables III and IV, respectively, represent the business profile and socio-demographic profile of each case. Because of confidentiality of data, we have used fictitious (assumed) names.

4.1 Socio-demographic profile

As you see in Table IV, most of the entrepreneurs we studied had university degrees in software engineering. They did not actually have much previous experience in the field of their firms. The owner of E.com was so experienced in fields of his company, and the

Enterprise sector	Date created	Number of employees	Average annual turnover	Type	Product or service offered
A.com Dynamic advertising	June 2002	20	\$72,000	B2C	First Persian web log service which offers advertising according to content of web logs
B.com Dynamic brokering	November 2007	1	Not available	C2C	A dynamic brokerage web site which connects small firms and individuals for outsourcing their projects (freelancing)
C.com Static advertising	May 2001	15	\$270,000	B2B, B2C, C2B, C2C	An advertisement service which classifies ads and shows them to customers according to searching key words
D.com E-learning	April 2001	3	Not available	B2C	An e-learning service which offers various services for online learning English
E.com E-commerce infrastructure	December 2002	50	Not available	B2B, B2C	Providing an infrastructure for e-commerce web sites selling products online, such as a payment system in which the product is delivered first and then the money paid

Table III.
Business characteristics of the studied cases

Profile	A.com	B.com	C.com	D.com	E.com
Training	Bachelor's degree in mechanical engineering, Bachelor's degree in mechanical engineering, Bachelor's degree in medical engineering	Bachelor's degree in software engineering	Bachelor's degree in software engineering	No university degree	Bachelor's degree in software engineering
Experience	Web design and programming			Previous experience in web design and programming, and proficient in English	Implementation of B2B systems, maintenance of web sites, implementation of content management software, implementation of CRM software, etc.
Age (years)	32, 31, 29	25	35	26	30
Gender	Male	Male	Male	Male	Male

Table IV.
Socio-demographic profile of digital entrepreneurs

owner of D.com also had previous experience in web design. But they all had experiences in information technology. They had great interest in information technology and this got them run a business on the internet. All of the entrepreneurs were young at the time of starting their business on the internet, an average age between 25 and 35. The owners of A.com were a team including three people.

Table III presents some basic characteristics of the firms which we studied. All of them were launched in 2000s and so they are young. Their average annual turnover (for those available) was between \$70,000 and \$300,000.

4.2 *The process of digital entrepreneurship*

As we mentioned in introduction section, one of our purposes of this paper is to examine the process which the internet-based entrepreneurs in Iran use to launch their business. We devised special questions in our questionnaire and interviews about how and when their ideas were formed, when they made them practical and what they did to launch their business. We also used the entrepreneurial process which Carrier *et al.* (2004) identified in their research in Canada and designed some questions according to their findings. By analyzing the collected information from five internet-based entrepreneurs in Iran, we found the basic process which is used by studied entrepreneurs, includes these steps: identification of business opportunity, emergence of business idea, analysis of market needs, feasibility study, venture creation:

- (1) *Identification of business opportunity.* "Taking advantage of a business opportunity is a fundamental step in the entrepreneurial process" (Carrier *et al.*, 2004). All of the entrepreneurs we studied in our research, had identified the opportunity that the new information technologies and internet provided, very well. They were aware of the potential advantages that the internet would provide for them. Also, they were first in taking advantage of these opportunities and offered innovative solutions. So, the first phase of their entrepreneurial process was detection or identification of the business opportunities. In the early 2000s the internet in Iran was emerging and developing, so many entrepreneurs seized this opportunity and established their businesses.
- (2) *Emergence of business idea.* As we explained the entrepreneurs detected the opportunities and generated innovative solutions, or in other words ideas. The owners of A.com were aware of the lack of a Persian web log service in Iran and the advantages of advertising on the internet. So, he combined web log service and content advertising. The owner of B.com knew the essence of outsourcing for small businesses and individuals. So, he thought about creating a place to meet such needs.
- (3) *Analysis of market needs.* All the entrepreneurs we studied paid much attention on needs of their prospective customers. After they initiated their ideas, they thought what their customers needed and what their problems were. Actually this phase was performed parallel to initiation of business idea, and they refined their ideas. In the case of A.com, the lack of a Persian web log service was the need of all Persian users. C.com exploited the internet network as a communication tool for e-learning, because the need for such tool was increasing.
- (4) *Feasibility study.* In cases we studied, the entrepreneurs did not actually run a formal feasibility study. The owners of A.com observed the development and growth of web log services in foreign countries and established it in Iran. The owner of B.com compared his plan with foreign web sites such as getafreelancer.com. The owner of C.com did not perform any feasibility study. The owner of D.com also studied foreign e-learning systems and established his own system. The owner of E.com had a little feasibility study about payment gateways and delivery systems in Iran, those days Iranian banks did not have

online system (online banking) so he decided to get money from customers during the delivery of product by postman and after one month he could directly deposit the money to his clients account minus his service fee (1-2 percent of net profit). And he investigated Iran post system and found out that he could have a contract with them to deliver the products.

They did not search for monetary support, because many of their entrepreneurial ideas and business plans did not need huge money for start point. For example, just A.com needed money for their servers, and because of their financial strength they tried to invest in their business plan but others as I mentioned before did not need much money for start. They just needed a designer, web site coder, a domain and a hosting service, and because of their experience and education in IT, designing and coding of web sites had been done mostly by themselves, so they just spent some money for domain and hosting service. Those days online advertising in Iran just needed a little budget, because online market and online jobs did not have large community, so they could advertise on many Iranian web sites for free.

4.3 *The competitive factors of internet-based entrepreneurship in Iran*

As we mentioned, in the third part of the questionnaire we questioned competitive factors of internet-based entrepreneurship. This part included 12 factors, six factors were the same factors that Carrier *et al.* (2004) found in their research and six other factors were selected from other sources. Those 12 factors include: using the potential of network-based business, staff motivation, care for technological developments and market dynamics, maximum use of information technologies, good market positioning, concern for security, innovation, cohesive culture, good implementation, supply chain management improvement, strategic positioning and operational effectiveness.

Ten factors were identified as competitive factors which are explained by the following:

- *Using the potential of network-based business.* All the firms we studied were essentially based on the internet and had a simple organizational structure. A.com and C.com communicate their customers through the internet, but still used traditional intra-organizational structure. B.com and D.com are pure virtual firms and made all their communications via network infrastructure.
- *Care about technological developments and market dynamics.* Technological breakthroughs were mentioned to be of importance to internet-based entrepreneurs. They also were careful about their competitors, customers and other important elements in the market.
- *Maximum use of information technologies and supply chain management improvement.* All entrepreneurs were aware of advantages of IT on their firm and they exploited it in all transactions with suppliers and customers. B.com, D.com and E.com took advantages of information technologies through their value chain. So, their supply chain management also was improved.
- *Good market positioning.* As we mentioned in entrepreneurial process section, all of the entrepreneurs we studied were the first to create such businesses in those sectors. Also they knew their market and adapted themselves to market needs and technological developments. So, they were leaders in their market sectors.

- *Innovation and good implementation.* “The invention or adaption of something new or different is conceptually quite close to entrepreneurship”. According to Porter (1985) in his book competitive advantage: creating and sustaining superior performance, innovation, cohesive culture and good implementation are some aspects of the firm’s performance which are determined in competition. Among these three factors which Porter stated, innovation and good implementation were found to be the firms’ competitive factors in our research.
- *Strategic positioning rather than operational effectiveness.* In one of his papers, strategy and the internet, Porter (2001) says:

[. . .] suitable competitive advantage comes from operational effectiveness (doing what your competitors do, but better) or strategic positioning (delivering unique value to customers by doing things differently than your competitors). This means offering a different set of features, different array of services, or different logistical arrangements.

In competitive view point, strategic positioning is more important than operational effectiveness.

5. Conclusion

In this paper, we studied digital entrepreneurship type three or internet-based entrepreneurship, its process and competitive elements in Iran. As we mentioned before, this type of entrepreneurship in Iran is still new and in emergent phase. So, the most notable contribution of our research is our focus on the process of this type of entrepreneurship and the steps which were used by entrepreneurs. Unlike the traditional forms of entrepreneurship, the entrepreneurs in cyber space in Iran did not examine their feasibility of their projects. And also the identification of a business opportunity created business ideas.

The other contribution of our research is entrepreneurs’ competitive elements. We explored 12 factors as competitive elements, and ten factors were selected to be the internet-based entrepreneurs’ competitive elements in Iran. Staff motivation and concern for security are those factors that have a little importance among Iranian cyber entrepreneurs; they focus on other factors to gain success on their entrepreneurial business on internet.

Also, we found interesting results about characteristics of internet-based entrepreneurs. They generally were young, at age 25-35 when they founded their business. Mostly, they were university graduates in software engineering. But as we saw the owner of D.com had no university degree, so some of the internet-based entrepreneurs in Iran are still less educated but they have specialty in the field of their business. Most of the cases were an individual that conducted a business on the internet, but A.com was established by efforts of a team.

We aimed to outline this new phenomenon in Iran. Our research was a multiple case study, but our sample was a small one and we cannot generalize the results. We used an exploratory type of research and studied each case in detail. According to collected information, we propose the process of internet-based entrepreneurship and its competitive elements, and establish a basis for future research.

We also concluded that the most important difficulties for digital entrepreneurship in Iran are as follows:

- software developer and web designer teams usually do not have enough knowledge and relevant skills necessary for this competitive area;
- limitations due to web site filtering in Iran;
- traditional viewpoints of some people in charge in main ICT departments in Iran for building the infrastructures;
- there are a few knowledge-based organizations in public and private firms that should be supported more and more;
- low internet speed and high price compared to the most developing countries;
- there is not established protocol which connects technical teams to the teams which own enough capital;
- unlike our investigated cases in this research, most Iranian web sites still lack business and return of investment models, so the digital entrepreneurs must first work on their own business models not only to copy the business models of well-known web sites; and
- there are not enough protocols for online trades or online businesses in Iran, so government must think of legislation of some rules and protocols for solving this problem.

Finally, we recommend digital entrepreneurs consider the following:

- Development of business models that are compatible with cultural and demographic aspects of Iran.
- Benchmarking foreign business models but not copying them.
- Considering the security of their web sites.
- Entrepreneurial ideas should be innovative and new. Most of digital entrepreneurs in Iran just run a simple business on the internet especially the one related to advertising.
- As we mentioned before, digital entrepreneurs in Iran do not search for monetary support. But we suggest that they should invest higher amounts even if they do not make profit in the first years, as many ideas need one to two years to become profitable business models.
- Digital entrepreneurs must consider that ICTs that constitute the fundamentals of electronic business are changing rapidly. So, we recommend that their ideas must be dynamic and adaptive to new environmental and technological conditions, otherwise their business will die.

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Further reading

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