

Information and Communication Technology and Entrepreneurship Development

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Abstract

Information and communication technology is advancing rapidly and has led to the fundamental changes in the world community. Activities, jobs, skills, cultures, needs etc. have been impressed and transformed by this technology. Undoubtedly, entrepreneurship has a major role in the development of these technologies; however, these technologies also influence the entrepreneurship and in other words, have created a modern entrepreneurship. In this regard, information and communications are two basic required tools for every entrepreneurial activity. Today, information technology has spread widely in the community and has integrated into all aspects of life. Entrepreneurship is the process of creating something new by spending a lot of time and effort and accepting financial, emotional and social risks to gain financial resources, job satisfaction and autonomy. In fact, information technology is considered as the driving force by which, in addition to mobilizing the job and employment wheels, leads to the economic growth and dynamics of community and the creation of a new kind of economy, that is called knowledge-based economy. This article has tried to analyze the concepts of information and communication technology and entrepreneurship and also has considered the interaction of information technology and entrepreneurship.

Keywords: Information and Communication Technology ICT, entrepreneurship development

Introduction

World in the recent years have witnessed a revolution in the information and communication

technology, and huge developments have been created in the “ICT”; Therefore, due to these developments, the current century is registered as the century of Information and Communication Technology (ICT). Because ICT is a key factor in shaping the new global economy and creating rapid changes in the society and has influenced the various aspects of life, cultural, socioeconomic, individuals and communities. Today, with more than ever development of science and by the help of technological tool, man has been able to make long way shorter. In confirmation of this issue, it is important to note that according to the latest statistics released by the UNESCO the data volume is doubled every two years. In this way, information technology is an applied tool to achieve such phenomenal growth in the service of human society and internet is considered as the most useful part of it (Feyz, 2010). On the other hand, population growth in developing countries, reduction of available resources and facilities in this countries and the emergence of new social and economic needs all have caused institutions and authorities pay attention to these needs and find fundamental and sectional remedy for them. According to the conducted investigations and available statistics, unemployment is one of the problems facing developing countries and even industrial countries and a set of solutions that have been proposed to address this global problem is called entrepreneurship. In a competitive economy, based on today’s market that is accompanied with rapid international changes and developments, has led to the process of transition from an industrial society to an information society and entrepreneurship is mentioned as an engine of economic development which has had an important role in economic growth of countries, job creation and so-

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cial welfare. Since entrepreneurship is impossible in isolation and without institutions, organizations and individuals' support, so, information and communication is mentioned as two basic tools needed to every entrepreneurial activity. Therefore, understanding how entrepreneurship can be developed more than ever through ICT is a topic that is discussed in this article.

Definition of entrepreneurship and entrepreneur

The concept of entrepreneur and entrepreneurship is different from perspective of economists, psychologists, businessmen and politicians. Economists were the first ones that described the entrepreneur and entrepreneurship in their economic theories (Richard Cantillon, 1992) which invented the term of entrepreneurship and know entrepreneur as a person who accepts the risk that purchase goods with definite price and sells with unclear price. Joseph Shomptrez "German economist and father of entrepreneurship, defined entrepreneurship in 1934 as "every process in company leading to the new product, and the creation of new method, new market and new sources." Entrepreneurship is the main factor of creating creativity and innovation and entrepreneurship refers to the process of value creation through formation of a unique set of resources to take advantage of opportunities (Ahmadpoor Dariani 2004). Entrepreneurship is a targeted activity for creating, maintaining and developing profitable business and entrepreneur maximizes the opportunities (Drucker, 1986). Entrepreneurs are the latest pretenders of operational control of organization. Drucker knows entrepreneurship as a perspective to change that always looks for variation and accordingly reacts to it and sees it as an opportunity and chance. He primarily knows entrepreneurship management as a response to innovation and the desire to change as an opportunity, secondly, he believes that the systematic criteria were crucial for performance evaluating of a company as an entrepreneur or innovator which aims to develop the performance and thirdly, knows the organizational structure as the most appropriate space to create the entrepreneurship space. Generally, entrepreneurship can be known as the main factor of innovation and creativity creation that is the process of value creation through formation of a unique set of resources to take advantage of these opportunities.

Entrepreneurship types

A) Individually: 1. independent entrepreneurship; is a process that entrepreneur independently traverses from initial idea to provide your product to the community, all entrepreneurial activity by creating a new economic enterprise. 2. Organizational entrepreneurship; is a process that entrepreneur accomplishes his entrepreneurial activities by support of an organization. B) Group: 1. Company entrepreneurship; is a process that a company conducts to encourage all his members to entrepreneurship and all entrepreneurial activities continuously to be done individually and in group form, quickly and easily in the company. In this process, each employee fulfills his duty in the role of the entrepreneur. 2. Social entrepreneurship is an emerging field that includes nonprofit organizations that assist individuals in starting nonprofit businesses, nonprofit organizations that create economic value to establish liquidity for their programs and creatively utilize available resources for social issues. Features of entrepreneur: in determining the characteristics of entrepreneurs, some consider the psychological and personality and individual characteristics of entrepreneurs and a group pays attention to activities and behaviors and performance of entrepreneur in environment. Innovation is the most important feature of entrepreneur. Joseph Schumpeter, professor of Harvard University, was one of the first people who spoke about entrepreneurship. He in his book in 1911 entitled "Theory of dynamic economy" has known entrepreneur as the main driving force of economic development and believes that entrepreneur innovates by creating new combinations of materials. He believes a dynamic equilibrium occurs through innovation and entrepreneurship which requires creative destruction. Some of the individual and personality characteristics that facilitate entrepreneurship include: innovation, creativity, confidence, success-seeking, intelligence, commitment, risk-taking, positive attitude, insights and foresight, providence, perseverance, ability to influence others, high motivation, determination, without fear of defeat, imagination power, timeliness, belief in controlling self-destiny, the ability to identify undiscovered opportunities, etc. and generally, emotional intelligence of entrepreneurs is high.

The importance of entrepreneurship

Entrepreneurship has been as a symbol of suc-

cess and effort in the business affair and entrepreneurs are the pioneers of commercial success in the community. Their ability to take advantage of opportunities, their force in innovation and their capacity toward success are as criteria that innovative entrepreneurship is measured by them.

Entrepreneurs have an important contribution in economic growth in terms of leadership, management, innovation, efficiency, job creation, competitiveness, productivity and formation of new company. Attitudes toward entrepreneurship and entrepreneurs, since early 1980s, simultaneously with companies' emphasis on innovation to survive and compete with entrepreneurs who were already appearing in the market result in conducting entrepreneurial activities in to the company (Anonous, 2008). Studies show that from the perspective of some economists and management scientists, entrepreneurs are the engine of economic movement and growth of a society that mobilize and develop society in the competitive environment and in imbalance condition. The key to entrepreneurial success refers to the innovative methods that satisfy human desires by applying new technologies, with marketing of better, faster and less costly new products. Entrepreneurship definitions that are provided suggest that entrepreneur does not wait government to invest and create jobs; He oneself provides facilities through a true recognition of opportunities and the use of stagnant funds and by organizing and appropriate management of resources implement his idea (Ahmadpoor, 2004). He just oneself is not practitioner but without relying on government, in the private sector creates jobs for many others, and additionally has an important role in production and productive employment. This issue leads to the reduction of unemployment rate, without any need to government investment in job create. However, government can accelerate and intensify entrepreneurs' movement by providing facilities and pursuing appropriate policies. (Mosleh-Shirazi and Sanei, 2008). In recent years, many industrial countries had witnessed the economic stagnation, high unemployment rate and fluctuations in international business cycles and the intensity of these factors was so high that these countries after World War II, never had experienced anything like this. This condition has caused the policy makers and political decision-makers pay attention to the potential role of entrepreneurs as the only solution to the increase of unemployment rate and economic prosperity achievement. Many countries have ac-

cepted this issue and have applied new policy precautions to support small and entrepreneur companies. In this regard, special efforts are also done with the aim of promoting innovative activities and increasing innovative capacities. Generally, the rapid development of science and technology, variation of demographic trends such as increasing the education levels, employment of men and women in families, population's aging, the effective attendance of capital markets, and more than ever familiarity of managers with entrepreneurial phenomenon caused the tendency toward entrepreneurship to be emphasized severely in companies' strategy (Kuratko, 2004).

Information and Communication Technology (ICT)

Information and Communication Technology is an innovative combination of technical, functional and commercial aspects in the form of a solution that is exclusively taken according to the commercial needs in every organization. The ICT solution helps to service actors and providers and offers new and stronger services and provides more value and credibility towards the traditional communication services for clients. Also, superior and services provider approaches to the center of his customers' commercial activities. Although, it seems that the concept of Information and Communication Technology (Fava) to be clear, but, actually, it is not clear and various definitions about ICT are presented by different people: ICT is a term that is referred to every type of communication device or program including: radio, television, cell phones, computer, hardware, network software, satellite systems and something like these; additionally, a variety of services and programs is related to ICT such as teleconferencing (video conferencing) distance education in which ICT is talked as a specific and exceptional concept and content like in education (Goh, 2006). While ICT alters the general trend of life, work and career, it is also able to create new job opportunities, and today, this issue has caused the accessibility to paves the ground for accessing to information and knowledge and paving the road for accessibility to higher living level. In new programs and policies to achieve sustainable development and growth; a community in which a significant number of citizens have been deprived of accessing to the benefits of ICT, is fundamentally considered as an unsafe society

that is in danger of disintegration. Today, ICT has spread widely in the community and has been integrated into all aspects of life. In general, we can say that technology is a tool that has been designed by human to achieve a specific purpose. ICT will remain as a positive force if people use this technology responsibly. Responsible use means that people do not spend their time and energy in the world of these technologies instead of spending on the important aspects of life. Information technology has a much wider scope compared to other media devices and provides facilities to change and anticipate and a new outlook for the development. (Haji Ketabi, 2010) Information technology is considered as a work machine and communications are its product. ICT is interdependent on each other and communication at the international level and between individuals would be impossible without it.

Entrepreneurship: The development engine of IT

Needs to be known through entrepreneurship and progress will be achieved by satisfying needs. Industrialized countries have advanced because have made progress in information technology and in this way take the charge of world's economy and have converted to military power and lead the present culture of the world toward their wishes. Information entrepreneurship can be done at different levels of hardware, software, information and communication. There are many opportunities for entrepreneurship in each of these levels which need the support of investment center and entrepreneurial efforts and interestingly, entrepreneurship in the field of information is much easier and more practical than the entrepreneurship in other areas. For example, because of limited utility there are fewer ideas in the field of nuclear power plants. Additionally, the extra investment and low feasibility percentage impede every entrepreneurial activity, while in the field of information and communication technology with a great extent, many ideas can be created and the amount of investment needed to bring ideas to the result is not so much. The information technology development in the economic dimension will bring information transparency, competitiveness of market and enhancement of exchange speed. In the social dimension, limited criminal acts, reducing the rents' role, traffic and so on in economic activities and the movement of capital-based economy to a knowledge-based econ-

omy are the other benefits of this technology. In the cultural dimension, the destruction of cultural exclusivity of Western countries especially the United States, the development of cultural exchanges between countries and increasing awareness level of people are the most important results of IT utilization. The necessity of positive impact of information technology should be considered by scientists. In this regard, the following applied cases can be considered as the background of study:

Mohammad Zadeh in a study entitled "Evaluating the quality of implementing the IT skills training program for high school teachers in Tehran," concluded that due to the significant relationship between the observed frequencies, the training provided to teachers on the use of information technology in reliability level of 99% have been consistent with their needs in teaching, learning process (Kerhat Ullah, 2007). Husseini (2009) conducted a study entitled "Factors influencing entrepreneurship of agricultural college students in Tehran province" and concluded that regarding the impact of 15 variables studied on entrepreneurship of students, extracurricular teaching associated with job skills, creative teaching methods in university and proper content of academic courses are the major factors influencing entrepreneurship (Hossaini et al, 2010). In another study conducted by Ayubi (2007) titled "Teaching Entrepreneurship lesson of second grade of work and knowledge schools based on the entrepreneurship components and proper information technology" and found the following results:

Entrepreneurship has 10 components in the order of priorities includes:

- Having an active mind and participatory
- Creativity and success-seeking
- Decision-making power and responsibility
- Accepting the change and seeking autonomy
- Opportunity-savings and success-seeking
- Modernism and providing new ideas
- Innovation and benefit from imagineering
- Motivation to create interest to get information
- Creating an appropriate area for mental deconstruction
- Commitment-accepting and the ability to negotiate

2 - Traditional teaching has no significant effect on student learning, but teaching through appropriate ICT method has created a significant difference between pre-test and post-test (Abedi, 2002). If by considering this issue, we think more evident

to the impact of technology on entrepreneurship, we can see that the value of future businesses has strictly a direct connection with the advancement of technology. It is presented in the following figure:

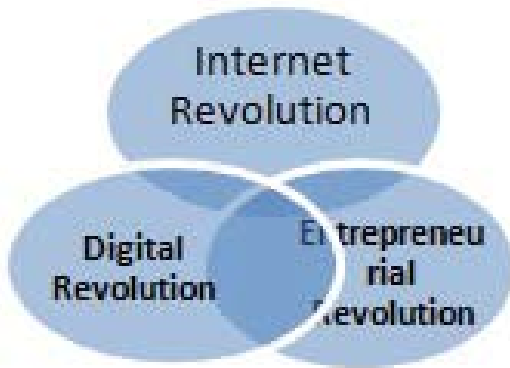


Figure 1. The value of new future businesses

Characteristics of Effective IT in entrepreneurship

IT by benefiting from various features and capabilities has been able to show a remarkable flexibility in the area of entrepreneurship. These features increase the efficiency of this technology in the area of entrepreneurship and creating jobs. In an overall look to some of these features can be noted as follows:

1. Increased speed: fast data calculation and processing and its instant transferring reduce the time of work doing and consequently increase the productivity.

2. Increased Accuracy: In human-based occupations the accuracy of work doing vary, while this technology provides the high and constant accuracy.

3. Reducing the physical size of information repositories: with development and application of this technology, there is no need to carry and maintain a large amount of specialized reference books. The information of several books can easily be stored in compact disc or the required resources can be received through computer networks.

4. Removing some administrative corruption: The utilization of this technology increases the transparency in doing work and eliminates many intermediaries. These two key advantages lead to the elimination of some administrative corruptions, especially at the lower level.

5. Creating the possibility of remote collaboration: communication, phone, teleconferencing, video conferencing and also collaboration systems, etc. are examples of applications of this technology in the area of entrepreneurship (Mohamedi & Mahmoudi, 2011).

The existence of information in the desired area is one of the most important factors that can increase the performance. The accessibility to more information of set is not the main problem in the optimal use of technology for better advancement of current entrepreneurship. In fact, one of the challenges of entrepreneurs is to signify the volume of content that are facing to it and purposeful absorption of all the information. For this reason and more important reasons or the same explosion of information and advancements combined with it, new approaches are needed. In general, it can be said that since the late 50th century, dramatic changes began in the world, from that time so far, information technology has been as a navigator and the main manager of all new innovation for human. The speed of these innovations is so much that still the progress and development and utilization stages are not provided in the whole society that another innovation with better facilities, greater convenience and lower cost is presented (Tavakoli, 2011). This issue can be stated as follows:

Information technology components include: the capital (classical economy), labor force (classical economy), raw material (classical economy), management (industrial revolution era), machines (industrial revolution era), and information (communications era). (Ahmadi & Iraqi, 2004)

According to the identified elements of technology, we see that workforce is one of the elements that being specialist and having the required competencies is important to establish an industrial society and this is not possible unless by creating individuals with new knowledge and this issue should be created by information technologies in order to make workforce in the form of lifelong learner. So that society to be able to make optimal use of the knowledge that is created. Thus, the ability of information technology and creating the information society structures are much more important than the technology itself.

The prosperity of a nation does not depend on the saving rate of science and technology, but depends on its ability to produce and create capability and technology. In this expression, the more necessary role of universities in shaping information so-

ciety is noted and this is in direct contact with entrepreneurship in those communities that want to develop.

The role of entrepreneurship in the interaction with ICT

As noted, requirements can be identified through entrepreneurship and progress to be obtained by meeting the needs. In the field of ICT because of the high widespread, lots of ideas is created; However, the required investment that can satisfy these needs is not so much, accordingly, the importance and role of entrepreneurship infrastructure and government's duty is more obvious in this area. Therefore, government in addition to the development of information and communications networks in this area should provide the possibility to everyone in order to have access to these networks and at the same time, by creating the utilization culture of these networks compiles and implements the required rules and regulations (Ali Miri, 2009). Today, entrepreneurship and business creation through ICT and e-government actions and commissioning of modern information technologies have been expanded in the country. Quantitative and qualitative development of digital entrepreneurship requires issues such as: having appropriate infrastructure and capable manpower, strong determination of government, rules and regulations and identified funding. The series of cultural activities, appropriate strategies and executive actions can lead to the development of entrepreneurship. Among the factors that act as an intermediary between entrepreneurship and ICT are incubators. Incubators are based on innovation designs that have small administrative staff and physical location and common facilities and usually are established near the research centers and academic centers. Electronic -government, Electronic commerce and electronic money are achievements of entrepreneurship interaction and ICT.

Conclusion

It was observed that ICT has caused many changes in all social activities such as entrepreneurship and is regarded as the most important tool of modern entrepreneurship. Also, entrepreneurship in information technology has a broad range for activity. Entrepreneurship is necessary for technology development and technology development is

entrepreneurship's foundation. Technology Development and internet on its top have created a new situation in which the topic, manufacturers, suppliers, vendors and customers, and almost all the factors involved in the economic cycle are able to communicate with each other in a common virtual space and share information, services, products, and money. Entrepreneurship is known as a key factor for economic growth and development in the modern era and IT is regarded as the driving force that in addition to mobilizing the career and employment wheels lead to the economic growth and dynamism of society and the creation of a knowledge-based economy. These two categories have mutual influence on each other. On the one hand, entrepreneurship severely depends on the foundations provided by information and communication technologies, in fact, entrepreneurship is the engine of technological development and the creation of new technologies and on the other, all activities, occupations and cultures are influenced by IT. Therefore, as entrepreneurship contributes to the technology development, this technology in its own turn effects on entrepreneurship too and has created modern entrepreneurship.

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