Entrepreneur Cybernetics

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Abstract

Cybernetics, which was accepted as a method of designing automatic machines by El-Cezeri who was a physicist lived in the 12th century, is a branch of science that examines the supervision and management of animate and inanimate complex systems. Cybernetics, which was considered as a scientific concept in 1948 by American mathematician and philosopher Norbert Wiener, includes an interdisciplinary approach based on the research of regular systems and the structure, limit and capability of these systems. The mechanical, physical, biological, social and intellectual systems can be subjects of cybernetics. In this context, in the length of time, the concept of cybernetics has been enlarged by covering social sciences, economics and management sciences by Canadian scientist Stafford Beer and others, and its interests diversified (Ergen, 2014, p. 18). Cybernetics has the possibility of being used on the subject of entrepreneurship which has increased its importance nowadays. Especially in the identification of the entrepreneurial mechanism of countries, cybernetics can be taken as a reference point that can be applied to understand the formation and functioning of the entrepreneurial ecosystem. Entrepreneurial cybernetics has an approach that involves entrepreneurial quality, capital risk tendency and state mechanisms of a country. The aim of this study is to develop an approach based on building a structure in which all parties related to entrepreneurship can collaborate and entrepreneurship ecosystem can be balanced in its own. The study of entrepreneurial cybernetics includes a theoretical approach on this subject.

Keywords: Entrepreneurial cybernetics, entrepreneurship

Introduction

Entrepreneurship is one of the most important issues highlighted all over the world. As well as this interest is closely linked with economic dimension of entrepreneurship, it is also linked with social and individual dimension. Entrepreneurship, which contributes to positive developments such as economic growth, increase in production and employment, supplying the needs of society, reducing the regional disparities, giving strength and

courage to individuals, strengthening the social integration, continues to increase its importance day by day.

One of the most important factors in the development of entrepreneurship is the creation of a strong entrepreneurship ecosystem. While the ecosystem in nature explains organisms and their relationship with their inanimate environment, entrepreneurship ecosystem is a system which is comprised of individuals, institutions and organizations, supported by state resources, and it guides entrepreneurs. Entrepreneurship ecosystem is analyzed under eight headings (WEF, 2014);

a) Attainable Markets
b) Human Resources
c) Funding and Finance
d) Support Systems
e) Regulatory Framework and Infrastructure
f) Education and Training
g) Universities
h) Cultural Support

In the development of entrepreneurship, the development of factors mentioned above should be compatible with each other. Today, efforts related to the development of the entrepreneurship ecosystem is focused on that direction. The aim of these efforts is to create a balanced structure in itself.

"Entrepreneur Cybernetics" is one of the concepts to be discussed in order to make the entrepreneurship ecosystem developed, balanced and effective. Cybernetics is a branch of science that examines the supervision and management of animate and inanimate complex systems. Cybernetics includes an interdisciplinary approach based on the research of regular systems and the structure, limit and capability of these systems. Cybernetics is also defined as a science of self-managing. This concept initially explained especially the relationship between biological and mechanical systems, then it enlarged by covering social sciences, economics and management sciences and its interests diversified. Cybernetics is used in the field of entrepreneurship by means of its functioning logic of and its use in different areas. Two main questions could be asked about "Entrepreneur Cybernetics": 1) Can cybernetics be an approach benefiting in the field of entrepreneurship? 2) Do cybernetic applications contribute to the development of entrepreneurship?

The aim of this study is to make a conceptual discussion based on the questions set out above. While making this discussion, the aim is to contribute to the development of entrepreneurship, but it should also be stated that there is a concern about producing new unnecessary and useless concepts encountered many times in recent years.

Definition

a) Ecosystem

Ecosystems are ecologic systems which are enduring and they occur with the mutual relations of living organisms and the inanimate environment surrounding them in a particular area. At the same time, ecosystems are formed by a food web. Ecosystem expresses an order on a global scale, but also it may refer to the existence of a local and sheltered system.

The ecosystem approach is interested in the functioning of all areas rather than individual organisms and communities. It examines the organisms in a particular area and their relation with the inanimate environment. Life in ecosystems continues with the energy flow and nutrient cycling. In ecosystems, which are open systems, input-output of energy and nutrient is continuous.

b) Cybernetics (Guidance Science)

Cybernetics is the science that studies monitoring and management of all the animate and inanimate complex systems.

Cybernetics includes an interdisciplinary approach based on the research of regular systems and the structure, limit and capability of these systems. The mechanical, physical, biological, social and intellectual systems can be subjects of cybernetics.

Cybernetics approach is applied to the systems in which the changes caused by an action are reflected through feedback in the system and it includes closed loop signal. Changes in cybernetic systems due to feedbacks is defined as "circular causality" relationship. The term "cybernetics" was firstly used by the French mathematician and physicist Andre-Marie Ampere. The current meaning has come from Norbert Wiener's book "Cybernetics or control and communication in animals and machines" in 1948. Wiener defined cybernetics as the field of study based on control and communication in humans and animals (Wikipedia).

Entrepreneurship ecosystem

Entrepreneurship ecosystem is a system which is comprised of individuals, institutions, and organizations. It was evolved by itself based on its region's needs. It is supported by state resources. It guides entrepreneurs and contributes to their production(Özkaşıkçı, 2013;110). It is very significant for the system to work balanced in itself.

Entrepreneurship ecosystem contains important players. Different definitions are made in the determination of these players. For instance, Isenberg, who is one of the experts in this subject, mentions that entrepreneurship ecosystem contains a structure consisting of hundreds of sub-components and these can be grouped under six main headings (Isenberg, 2011). In addition, the same

classification is also involved in the OECD report prepared by Menson and Brown (Menson ve Brown, 2014; 6).

- Appropriate Cultural Environment
- Politics and Leadership
- Finance
- Qualified Human Resources
- Entrepreneur-friendly Markets for Products
- Infrastructure and Regulatory Framework

Apart from this definition, there is another framework published by World Economic Forum. According to this framework, there are eight basic elements (WEF, 2014);

a) Attainable Markets
b) Human Resources
c) Funding and Finance
d) Support Systems
e) Regulatory Framework and Infrastructure
f) Education and Training
g) Universities
h) Cultural Support

Entrepreneurship ecosystem is the habitat of entrepreneurs and new enterprises. The conditions of this habitat play a decisive role in increasing the number of entrepreneurs and emergence of new enterprises. All the players that comprise the ecosystem have a great importance in this system. Even though each player has different roles, it is not possible to develop entrepreneurship alone. Therefore, entrepreneurship ecosystem should be accepted as a superior system and all the components that comprise this system should be accepted as a subsystem which is feeding and completing the system. The effectiveness of the system hinges on the synchronization and interaction of all the components with each other.

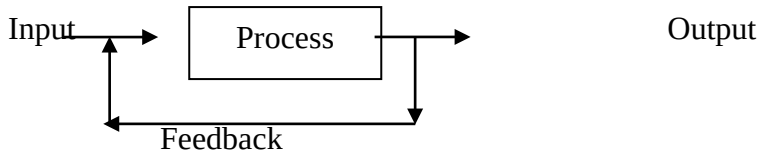
Today, one of the most studied subjects about the creation of entrepreneurship ecosystem and increasing its effectiveness is how the system can keep itself in balance. In this regard, there are a number of methods followed by public institutions. However, it can not be said that the quests have ended in this subject. In this process, "Entrepreneurial Cybernetics" could be a valuable approach to discuss.

From entrepreneurship ecosystem to entrepreneurial cybernetics

Cybernetics, which was derived from the word «Kubernetes» in Ancient Greek, was used in the meaning of «to govern well» formerly. Then, it was used as a method for designing automatic machines by El-Cezeri who was a physicist lived in the 12th century and finally, American Mathematics

Professor Norbert Wiener used the word in the present meaning (Akman, 2003;21).

Cybernetics is the science that studies monitoring and management of all the animate and inanimate complex systems. The field that cybernetics is inspired from is the state of balance in living organisms. This balance is due to the system configuration. This structure provides continuous inputs from outside, converts them into different outputs and brings them back to the system, so it keeps itself in balance continuously.



Cybernetics is also interested in ecosystems. Life in ecosystems continues with energy flow and nutrient cycling. In the ecosystem, which is an open system, the input-output of energy and nutrient is continuous. System theory is based on the sociological dimension of the ecological point of view. Additionally, according to the discipline of cybernetics, the source of control and communication in animates is also in the ecosystem.

In the length of time, cybernetics has found use in different disciplines such as social sciences, economics and management science.

Can the system concept of cybernetics, which is constantly renewing itself, be an alternative in the solution of a number of problems in entrepreneurship ecosystem?

Although entrepreneurship ecosystem has eight components, there are hundreds of parameters in these components. It is a complex and challenging process to establish such mechanisms which can make this dense and complex structure contribute to the entrepreneurs and entrepreneurship systematically, balanced and efficiently. Many countries strive for overcoming these problems and set a course for it.

The shareholders comprising entrepreneurship ecosystem often make individual efforts without aware of each other, and this situation affects entrepreneurship negatively. Disorganization in the system causes serious losses.

At this point, entrepreneurial cybernetics offers a system in which the activities of all the components of the ecosystem will be pursued in the framework of different parameters and the obtained outputs can be interpreted through advanced information technology.

By means of this system, a mechanism, in which a process in a component can be defined as an input to another one and all the components of the system will provide a state of balance with a corrective and regulatory approach when necessary, can be provided.

It can be stated that there are some efforts in this regard. For instance, a national monitoring system was established to pursue the performance of entrepreneurship in Denmark. Entrepreneurship performance is monitored and evaluated regularly by using intelligent indicators (Entrepreneurship Index, 2012).

The most important problems here are how to edit entrepreneur cybernetics approach and how to make it systematic. It can be said that the system primarily needs an intensive technological infrastructure, algorithm, and software.

Conclusion

Dissemination of entrepreneurship and increase in the number of new entrepreneurs continue to be today's most important issues. The performance entrepreneurs put in on the subjects such as employment and economic growth is very significant for countries. Therefore, new strategies and practices in entrepreneurship are continually conducted.

Developing the entrepreneurial ecosystem, enabling the system operate effectively in itself stands out as the subjects studied. The system efficiency of the system is important as much as its formation. One of the subjects discussed in this study is how the need of feedback and balance could be provided perfectly. In this context, "Entrepreneurial Cybernetics" approach is considered for a perfectly working entrepreneurship ecosystem.

Entrepreneur cybernetics approach offers the idea of seeing all the components of the entrepreneurship ecosystem by using information technology, monitoring the outputs of these components and sharing these with all the players of the system. If this structure is performed, it will provide the opportunity of information transfer to all the shareholders of the system (primarily the policy makers), and exhibition of necessary behavior. Thus, the system will be in the state of self-editing, doing feedback and maintaining balance continuously.

Serious communication infrastructure, ensuring the continuous data flow among the players within the system and preparing a framework in which the data will be considered as input for each player are needed for the formation of the system. The preparation of the particular set of indicators and algorithms in this context should be considered as elements of the preparation process.

Entrepreneur cybernetics approach carries the claim of providing inputs which can help all the players (primarily policy makers) in entrepreneurship ecosystem to see the current situation holistically, increasing system efficiency and contributing to the development of entrepreneurship.

It is considered that it would be useful to discuss the subject and conduct a wider research on "Entrepreneurial Cybernetics" approach, which is discussed as a new concept in this study. Thus, it will be easier to determine whether this approach offers a new thing and it contributes anything practically to the field of entrepreneurship in which different needs emerge every day.

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