THE EFFECT OF CYBERNETIC PATTERN ON THE CHARACTERISTIC OF LEARNING ORGANIZATION IN UNIVERSITY: A CASE STUDY OF IRAN

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Abstract
By debating the issue of academic independence, it is expected that the academic systems act more efficiently than before and academic system had to rethink about the structures, aims and goals to understand the complex nature of its organization and widen its social realm with a more modified and proper design. The present research aims at studying the effect of cybernetic structure on characteristics of learning organizations. 163 of faculty members of Iran universities were chosen as the sample and participants of the present study through random classification method and using a standard questionnaire. In order to analyze the data and answering the research questions and also studying the fitness of the conceptual model which introduces a meaningful network of relationship among the variables, the path analysis and structural equation model analysis were used. The findings suggest direct effects of the Cybernetics model on learning organization have been (0.63).
Keywords: cybernetic model, learning organization and University.

Introduction

Today, due to the constant changes and high complexity, organizations, especially higher education system in a dynamic and changing environment of today has to make a flexible and dynamic structure. This structure has to support the scientific independence of the academic society and give them the chance to do self-modification and correcting. Cybernetic structure according to Baum agrees with internal complexity of universities and so has a modifying system for monitoring the organizational functions and corrects the different sections continuously (Baum, 2004). By establishing an active system of feedback, the ability to recognize the weak points and correct information is done for applying the required changes and corrections (Heydari Tafreshi et al, 2003). Organization leading should have awareness of important changes, reforms and activities in organization, knowing the organization and its activities, supporting the activities and cooperation of the members in management and leading, intellectual intervention and emphasizing on case management and creating the communication systems (Bazrafshan Moghadam, 2007). Such a definition of organization associates with the pattern of learning organization (John Kwicz, 2000). The learning organizations create knowledge through reviewing the failures and success, their systematic evaluation and transferring and fixing the lessons with maximum efficiency. Schowant and Marcoant believe that in the new environments

where the organizations place in, only fast learning of success and failures can maintain the competitive advantages and help them move toward their objectives. Such organizations create the causes of creating cooperation and incentives and so the output and consequences of organization will have higher quality.

In the second chapter of the fifth development plan, knowledge development and obtaining the second rate of science and technology has been taken into account. In order to obtain the goals of the program, universities and faculties have been considered as the main references of creating, producing and development of knowledge in the society. The study of Bazrafshan (2007) showed that the universities of Iran make use of cybernetic structures especially leading component to organize their activities. Now, there is a question that how much these structures can provide the possibility for emergence of learning organization characteristics? Whether the cybernetic models have been effective in guaranteeing the qualities? Generally, the main goal of the research is that whether the cybernetic model can affect the learning organization or not?

Literature Review

Universities as productive systems have a different function but production in universities is different from other organizations. Universities work on Knowledge (Bazrafshan, 2007). The most important function of development of faculty in university is efficiency in three sections of teaching, research and services. The extent of academic activity makes choosing the title of a learning organization as improper (Granberg & Ohlsson, 2000). Malford (2000) define the learner organization as the self-built organizations which are revived and developed again. This definition of learning caused the Malford refused the belief that the learning organization has fixed approaches and formulation of goals. Granberg and Ohlsson define a learning organization as an organization which provides proper condition for its members to learn from each other and modify with the environment. Malford, Grenberg and Ohlsson emphasize on the relationship between the individual and organizational learning and therefore problem solving and the relationship between the organization and environment.

Senj (1996) has mentioned that learning organizations are not defined by a fixed structure which can be copied. These organizations use processes of systematic learning as an efficient strategy for solving the problems. As it can be seen, there are some similarities between the learning organization features and cybernetic hypothesis by Byrne Baum since compatibility of organizations need a dynamic and cybernetic system which is flexible and lets rebuilding at any time (Strandli, 2006, p. 21-22)

Learner organization are the organizations where people are continuously developing their capacity to obtain a results they want, where they develop new thinking patterns, where the group and desires are met and finally a collection in which the people always learn to learn together (Senj, 2012). These features or characteristics include:

1. Cooperation of beneficiaries and listening process
2. Mutual trust
3. Powering and empowering (and make ready)
4. Group consultation and informing instead of intervention
5. Horizontal and interactive patterns
6. Making capacity and providing the bases.

So, creating and transferring new knowledge is a base for all the sections of organization (Dunten, 1998). The features of learning organization provide the reasons for development of

staff and faculty members. The most important function of development of faculty in university is efficiency in three sections of teaching, research and services (Farastkhah, 2012).

At the present time, the success of universities is mostly dependent on efficiency of the management and leading. Educational management and leading has an outstanding importance. It is social process that uses human, professional, scientific, art and experimental skills of all the resources including technological, financial and values to meet the goals of the university (Khorshidi, 2004, 65-67). The main leveler of management is to know the condition, correct understanding of complexities and dynamics of the organization and not dealing with the details. The change pattern should be recognized and immediate actions should be avoided.

Clinson points that cybernetic designs a science for the art of management as physics design a bridge for art (Beckford, 1993, p. 168). The higher education institutes try to meet their goals through efficient management.

The researches of Rastemoghadam (2002), Satari (2012) and Abdeli (2011) showed that the case universities do not have proper condition in using the features of learning organizations. But based on the findings of the study by Bazrafshan Moghadam (2007), the case universities have tendency to organizing their activities in the frame of Cybernetic which is the most common approach with leading components. Laurence (1998) in his research mentioned the reason for organizations tendency toward the learning organizations and its relationship with the cybernetic and thought that during the last 20 years the working environment of different organizations have changed due to external factors of globalization and fast development of information technology. In spite of different personalities of the managers, they have to modify themselves with the new environment and this is not easy. But they can do it through taking different strategies to agree with the internal environment of the organization and changing world outside. In other words, the managers have to apply the new strategies for learning organizations which are distinct from other organizations and they have to use different techniques.

He defines cybernetic as directing through negative feedbacks. In other words this approach relates communication and learning. The characteristics of learning organizations include:

1) They can understand, monitor and correct the environment.
2) Relate the information to the agent norms
3) Recognize the meaningful deviation of the norms
4) Start correcting.

The main leader of this strategy is learning-centered approach since it has accepted the errors and uncertainty in a changing environment and replaces the encouraging the new ideas and avoids the obligatory plans and designs a related structure to the changes. He also points that the learning organization meaningfully work base on two approaches for improving the organization performance (Lawrence, 1998). Stephan Mignot (2002) believes according to the Byrne Baum approach that universities are cybernetic organizations that modify themselves with efficient methods. Self-building and self-reference in cybernetic structures increases the efficiency. In other words, the feedback rings of cybernetic help the information system to set itself and analyze the relationship between the organization and the context. All the stake holders of higher education including the managers, faculty members, students and staff share in technology (Bazrafshan, 2007, quoted Case, 2003).

2. Methodology

The present study has applied the descriptive and correlational method. The research instrument was the standard questionnaire of Wick and Leon in two M.A. theses which was localized and

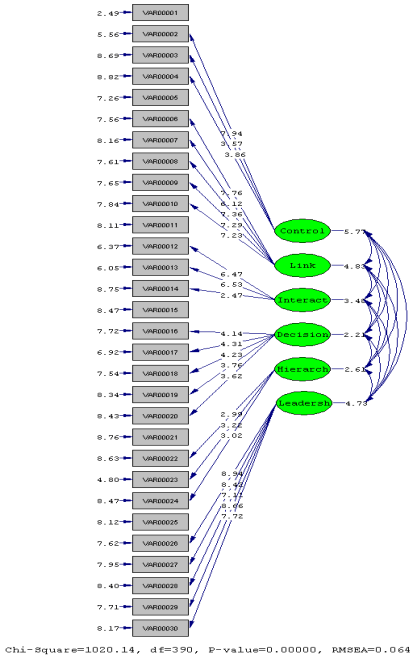
the questionnaire of cybernetic pattern was taken from Doctoral thesis of Bazrafshan (2007). In order to confirm the internal validity of the questionnaires, they were reviewed by the professors and experts. Construct validity was confirmed by the cycled factor matrix. In addition, the reliability of the three questionnaires was calculated by Cronbach alpha for cybernetic questionnaire was 0.95. The population of the study is 650 of faculty members in engineering, human science, physical science of Tehran, Shahid Beheshti and Tarbiat Modarres universities. The questionnaires were distributed personally and through email. (163) of the questionnaires were collected and analyzed.

3. Research Findings

The morphological information showed that 124 of 163 respondents (82.2%) were male and 29 of them were female (17.8 5). Totally, the respondents can be categorized considering scientific level as: 0.6 teachers, 51.6 assistants, 39.3 associates, 7.4 professors and 1.2 did not respond.

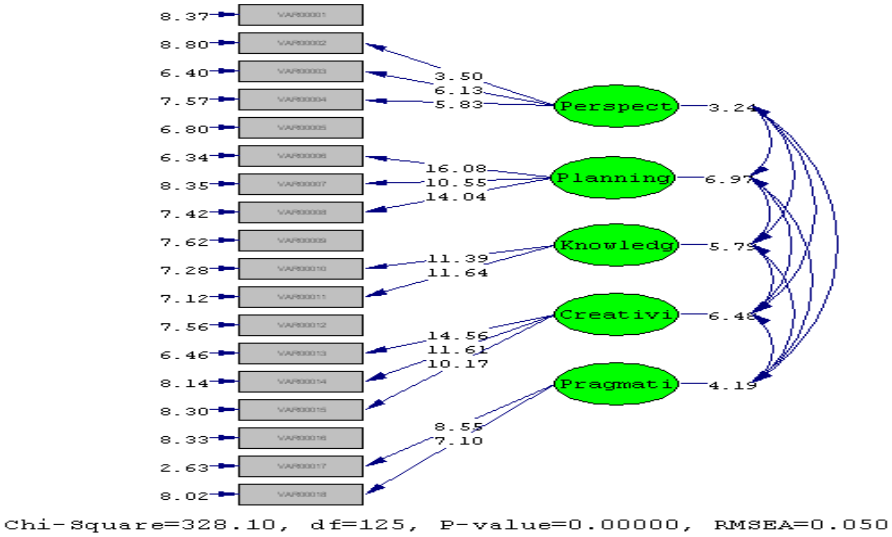
The results of factor analysis of cybernetic variable indicate that the amount of X^2 was 102014 which is less than 3 considering the 390 degree of freedom. This amount shows the little difference between the conceptual model and the data of the present research. The amount of RMSEA was 0.64 and NFI, GFI and AGFI indexes were 0.96, 0.98 and 0.95 respectively which show high fitness. The results are shown in figure 1 and the significance of all is higher than 1.96.

Figure 1: the structural model of cybernetic pattern in meaningful mode



The results of factor analysis of learning organization variable indicate that the amount of X^2 was 32810which is less than 3 considering the 125 degree of freedom. This amount shows the little difference between the conceptual model and the data of the present research. The amount of RMSEA was 0.64 and NFI, GFI and AGFI indexes were 0.94, 0.95 and 0.97 respectively which show high fitness. The results are shown in figure 2 and the significance of all is higher than 1.96.

Figure 1: the structural model of learning organization pattern in meaningful mode



The main results of hypothesis can be seen in figure 3. Based on the data, cybernetic pattern has had a meaningful effect of learning environment.

Figure 3: the structural model of cybernetic pattern effect through learning organization on quality assurance in meaningful mode.

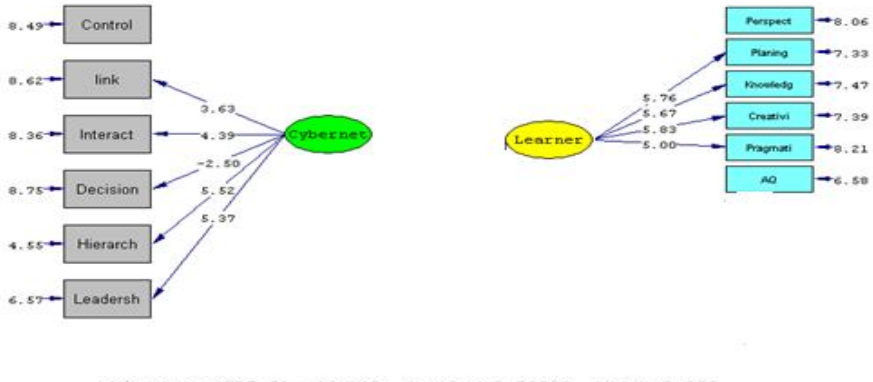


Table 4: Results and findings

row	*hypotheses*	*Effect coefficient*	*Significance coefficient*	*result*
3	$H_0 : \rho = 0$ *Cybernetic model has no meaningful effect on learning environment* $H_1 : \rho \neq 0$ *Cybernetic model has meaningful effect on learning environment*	*0.63*	*4.19*	*confirmed*

In order to study the research subject more deeply, other outputs of Lizrel were studied, too. The outputs of table 2 show that all the relationships are meaningful. In other words any change in one of the dimension of cybernetic pattern will lead to changes in other dimensions. So the most correlation is found in the link and interaction with 0.88% and there is a reverse relationship between the link and hierarchy of – 0.57 negative and meaningful. It means that by increasing the hierarchy in the organization, the link between staffs will reduces. On the other hand, interactions have the most effect among the components of cybernetic pattern. The factor load of

this component is 0,48 that is 33 percent of cybernetic pattern variance. After this load, leading has the highest effect.

Table 2: correlation analysis of cybernetic structure dimensions

Leading	hierarchy	Decision making	interactions	link	Correlation of variables ith and jth
0.62 significant	0.65 significant	0.58 significant	0.45 significant	0.62 significant	control
0.24 significant	-0.57 significant	0.46 significant	significant0.88		link
0.29 significant	0.36 significant	significant0.31			interaction
0.41 significant	0.24 significant				Decision making
0.66 significant					hierarchy

The results of software show that there is a positive and significant relationship between the learning organization dimensions as in table 3.

Table 3: correlation analysis of learning organization dimensions

practicality	creativity	Information and knowledge	planning	Correlation between variable ith and jth
0.61 significant	0.11 significant	0.23 significant	0.78 significant	view
0.57 significant	0.60 significant	significant0.82		planning
0.36 significant	significant0.31			Information and knowledge
0.74 significant				creativity

It means that any change in one of the dimension of learning organization will lead to changes in other dimensions. The correlation between the view and planning is 0.78%. The factor load of creativity component is 0,95 that is 83.5 percent of learning organization variance. After this load, the variable of view has the least effect.

Conclusion

comparing the findings of the present research to the theoretical bases shows that organizational development is related to theoretical bases of management change (change means planned intervention), group dynamics and the opinions of learning organization and learning organization. The learning organization recognizes that it is in a dynamic and changing condition

and provides the possibilities to develop and grow the staff and faculty members. In these organizations people are in contact with problems and so better think about how to solve them. New opinions are vital for these organizations and they have to be encouraged. Lawrence in his research about the relationship between learning organization and cybernetic dealt with providing methods for solving the problems and facing the challenges. He defines cybernetic as directing through negative feedbacks. In other words this approach relates communication and learning. The characteristics of learning organizations include: to understand, monitor and correct the environment, Relate the information to the agent norms, Recognize the meaningful deviation of the norms, Start correcting.

The main leader of this strategy is learning-centered approach since it has accepted the errors and uncertainty in a changing environment and replaces the encouraging the new ideas and avoids the obligatory plans and designs a related structure to the changes. He also points that the learning organization meaningfully work base on two approaches for improving the organization performance (Lawrence, 1998). Based on table 2 all the relationships are meaningful. In other words any change in one of the dimension of cybernetic pattern will lead to changes in other dimensions. So the most correlation is found in the link and interaction with 0.88% and there is a reverse relationship between the link and hierarchy of – 0.57 negative and meaningful. It means that by increasing the hierarchy in the organization, the link between staffs will reduces. On the other hand, interactions have the most effect among the components of cybernetic pattern. The factor load of this component is 0,48 that is 33 percent of cybernetic pattern variance. After this load, leading has the highest effect. The results agree with the study of Mignot (2002) that universities are cybernetic organizations that modify themselves with efficient methods. Self-building and self-reference in cybernetic structures increases the efficiency. In other words, the feedback rings of cybernetic help the information system to set itself and analyze the relationship between the organization and the context. All the stake holders of higher education including the managers, faculty members, students and staff share in technology. According to the study of Pratt feld (2006) Universities did not have a feature of the learning organization, and this shows their lack of information about internal feedback. When universities do not pay attention to information gathering the principles of learning organizations do not agree for them. The weak relationship among the creativity and view variables shows the necessity of changes and innovative approach so that learning all the time led the universities to be more powerful and can manage themselves. In addition the results of factor load of creativity component is 0,95 which is the highest and then practicality with 0.84 factor load is the second effective components. But the view has the least load. The comparison of the results and previous studies shows that people like Malford defined learning organization as those who learn from each other and lead to more efficient problem solving and so this understanding caused him to consider the learning organization having no fixed strategy and goal and what is important to him is creating chances for learning and creativity and view does not matter to him so much.

Suggestions

According to the results of the data analysis and aforementioned discussion, it is suggested that the cybernetic pattern has been effective on learning organization and shows the complex relationship in academic system of universities and according to Baum the help of cybernetic systems and patterns can affect the management. If the dean of universities knew the academic society (Mackellar, 2005) he can rely on professional self- management and trust the staff and

faculty members to have debates for short term and long term plans for the group to be implemented as decentralize programs and then replace the bureaucracy by the cooperative management and symmetrical interactions. They can hold workshops for teaching new features to the faculty members to know about the organization and design an intranet and internet so that the faculty members can share and communicate with each other and have discussions. Furthermore, encouragements and feedback rings can correct the faults of faculty members in secret and after a while they can be remembered in case of ignorance.

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