

University of West Hungary
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Knowledge Networks in the Economic Higher Education

The theses of the dissertation

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1. THE AIMS OF THE THESIS

The network theory examines the common features of the structure and the function of diverse organisms, groups, organizations. Despite the certain exaggerations of paradigm shifts the theory irresistibly rushes in almost all the disciplines. The investigations of networks uncovered common, shocking structural and functional rules of institutions in the last years. Therefore basically all the disciplines must adapt the methods of network analysis.

Higher education institutions in all over the world must respond more and more the force of manifold networking. They must integrate themselves to global, national and regional education, scientific and institutional networks and defend against the effects of network learning. The network learning is a real attack against the monopoly of knowledge, and the institutions must accommodate with this one.

The integration of institutions in the economically and socially peripheral Hungary promises the rise of the country. However it is questionable, that the higher education institutions (in that case: the economic higher education institutions) how could come up to the social interests, and which power and structure could speed up the network processes.

At the level of economic higher education the manifold force of networking can be verified with the proving of the following hypotheses:

1. *The institutions have integrated themselves into the scientific networks of Hungarian higher education disproportionately. This*

- process follows the regularity of scale-free networks and it's against the balanced regional development that can be expected.*
- 2. The rule in the scientific networks shows itself in the attractive force and the economic position.*
 - 3. According to the aspects of national and regional interests a radically renewed structure must be composed. In this structure must be just a few academic institutions with similar size and power, and the most institutions must have less autonomy and would concentrate to the local and regional interests and integrate themselves to an elastic regional network.*
 - 4. The new learning habits of net generation radically attack the traditional institutional structure and pedagogical methods.*

The research is based on an assumption, that the institutional network can be the frame a regional business network. The institutional network modernizes the local and regional social structures and promotes the interdisciplinary connections. The institutional network can promote the closing up and the learning process which is necessary for the adaption of innovation and can be the source of innovation.

At the beginning of special literature research the author sketched that the networking structures of universities and colleges why can be the main participant and actor in the local and regional innovation and adaptation (learning) processes. Then the author presented the most widespread and most interesting network theory and network analysis trends and methods.

The effective institution network is unimaginable without a partial restriction of institutional autonomy. Therefore the author considered some aspects of modern conception of autonomy, and also inspected the formation of the Hungarian (economic) higher education system in this point of view. The sketchy depiction of critical schools, showing the symptoms of the crisis of modern science and pedagogy, and the radical effects of network learning closed the theoretical part of thesis.

The empirical analysis is mainly based on SNA methodology. The author analysed some segments of Hungarian research network, depicted the regional structure of the network and separated the central and peripheral institutions with network research and statistical tools. In the next phase the research of institution ranks rendered the comparison of the roles in scientific networks and educational structure possible. In the course of research also the comparison of academic and business ranks was carried out. In the third phase of research the author picked up the countries similar to Hungary by territory and whose higher education is able to integrate itself to scientific networks and serves the social interests at a high level. Then he examined the common structural and network features of the country group picked up. He also investigated that the results what kind of lessons for Hungary carries at the level institutional structure. In the last phase of empirical research a questionnaire had been fulfilled by the students of economic higher education institutes. The research of new learning habits and unstoppable spread of this one is based on the results of this survey.

After the scientific investigation the author proposed a new structure for the economic higher education, which more effectively serves the spring up and transfer of knowledge and strengthens the local, regional and national innovation processes.

The diffuse character of topic raises some questions, which are not able to be responded in the frame of dissertation because of extensional constraints and methodological problems.

The author couldn't investigate that what and how flows in the knowledge networks. Firstly the methods of research and analysis are restricted for this. Secondly it's presumable that the knowledge creating and knowledge transfer is more developed in a 'healthier' network. Although the content and the measure of university knowledge 'capital' is absolutely important and there are lots of attempt to develop its methodology, it's scientifically unaccomplishable in the whole higher education network. The author didn't deal with the institutional and knowledge networks between regions in neighbouring countries. Many foreign institutions work in the Hungarian higher education and vice versa, but the more intensive networking processes are blocked by mainly the regulating environment.

2. THE DESCRIPTION OF RESEARCH

After the execution of research goals the author classified the economic research projects by content on the basis of Hungarian Current Research Information System. Then he investigated, that which projects belong to discipline group of economics and which one to the other groups. The used SNA (Social Network Analysis) methods were expedient to carry out by both groups.

The dichotomized, quadratic matrices based on the data of mutual projects made the use of SNA methods possible.

The densimetry and descriptive statistics gave important information about the common structure of networks and according to the indicators of centrality an opportunity presented itself to the separation and exact characterization of central and peripheral nodes. The use of CONCOR method was expedient to specify the structural equivalence that renders the structure of groups. The correlation matrices of research network separated to groups described the connection between research blocks. The results of the use of SNA methods indicated the role of institutions filled in the network.

Then the author investigated the network between editors of economic periodicals in the database of MATARKA. As previously he used unilateral and bilateral SNA methods. The unilateral methods made the sketch of connections among the members of editorial boards and among economic periodicals and the determination of general statistics, centrality indicators and group structure possible.

The results were completed with bilateral network analysis (bilateral centre-periphery analysis).

The results of previous analyses were reinforced a third one, the analysis of the authors of 'Közgazdasági Szemle'. Because of the character of data the analysis was carried out by a simpler methodology.

Although the results mustn't influence the final conclusions because of its deformation, the author sketched the publication network of public board of Hungarian Academy of Sciences.

The several analyses made the separation of Hungarian economic higher education institutions into various knowledge centres, subordinate and peripheral institutions possible.

The regional structure was completed with the analysis of Hungarian institutional ranks. According to this the author made evident the insufficiencies of academic certificate system and revealed some typical trends of the choice of careers.

According to the facts and figures the national education and research structure of institutions was outlined.

Knowing the national structure and analysing several international ranks and scientific databases the author appraised that the Hungarian economical education how successful and specified that which countries are comparable to Hungary by territory among the countries which achieved outstanding performance in economic higher education.

After the revealing of the features of the Nordic success zone sharp differences appeared between the five investigated countries and Hungary.

The author compared the results of a survey made among students of Hungarian economic higher education with the previous conclusions and results of special literature research in the last phase of empirical investigation. The survey made the analysis of students' satisfaction, value judgment and learning habits of net generation possible.

3. RESULTS

In the first phase of special literature synopsis the author described that the investigations based on innovation theory and knowledge management how moved toward network theory research. The research set out from special literature data. Then the author summarized the results of main knowledge theory problems and tendencies and selected the tools which were usable in the course of analysis.

In the chapter of modern university autonomy the author sketched the modern, European university conception based on Humboldt's principle. The conception has radically changed in the last two hundred years and determines the possibility of institutional networking to a great extent. In the chapter the semi-peripheral character of the development of Hungarian higher education and some characteristics of the development of economic higher education were outlined.

In the last part of special literature overview the author described the impairment of institutionalized knowledge monopoly. The process is not perceptible at every level yet but the Web 2.0 revolution makes it conclusive. The results reinforced the critical point of view that the learning habits and knowledge forms of net generation, which gradually becomes predominant among the age-groups of students, mean a radical challenge for higher education.

New scientific results

- 1. The institutions have integrated themselves into the scientific networks of Hungarian higher education disproportionately. This process follows the regularity of scale-free networks and it's against the balanced regional development that can be expected.*

The analysis of the data of Hungarian Current Research Information System by content and with SNA methods proved, that the distribution of economic research between institutions is extraordinary unequal. The most institutions are entirely ousted from the economic research projects financed by the subsystems of state budget. The Corvinus University of Budapest rules the network at the level of all participants and of the discipline group of economics. In the economic research projects in a wider sense appears a strong agricultural sub-network.

The analysis of the network between the editors of economic periodicals also proved the superiority of Corvinus University of Budapest and some other institutions which had already a good performance in the project network. Besides the central rule of 'Közgazdasági Szemle' has been proved.

The common publications published in 'Közgazdasági Szemle' haven't become settled into a connected network, but the absolute rank of institution belonged to the authors proved the results of previous analyses.

According to the results of the three different segments of Hungarian scientific network the author classified two faculties of

Corvinus University of Budapest as prominent knowledge centre, two institutions as knowledge centre, for institutions as regional knowledge centre, the other institutions as subordinated or peripheral institution.

Budapest is at the top of institutional structure, it has a rich and multi-coloured institutional network. The scientific centres of Southern Transdanubia, Southern Great Hungarian Plain, Northern Great Hungarian Plain and Northern Hungary are also clearly outlined. But the regions of Middle Transdanubia and Western Transdaniubia don't possess prominent scientific centres, the healthier regional structure is not favourable to form scientific centres of economics.

2. The rule in the scientific networks shows itself in the attractive force and the economic position.

The main result of the analysis of several higher education ranks that the academic qualifying system and employers' opinions about institutions hardly match. However the rank elaborated by the author is parallel with the employers' ranks. Thus the academic principles are only restrictedly able to determine the frame of a really successful economic higher education, but lots of institutions underestimated by the Science are very successful in some aspects and provide a high quality education.

The redistribution of students in the last years proved that the attractive force of institutions can be analysed by the axes of

‘Budapest – country’ and ‘provincial educational-scientific centre – provincial educational-scientific periphery’’. The change of enrolment data confirmed that the existence of regional supercentres is revealed in matriculations. Where there is a balanced regional structure (Western Danubia) every institution can suffer from the decline of students’ number.

3. According to the aspects of national and regional interests a radically renewed structure must be composed. In this structure must be just a few academic institutions with similar size and power, and the most institutions must have less autonomy and would concentrate to the local and regional interests and integrate themselves to an elastic regional network

The analysis of international institutional and country ranks proved, that the Hungarian economic higher education is not successful in the international scientific competition.

However the international investigational and educational results showed that some Nordic countries stand out from the small and medium-sized countries.

The five outstanding economic higher education systems (Denmark, Finland, the Netherlands, Norway and Sweden) move on an essentially different way than the Hungarian one. Instead of unequal competition for resources the Nordic institutions congregate to regional and local institutional networks. These networks cooperate with local economic and social partners, and the educational

structures are adjusted to regional demands. Just a few institutions work by academic principles. These universities compete with similar-size institutions with strong scientific and finance background.

4. The new learning habits of net generation radically attack the traditional institutional structure and pedagogical methods.

In the last phase of empirical research the author proved, that the learning habits of investigated students' group in the economic higher education follow with a phase delay the trends of western centres. The traditional forms of teaching already, the new forms of learning not yet can be successful.

4. CONCLUSIONS AND PROPOSALS

Because of the current structure of Hungarian economic higher education institutions and unfavourable demographic processes the most institutions probably won't be able to survive for a long time. Beside the current structure the number of economic education places is very high, but a new institutional structure, which separates at the level of education and by the goals of education, may afford just more institutions.

Two different ways of renovation evolve. The first one is that the unequal competition for public resources set 'right'. It would be disadvantageous decisively for the provincial institutions and regions. The second choice that the state would intervene in the processes and restructure the higher education.

Although the author is not convinced at all that the last alternative is currently preferred by the majority of the society or by any governments in the immediate future, at present only the existing government can elaborate a new structure of higher education. It is reinforced by the history of university autonomy, a the successes of Nordic countries and the ambivalent integration aspirations of Hungarian higher education institutions.

The author doesn't believe that social conditions of Scandinavian countries, Finland or the Netherlands could be or must be adapted by Hungary. However some common components of the success of Nordic higher education are worth considering in spite of the fact that this country group is heterogenic in some aspects.

The most of current existing institutions can be congregated to networks. These networks can be supplemented with new educational places and at the level of vocational training of higher degree could be based on secondary schools and shaping regional educational centres. The networks can collaborate with regional and local business and social groups.

The new, regional higher educational institutions must receive budget that can be elastically restructured, the number of matriculations that is guaranteed by the state and independence from the academic educational principle and mechanism. The educational supply and curricula of regional institutions must be adjusted to regional educational demands. It's questionable, that the articulation of institutions would have to follow the former separation by disciplines.

In the professional field of economics not more than a few institutions, decisively the faculties of economics in the universities of arts and sciences, the central European University and the Corvinus University of Budapest can function effectively by the academic educational principle and mechanism, and some of them can integrate themselves to global knowledge competition. The Corvinus University of Budapest must be obliged to a national competition for the interests of the Hungarian elite economic education and scientific research. To achieve this goal some faculties of the university can be posted to other institutions.

As a matter of course, the sketched educational principles can succeed beside different structures.

The countries which serve good examples of higher education are very different in some aspects. According to the experiences of the investigated countries it seems to be very important, that the new regional educational centres should provide at least the level of master degree and supplementary exams should provide the permeability between educational forms.

The current Hungarian economic higher educational institutions are divided smoothly in the country; most of them would be already now regional centre, if the accreditation, competition and matriculation system stimulated it.

The main obstacle to the sketched transformation is the impotency of Hungarian self-governing system. In the investigated Nordic countries the co-operation between local and regional government provides the supervision of regional university networks and coordination between local business demands and social interests.

In Hungary the impotent, small local authorities, the weightless counties without towns of county ranks, the hardly operating districts and region without functions couldn't provide these public services so there is no chance for regional higher educational networks.

The Hungarian higher education must also prepare itself to the global rearrangement of learning habits. It's true that the web 2.0 is in an earlier phase in Hungary, but the process inevitably booms

forward. If the higher education didn't accommodate itself to these changes, it lost its knowledge monopoly and power.

Currently the radical transformation of e-learning strategies and adaptation of revolutionary method of Web 2.0 are urgent tasks. In a wider sense the whole education system must move toward a more student-friendly structure. However the concrete tasks point beyond this thesis.

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