

Win-win – towards the Third Generation. Case study of Wrocław Environmental and Life Sciences University

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Abstract. The role of universities has been changing over last decades. In the modern society the Humboldtian model of higher education is quite obsolete concept. As a result of competition and globalization, the universities have to be adapted. The question is: how? We have to create The Third Generation University that aims to not only learn and research but also to collaborate with industries. Thus in this collaboration not only university would be a „winner”, but also this kind of partnership can be beneficial for the business environment. This paper reports on a case study of Wrocław University of Environmental and Life Sciences in the moment of transformation. The activity of WUELS will serve as an example – and will be also a basis to analyze the model of knowledge transfer.

Keywords: third generation university, knowledge transfer, technology transfer, modern education

1. Introduction

Modern universities are changing for the needs of tomorrow. The classic type of the Humboldtian university becomes out of date. The future is to belong to third generation universities, which, in addition to education and research, include a third mission in their field of interest, focusing on the transfer of knowledge, commercialization and innovation [3–5, 8]. The main reason for this change is the fact that Europe has lost its leading position in the world of knowledge and economic development [6]. Various ranking lists prove this; according to the CEBR (Center for Economic and Business Research), a British site that compiles the World Economic League Table ranking, the first three places are occupied by the economies of the USA, China and Japan, and the fourth, fifth and sixth places – Germany, Great Britain and France. The Italian economy was in the eighth place. The best university in the world in Academic Ranking of World Universities (ARWU) for the 10th time proved to be Harvard University – according to the Academic Ranking of World Universities. In the top three of the best universities in the world – apart from Harvard University – there were two other American universities – Stanford University

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and the Massachusetts Institute of Technology (MIT). Wissema [7] lists seven important factors that force transformation at universities. These are:

- increase in research costs, which forces universities to look for new sources of financing,
- businesses, especially smaller ones, which stop conducting basic research or cooperation with research centers,
- global competition for students,
- national governments that universities see as incubators for new trade activities,
- scientists working in interdisciplinary teams,
- increase in the number of students, which has resulted in mass education that has diluted the scientific element in academic education,
- formation of specialized research centers, located between academic and industrial research and related to both. These institutions constitute a challenge for academic and industrial research. They conduct part of their research and development activities mainly on the basis of competitive offers.

In Europe, the transformation of universities is indirectly modeled by the Horizon 2020 program. The largest European Union research program so far in the field of research and innovation development, amounting to approximately EUR 80 billion for the period 2014–2020, is intended to support not only basic research but also applied research and innovation. It promotes a multidisciplinary approach and cooperation in the context of sustainable European growth, competitiveness of its industry through scientific excellence and dynamic innovation. The European Commission (EC) has introduced the idea of smart specialization, focusing on universities as key players in economic and cultural growth in modern knowledge society [2].

An additional university mission and new goals to it mean structural and organizational changes, obtaining new sources of financing and developing effective management methods. Wrocław University of Environmental and Life Sciences has been carrying out the transformation of the university towards the third generation university since 2016.

2. Case study: Wrocław University of Environmental and Life Sciences (WUELS)

The introduction of the university in the host circle required the identification of key elements that affect the functioning of the university in a new version. These include management, new sources of financing, staff reorganization, modern didactics, graduates' potential. The change in the way of management was connected with putting on a collegial type of cooperation. This is also understood as the flexibility and integration of the administrative and financial sphere. The main back-up for the new financing is going to be projects, because the ministerial subsidy is not able to ensure the desired development of the university. The philosophy of human capital management is to be Total Quality Management (TQM), i.e. comprehensive management through quality, based on teamwork and the use of reserves inherent in the psyche of each employee for the purpose of enhancing the quality [6]. Didactics should enable students to learn independently and allow the best ones to participate in project. Graduates should not

only be supported financially but also taken advantage of in order to enhance the university development.

Presenting the WUELS case study, we refer to the model proposed by Secundo et al. [5], who divide the “third mission of the university” into three broad categories, each of which is related not only to the appropriate strategy, activities and processes, but also to other categories:

- **Technology transfer and innovation** includes two main processes: intellectual property management and the development of a research and development network.
- **Social involvement**, embedding activity in regional and national as well as international and networking communities.
- **Education and continuing education** focuses on two processes, i.e. attracting talents and incubation, as well as education in the field of entrepreneurial competences

2.1. Co-operation with the economy vs. university vs. scientific development (Technology transfer and innovation)

In the assumption of the third generation university, the economy and social welfare are to be the driving force for the scientific development of the university with mutual benefit. Cooperation with the economy required structural and organizational changes. New units were created aimed at cooperation with businesses, some of the existing units were transformed in the same direction. The multiplicity of departments dedicated to economic cooperation may be surprising, but this results from the criteria for the division of, for example, the type of service carried out, or the type of projects supported. The following structures are associated with it at WUELS.

The Department for Development and Investment Projects supports (application and management) all projects related to investments, e.g. scientific, didactic, administrative, etc. It also finances all other projects acquired by universities. **The Department for Innovation, Implementation and Commercialization** prepares offers for the business environment. The unit offers the possibility of establishing contact with research units or didactics at the university, thanks to which projects can be implemented through cooperation of the business environment with the university. It provides assistance in the application of project applications, takes care of the legal aspect of applications, i.e. oversees the shape of consortium agreements, division of property rights, implementation of patents, use of research results in didactics. It also monitors small commercial contracts run by universities. **The Office of Cooperation and Transfer of Knowledge** supporting the projects from the Horizon 2020 program and projects whose added value will be provided by the Regional Center for Innovative Technologies of Production, Food Processing and Safety, in short Center for Innovative Technologies (CIT). This is the largest investment planned for WUELS in the coming years. Its value is over PLN 94 million, of which PLN 29 million will be covered by the Wrocław University of Environmental and Life Sciences.

2.2. “Lower Silesia. Green Valley of Food and Health” (Social involvement)

One of the largest initiatives of the Wrocław University of Environmental and Life Sciences is the program “Lower Silesia. The Green Valley of Food and Health” prepared by the university in cooperation with the Marshal Office of the Lower Silesian Province introducing the idea of intelligent specialization. The program includes representatives of territorial self-governments,

government administration, as well as entrepreneurs and institutions belonging to the business environment. It is an example of an activity carried out by several entities – university, state and business. The main objective of the entire program is to increase the competitiveness of the regional economy in the area of food and health, improving the quality of life of the inhabitants of Lower Silesia.

2.3. Cooperation with the economy vs. students (Education and continuing education)

Cooperation with the economy should also translate into the sphere of student life. To strengthen this trend within the university certain units have been created that promote student entrepreneurship. They prepare future graduates for developing their career path.

The Academic Incubator of Entrepreneurship supports student entrepreneurship by offering young business people space to carry out business, office and legal services, as well as financial and accounting ones, consulting and training. Thanks to this, students have a chance to appear in the Polish economy at the beginning of their professional career. The Careers Office helps students find a career path suited to their own individual predispositions. It enables establishing contact between employers and students. Entrepreneurs may recruit employees, trainees, apprentices or volunteers from among students and graduates of the University. As part of this unit, optional internships are also implemented.

3. Cooperation with the economy vs. education (Education and continuing education)

Didactics is undoubtedly the first mission of the university, but it cannot be carried out in isolation from other areas. Socio-economic activities result among others in the change of the education program in terms of labor market requirements and in the increase in innovation. Business councils that include local and regional business representatives operate at the faculties. They are a “barometer” of the labor market needs, indicating the needs and desirable directions and profiles of education. An important role is performed by the coordinators for the internship, who are involved in the implementation of compulsory internships at the university looking for interested business entities to accept students for internships. The whole life-long learning program is implemented by the Center for Continuing Education (CKU) through the organization of training courses. It is the Center’s responsibility to develop and implement a model for identifying and describing non-formal qualifications supporting formal education and facilitating the confirmation of learning outcomes and adapting to them the offer of educational services. Distance Education Center (CKnO) promotes modern teaching techniques. It implements courses using remote teaching methods and techniques. The courses are used by both students and employees. Scientific activity – through the implementation of projects and research allows for the modernization of the education program guaranteed by the records of commercial contracts concluded by the university. Currently, projects financed by CKU and CKnO, financed from outside, support didactics in the production of open educational materials, and the implementation of modern teaching methods. CKU educational programs

also include potential candidates for studies, an example of which is the “Time for a professional” project. The aim of the initiative is to increase the efficiency of education as well as develop key competences and attitudes necessary for the labor market for both students and teachers of vocational schools and WUELS students participating in the project. The project is part of the idea of the program “Lower Silesia. The Green Valley of Food and Health” – it enables participants to acquire specialist knowledge in the field of food and nutrition, environmental protection, production and processing of agricultural raw materials.

Transformation is a continuous and monitored process. The form of activities, as well as the shape of the organizational structure, its connections are not permanent elements. A solution that will strengthen the university is still being searched for and this search is much likely to become a characteristic feature of third generation universities, and their management will be based on managing change. The university should create a system related to the business environment and the social environment, which will evolve depending on the changing conditions.

4. Methods

The structures described in the case study and their interconnections as well as relations with other units of the university are aimed at increasing the flow of external funds to build educational capital and create scientific and business consortia. Presenting the current WUELS business model based on a case study is the goal of the authors.

The research adopted the heuristic concept and a system approach from the category of system thinking was used [1].

5. Results and conclusion

Research and innovation have a big impact on our lives, way of thinking and work. They contribute to the rapid development of knowledge, and this is an end in itself, especially for universities. They are of key importance when taking on the great challenges faced by the university. Research and innovation can only be ensured by the intellectual capital of the university, which is created by people, management and the social environment, which all together create a system (figure 1).

On the basis of the model, it appears conspicuous that external funds play a very important role in the development of the university. As a rule, the ministerial subsidy covers only the costs of education. Research and innovations that significantly affect other elements of the system, however, are key elements. The business loop → scientists → research is interesting. According to the director of the Innovation, Implementation and Commercialization Department, we can conclude that the model business – university rather than university – business proves more correct at WUELS. In the first model, the initiator of cooperation is a business that knows its needs, has specific goals and is determined to invest its capital in research. These types of relationships are always successful also when it comes to joint fundraising in external funds. The second model has much worse effects and low efficiency. Can this fact be explained by the lack of adequate marketing, insufficient economic, technological and scientific potential, etc.?

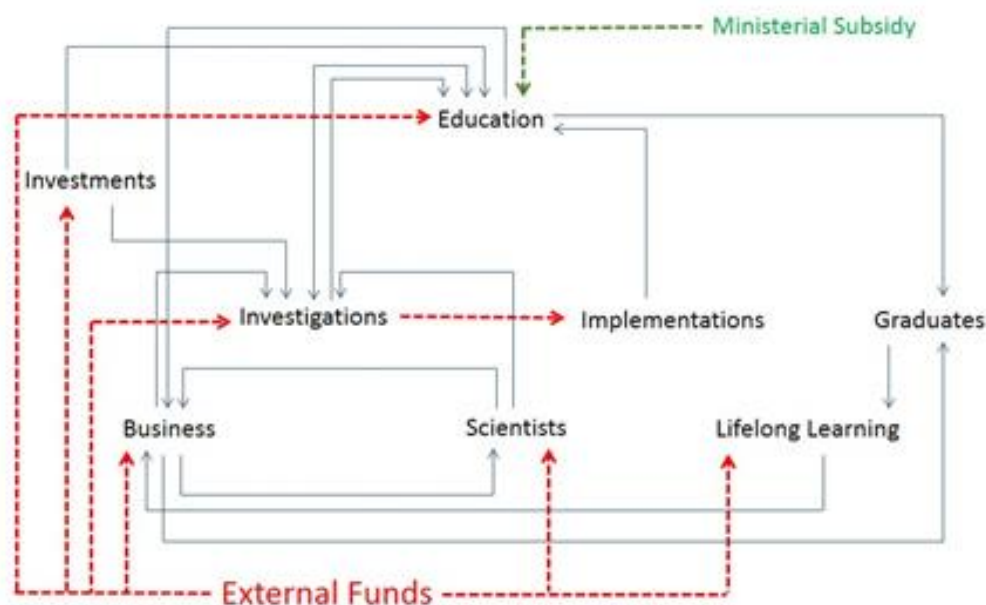


Figure 1: Model of knowledge and technology transfer at WUELS.

These are questions that require deeper analysis. The effectiveness of action in the sphere of linking science with economy is influenced by the speed of decision-making and reliability of performance, which is why the way of the functioning of units created to increase the flow of external funds and support for projects with particular emphasis on the policy of intellectual property protection and subscriptions in contracts regarding the possibility of use of research results in didactics is so important.

Considering the ever-changing reality, in which there are socio-economic and economic changes, and there is increasingly progressive globalization and internationalization, there is no doubt that the role of the university must also be transformed. Universities not only have to follow changes, but also forecast them – and adapt their activities to the desired direction, which in turn will allow to fulfill all the missions of educational institutions.

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