

Chapter 5

Improving the Mechanisms of Formation of MS Students' Research Competencies in Russian Core Universities

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ABSTRACT

The present study aimed at finding ways of combining the concept of the triple helix of innovation development “university - business - government” on the basis of a competence-based approach of university management theory, with increased attention to the mechanisms of formation of intangible assets of regional universities, modernization mechanisms of their innovation activity at the higher levels. The results can be incorporated into management practices to improve and enhance the competitiveness of the innovation system of the Russian Federation regions, in particular in support of individual regional universities. The rapid deployment of innovative processes in the region has led to the emergence of new business models of universities, in particular the “triple helix” model, combining universities, business and government with the semi-autonomous centers that interact with the environment.

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INTRODUCTION

The Triple Helix theory was devised in Great Britain and Holland by professor of Newcastle University Henry Etzkowitz and professor of the University of Amsterdam Loet Leydesdorff (Etzkowitz and Leydesdorff, 1995). The Triple Helix symbolizes a union between government, business and university, which are the key elements of an innovative system in any country (Etzkowitz, 2010). The Triple Helix model presents interaction of certain institutions at every stage of innovative product development. Government and university interact at the initial stage, i.e. conception of an idea. Thereafter university cooperates with business in technology transfer. Eventually, a final product is commercialized in the market by joint effort of government and business. The role of university in the Triple Helix model is indisputable. Majority of countries nowadays are in transition to economy of knowledge, where competitiveness of a country is primarily defined by know-how and sophisticated technologies. Therefore, universities carrying out research and development become a paramount asset in science-intensive production. The Triple Helix model is widespread in the modern science. It's a model of innovative development based on interaction of universities (U), business (B) and government (G). Every component of this model has its own characteristics and measurement parameters. The measurement parameters of U- and B-components separately are effectively measured by methods of descriptive statistics, but the analysis of their interaction is complicated (Etzkowitz & Loe, 2000). The interaction of G-component with other processes of the Triple Helix is defined on the basis of the analysis of the national and regional laws that influence on the development of the components. The means of mathematic allows investigating the components separately, but it doesn't do for spheres in which the components are interacting (Abell & Oxbrow, 2002). Scribe the general perspective of the chapter. Toward the end, specifically state the objectives of the chapter. Tomsk State University of Control System and Radio Electronics (TUSUR University) is striving to become the core of a regional innovation cluster and the first entrepreneurial university in Russia. Its traditional mission evolved from education to include research and knowledge commercialization. The university has legal control over its academic resources and intellectual property emanating from its academic research, it dedicates 41% of its budget to research, and it is capable to transfer its technology through patenting, licensing, and incubation. The university grants all intellectual rights to the inventor. Team projects and «learning by doing» teaching methods, independent study plans, and access to innovation infrastructure complement the traditional engineering education at the university. Students are encouraged to become entrepreneurs in advanced areas of science and technology and are offered opportunities to incubate their technological projects. The university encourages interdisciplinary research, promotes entrepreneurial education, and collaborates with industry to establish joint research funding. It has a developed innovation infrastructure, scientific collaboration and joint R&D projects with industry, and a cluster of firms closely associated with the university. TUSUR University a top Russian University of Technology in applied research with developed innovation infrastructure. It is a public university known for its programs in nanotechnology, telecommunication, electronics, and entrepreneurship education. It is a member of the Russian Association of Entrepreneurial Universities ranked in the top-ten universities in Russia in terms of innovative technologies and entrepreneurship indicators. On the road towards becoming an entrepreneurial university, TUSUR University is one of the first Russian universities to undertake reorganization as a whole institution and modify its mission to promote entrepreneurship education, innovation in technology, and knowledge commercialization. The university

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