HIGHER SCHOOL POTENTIAL AS A SOCIAL-ECONOMIC CATEGORY: CONCEPTION, ESSENCE AND FUNCTIONS

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Abstract. The article presents a description of higher school potential as a social economic category. Treating sistematically, higher school potential is a complex of interacting elements having a structure, which, in its turn, is described by a complex of permanent relations, ties and dependencies. Higher school potential, as a system, is characterized by continuity, proportionality of elements, proportionality of the parts of an element, balance, hierarchy, functional uninterruptedness. The authors of the present article claim that a specific role must be given to the the most important element of pedagogical and research-technical activities—the human intellectual potential. It should be noted that economic and social activities become more intellectual, accordingly, in the manufacture of products, goods and services, intellectual activities take a more important place. Therefore, pedagogical and research–technical activities in a higher school, as one of the most important generator and supplier of innovations
in the economic and social field, should have the highest human intellectual potential—the research–pedagogical intellectual potential. The persons wishing to engage in pedagogical and research–technical activities at higher schools must have exclusive capabilities, research intuition, pedagogical mastership and other properties, without which they do not suit for this kind of activities. Therefore, the authors of the article present their conception and definition, describe the functions of higher school potential as well as its content and the results of its functioning. The article claims that the potential of a higher school under the conditions of market economy performs the following functions: marketing function (including diagnostic and analytical ones); study programmes corresponding to economic needs development and realization; scientific forecast (prognosis); development and realization of innovations (pedagogic, scientific–technical); innovations realization in practice. The authors draw a conclusion that the functioning of a higher school potential in the context of increasing competition requires active development of the marketing function.

**Keywords**: higher school, higher school potential, innovations, functions of higher school potential.

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**Introduction**

Due to an increase in the need of research for developing production, the economy needs more scientific knowledge. Therefore, scientific research becomes more and more necessary.

Lithuania, as a member of the European Union (EU), tries to achieve the goal of the Lisbon strategy, i.e. to become, together with other EU countries, ‘the most rival and dynamic economy in the world’. The long-lasting economic development cannot be reached without a more ingenious research and technical results as well as new technologies. The growth of higher school potential influences, though in some cases not effectively enough, the research and technical level of economy and investigations. It should be noted that the Lithuanian economy, after the entrance into the EU, became more open for implementing world-level innovations.

The EU, which seeks to remain competitive, emphasizes that research and innovations must become the centre of its political trends, financing and business. Such a goal should be supported by the help of the states as well as by innovation groups and the development of such groups as the partnership of universities and the industry.

In the survey of the EU activities of 2007-2013, scientific research activities are regarded as a side of the so-called knowledge triangle. Meanwhile other two sides of it represent the modern education and innovations. The potential of higher schools is harmoniously included in the abovementioned knowledge triangle and is able to develop more or less all three sides of the triangle.

The goal of the present research is the analysis of the theoretical aspects of the factors determining the possibilities of higher schools.

The research object is a complex of interacting elements of a higher school having a structure described by permanent relations and dependencies.
Research method: the methods of logical and systems analysis were used.

1. The Concept and Essence of a Higher School

The potential of a higher school may be conventionally divided in two parts:
1. research and technical potential (RTPot);
2. education and intelligency services potential (EISPot).

These potentials are closely interconnected. Higher education, as a service, is based on the activities of research and technology. The presentation of higher education is based on technical activities. At universities, the scientific knowledge is developed by fundamental investigations and applied research; in this way, the researchers are trained when realizing the results during teaching and developing highly educated personalities, who are receptive to scientific knowledge and prepared to base their life on the latest scientific novelties. Nowadays, the RTPot of colleges influences the present studies less; in them, the applied research development prevails. However, in the colleges’ learning process it is stressed that the obtained education and qualifications should correspond to the needs of modern economy and the level of the latest technologies; the graduates should be able to work under the conditions of a rapid change of technologies.

When analysing the higher school potential (HSPot), conclusions are based on the results obtained when generalizing the RTPot, including the RTPot of higher schools.

In the theoretical RTPot research, it is possible to form a unanimous viewpoint concerning the essence and structure of the RTPot of higher schools. Therefore, it is necessary to review the main treatments of this category.

There are distinguished three points of view on RTPot:
1. RTPot is regarded as a unit of research–technical resources.
2. RTPot is regarded as an organic unity of research and technical potentials. For instance, it characterizes the scientific potential as research results and the technical potential as the examples of the new technology.
3. Research potential is regarded as a whole of resources, and RTPot is characterized as the results of research. The treatment of RTPot as a whole of resources is mostly based on the methodological point of view.

The researchers adhering to this opinion see the potential of scientific–technical development in the social and economic growth of the specific resources of production (research–technical) factors. The functioning of these resources allow obtaining new facts, new information, fresh scientific and scientific–technical results. Thus, the moving forces of science and technology are observed and fixed in the sphere of the production results, but not behind it.

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Thus, it is possible to define RTPot from the systemic perspective: it is the total (of the state, its higher school system, university, research institute, office, research trend, research, school, etc.) of technical research possibilities embodied in human and material units and their inner ties and relations as well as in possible interactions of this system with ‘the outside environment’. These potential possibilities express themselves by an ability to foresee the main research and scientific–technical directions and problems, to reach a high scientific and scientific–technical level of results, to realize those results in practice (in social and economic sphere, in science, culture, teaching process, etc., depending on the system analysed)\(^3\).

However, the scientists who regard RTPot as a sum of resources are not of the same opinion concerning the sum of potential elements. Only the following elements are unanimously distinguished:

1. the personnel;
2. material and technical resources;
3. informational resources.

However, what regards other elements which integrate all three mentioned kinds, the opinions are different. Some of the researchers distinguish organization as a separate element, others—organization and management. Most probably, this element should be treated as a part of the RTPot structure. The structure characterizes relations between people, connections between things as well as between people and things. As Ginevičius and Sūdžius write, ‘a structure is the view of the inner system composition. Form and structure characterise configurations of composite elements and in many cases by connections and dependence express their essence and activities’\(^4\).

Obviously, any activity includes four components: material and technical resources, informational resources, labour force and all connections, relations and dependencies between technical, economical, social elements, determining the content of such activities. The pedagogical and scientific–technical activity of a higher school, i.e. the functional process of HSPot, includes:

1. material (physical) potential (building structures, equipment, instruments, materials etc.);
2. intellectual potential (teachers, researchers, investigators);
3. informational potential (materialized information resources, algorithms, programmes, models, projects (some of them may have a status of intelectual property), etc.);
4. a corresponding HSPot structure.

The most important element of pedagogical and research–technical activities (PRTA) is the human intellectual potential. In general, it should be noted that economic and social activities become more intellectual. In the manufacture of products, goods

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and services, intellectual activities take a more important place. Therefore, PRTA in a higher school, as one of the most important generator and supplier of innovations in the economic and social field, should have the highest human intellectual potential—the research–pedagogical intellectual potential. Persons wishing to engage in PRTA in a higher school must demonstrate exclusive capabilities, research intuition, pedagogical mastership and other properties required for this kind of activity.

After the development of informational technologies and the Internet, information resources and scientific and technical data became more widely and operatively accessible for PRTA. An the informational potential is not active per se; only when the work process is joined with labour, material and technical stimulate, it assumes an active form.

The HSPot internal ties and relations can be divided into the following groups:

1. organizational and technological relations connected with labour division in PRTA;
2. economic relations connected with the satisfaction of economic interests of workers engaged in PRTA;
3. political, ideological and other social relations between workers in PRTA;
4. technological connections between human and objective elements of HSPot;
5. internal objective ties of HSPot (balance, proportionality, etc.).

Some supporters of the resource point of view include RTPot, financial resources and the social–economical effect in the abovementioned list. One should admit that financial resources are only a presumption for renewing, reproducing the elements of this potential. The same can be said about HSPot. Having financing does not mean that finances will be turned into material elements of HSPot or applied to develop the personal potential. In its turn, the social and economic effect, obtained behind the limits of the higher school, is the result of the application of HSPot.

Treating sistematically, HSPot is a complex of interacting elements having a structure, which, in its turn, is described by a complex of permanent relations, ties and dependencies. As a system, HSPot is characterized by continuity, proportionality of elements, proportionality of the parts of an element, balance, hierarchy, functional uninterruptedness.

HSPot always acts in a broader system—in the space of economic, scientific–technical, material, cultural, demographic, political, psychological, technological relations. The surroundings of HSPot include the factors of state organs, the influence of activities and of the competitors in the market, etc. The external factors compel HSPot to forecast the change of surroundings and to adapt the dynamics of the potential according to external changes as well as to influence these changes, to take part in them.

During the functioning of HSPot, non-material agents become more important elements of this potential. Some authors maintain, when analysing the idea of higher

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educational institutions, that the presentation of such an idea becomes very important for their activities or even for their survival.

As Ruževičius\(^6\) has noted, for a higher school, as an organization of research and academic studies, the following factors are important: organizational values, quality culture, investments, intellectual capital, saving development and socially responsible management systems, universal management of quality, image, motivation of the staff, management of fundamental changes, etc. Thus, the importance of both material and non-material elements of HSPot are stressed.

2. Functions of Higher School Potential

The contribution of HSPot to the social–economic and scientific–technical development is determined by the realization of its functions. Under the conditions of market economy, HSPot performs the following functions:

1. marketing function, including the diagnostic, analytical functions, etc.;
2. studies programmes corresponding to the needs of economy development, mastering, improvement and realization;
3. scientific forecast (prognosing);
4. development and realization of innovations (including new scientific technical results (STRes));
5. innovations (pedagogical and scientific, research–technical) realized in practice.

Any enterprise, organization, office, acting in a market, consciously (for instance, according to a marketing plan) or spontaneously (intuitively, according to a previously accumulated experience) perform in a larger or smaller degree the marketing function. Marketing allows an organization to adapt to market conditions. For an organization to effectively function and thus remain in the market, the role performed by marketing should expand accordingly to the extent of changes in the market.\(^7\)

A higher school, functioning under market conditions, realizes its potential:

1. as the potential of research–technical activities (RTPot);
2. as educational services potential (ESPot).

HSPot performs the marketing function: it investigates (diagnoses) potential users’ needs for education services and scientific, scientific–technical results, performs analyses and expedient inner coordination of these needs in order to accordingly activities. While realizing RTPot, the usage of marketing instruments is more developed.


The investigations of the needs of potential consumers for research-technical results are carried out together with an inner coordination of scientific-technical activities by orienting to the satisfaction of the users’ needs. Having in mind the connections of RTPot with the outside environment, through marketing, depending of the existing possibilities, the balancing of supply and demand is performed. Marketing is meant for reaching the satisfaction of the needs of consumers for research-technical results (RTRes), but also for shaping them. Having in mind the inner ties of RTPot, marketing performs the role of scientific, scientific-technical activities directed at the satisfaction of the consumers’ needs. Thus, the RTPot marketing function is realized by coordinating scientific-technical activities and forecasting the consumers’ needs in order to connect the renewing, shaping, restructuring of the potential with the perspective needs of consumers and present an optimal product for them.

The function of RTPot marketing is realized both by management sub-system activities and, to a great extent, by RTRes developers’ work: its actuality, novelty and grounding and realization of competition ideas. Nobody can see the activities and their results in local manufacturing and economy in general better than the developers of scientific-technical results and RTRes. Therefore, the explanation of the RTRes users’ needs (diagnostics), to grounding of the necessity for some management solutions starts from them. Only later in the marketing realization, the sub-system of management (from faculty, institute, university, etc.) must join trying to ensure the process of decision-making oriented to RTRes practical realization, commercialization. For an effective marketing, it is necessary to ensure permanent collaboration with the users of RTRes, to enter into long-time relations and maintain them. Such relations allow understanding the processes of RTRes users’ innovation and their complexity as well as their values and expectations from the collaboration with higher schools better. The basis of long-term relations is the exclusiveness of the present RTRes. Thus, the realization of RTPot marketing function means the balanced management sub-system and actions of RTRes developers.

The commercial success of the realization of RTPot marketing function depends on the following aspects:

• consumers’ potential needs, their change tendencies and possibilities of RTPot collation and comparison;
• evaluation of RTPot possibilities to compete in market with other systems (universities, institutions, etc.);
• capability to turn the developing consumer’s needs into definite RTRes.

As a result of RTPot activities, two points, defining the marketing function content may be distinguished:

1. the developed and presented result, based on a diagnosis and analysis, satisfies the consumer’s expectation;
2. based on a scientific forecast and its own RTPot, a substantially new, higher-level research product is presented.

To better satisfy the needs of economy and production under present conditions, it is necessary to develop, to systematically realize the function of RTPot marketing.
Clearly, in order to improve manufacturing, one should keep it in mind as well as be aware of the latest world achievements in a particular field. However, in practice some researchers are far away from modern manufacture problems and are interested in narrow issues. Under the conditions of large intensification of manufacture, when basic models are being changed every 2-4 years, researchers must know the real development of manufacturing processes, their problems. Thus, teachers, researchers must continue investigations in the manufacturing stage as well, to forecast and analyse manufacturing problems. Only in this way it is possible to define the importance and complexity of these problems, their ties and relations with other unsolved questions and suggest scientific solutions and improvements.

Modern marketing, as a science, more and more concentrates on the value by presenting to the consumer the model of higher values. As Virvilaitė has noted, ‘the new marketing of consumers consists of three main processes – the definition of value, the development of value and the transfer of value’.

In Lithuania, in the context of an increase in the number of higher schools and the development of higher schools competition, marketing of educational services (EdServ) becomes more and more relevant. While public higher schools have an economical advantage by obtaining finances from the budget, they can provide the EdServ for a lower price and, for some better students, even make them free of charge—marketing is not relevant for them. When reforming studies, some conditions of higher schools functioning will become equal and the importance of the EdServ quality will increase.

The development of the EdServ in the post-reform period requires methods and principles of marketing to be defined, its achievements in the traditional market of goods and services and the possibilities of their application in research spheres to be estimated and all the achievements to be adapted to a new sphere taking into account the specifics of separate higher schools.

In a higher school, as in any other specific field, the content of marketing is defined by a product or service. From a modern point of view, the content of the EdServ must include:

- presentation of scientific research based on the corresponding modern education;
- development of an educated, creative, capable for self-education and business activities person;
- development of receptivity to innovations and new scientific ideas.

The activities of higher school marketing directed at the realization of the EdServ include the following trends:

- to the direct users of the service (persons striving for a higher education);
- to persons having a direct influence on service users (parents, teachers of schools, gymnasiums, lyceas, etc.);

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9 Virvilaitė, R., supra note 7, p. 144.
• to enterprises, organizations interested in educating definite training specialists;
• to offices intermediating at the work-force market of labour exchange, offices of employment, etc.;
• to organizations presenting educational services;
• to the society and its institutions engaged in the development of the human capital.

The content of a higher school activity is influenced by the following external factors:
• state policy of economy and research;
• state policy of research and studies;
• state social–demographic situation and policy;
• the demand of specialists in the labour market;
• competitors’ growth, development dinamics and their strategies;
• other external factors.

The contents of the EdServ also largely depend on interior factors related to:
• teachers’, scientists’, researches’ qualification structure;
• material–technical basis;
• higher school infrastructure;
• marketing monitoring system;
• innovative teaching programmes;
• teaching–educational process in quality management systems;
• level of the advertisement and communication system;
• other inner agents.

The EdServ system should be oriented to the presentation of the teaching–educating process as an innovative one. The marketing of some unique teaching ‘schools’, of distinguished researchers, pedagogues and teaching technologies is prospective too.

When realizing the function of the studies curricula corresponding to economic interests and the function of development, mastering, improvement and realization, it is necessary to increase the receptivity of a higher school and the possibilities to adopt the progressive teaching and learning experience of European higher schools. The realization of study curricula should be based on service quality, and the improvement of studies curricula must satisfy the needs of service consumers.

For formulating and basing definite scientific research–technical aims, the level of higher school potential forecast (HSPF) is of great importance. The function of HSPF is based on the knowledge of the past and the present processes and phenomena. It also allows foreseeing the possible sequence of prospective events. Universities have the greatest possibilities of complex evaluations and prognosis of many economic, research, technical, ecological processes taking place in Lithuania. Particularly in universities there are many teachers, researches representing different scientific trends, and they are able to evaluate and discuss processes and phenomena and to forecast their development.

The function of innovation development is based on the actions characterizing the investigated object and practical realization of research novelties. The description of
the properties and parameters of an object, the systemization of the knowledge of it, the explanation of the processes taking place in it and the regularities of them comprise the new scientific knowledge. The function of innovation development performs the task not only of knowledge but also of practical realization. The implementation of new research and technical results requires foreseeing new ways for developing techniques and technologies for finding new solution, etc. Under the internalization processes in Europe, the exchange of information on teaching and studies, assimilation of novelties became urgent in the institutions of higher education.

The function of RTRes is performed in the stages where scientific knowledge is already based on scientific–technical activities. According to Ginevičius and Rimkus\textsuperscript{10} under market conditions, the commercialization of research results became very relevant. On the other hand, in the research–technical field, this function implies a specific object—the process of teaching. Here, when realizing new research, research–technical results in the educational process, the ties between research and education are maintained. By transferring scientific knowledge to students, a highly-developed mentality, an intellectual potential is developed; these aspects, in their turn, serve as a basis for the development of economy, research and culture in future. Only a teaching process based on transferring scientific knowledge and taking part in it may correspond to the modern knowledge economy development tasks.

For the characterization of the activities of higher school or, in other words, for the functioning of HSPot, Ruževičius\textsuperscript{11} suggests a system of quantitative and qualitative indices. The quantitative indices include:

- indices of people entering the competition;
- indices of people graduated from a higher school and employed (the level of earnings);
- indices of students’ opinion and evaluation questionnaire;
- indices of employers’, social partners’ opinions and evaluation;
- qualification of teachers (academic degree);
- the quantity of teachers’ research and educational publications;
- the quantity of popular publications;
- participation of teachers in scientists’ development (consultations for doctoral students, taking part in the Doctoral and Habilitation theses defence committees);
- teachers’ participation in international and national (academic) research and business scientific organizations;
- the quantity of lectures at international and national conferences and other academic and business meetings (participation of teachers in research and certain kinds of business meetings);
- participation in the EU and other international and national business projects;


\textsuperscript{11} Ruževičius, J., supra note 6, p. 51–69.
the quantity of foreign partners taking part in common research projects and teaching of students;
the value of ordered investigations;
teachers’ participation in business and public sectors organizations competence-development training;
the quantity of organized research meetings;
participation in reviewing the research and school editions, editorial boards, conference organizing committees, presiding conferences and their sections;
representation of the faculty, university at the technical committees of state ruling institutions, councils, expert commissions;
representation of the faculty, university in the field of national and international research, in academic and business organizations;
the efficiency of the preparation of young researchers (the quantity of doctoral students who defended the dissertation, the quantity of their publications and the indicators of research implementation);
the quantity of the courses read in a foreign language;
the scope of international students’ exchange;
the scope of international teachers’ exchange;
international studies curricula accreditation;
the number of study programmes common with foreign universities or integrated into international networks of universities or programmes;
the number of final and course works ordered by organizations;
the number of students’ final and research works;
the number of students’ papers delivered at conferences, industrial plants;
the number of students’ research publications;
awarded students and their research works in international, national and other competitions.

According to Ruževičius, the quality of a higher school is shown by the following indices:

- a broad network of collaboration (with educational and research institutions); effective representation in associated business institutions; increasing permanent collaboration with foreign institutions;
- the quality of curricula (the opinions about the graduates’ final papers and acquired competences); accreditation indicators for outside evaluation;
- the quality of organization (democratic ruling, striving for leadership, close work of administration and self-government; publicity; common arrangements of students and teachers; formation of traditions and academic society; flexibility; association culture);
- response to regional needs (accessibility of higher education in regions; development of project activities for different regions of the country; organization of bridge studies);

12 Ruževičius, J., supra note 6, p. 51–69.
• studies and work environment (improvement of material resources, application of the latest informational technologies, the aesthetic quality of surrounding, publishing possibilities, etc.);
• learning organization (the qualification and competence of the personnel become better: second cycle studies, Doctoral studies, Habilitation indices);
• support for students (all auditoriums have an access to the Internet and multimedia equipment, automobile parking places, etc.);
• improving qualities of research activities;
• influence on the urban (regional, country) culture;
• teachers’ internal (of university, faculty) and external (of branch, national, international) nominations;
• the usage of growing organizational advantages (cooperation between some higher schools subdivisions; possibilities of studies curricula choice; the possibility of concentration of human and material resources);
• application of the latest information dispersion methods;
• students’ comments (a positive opinion of students about practical teaching, levelling studies, work and learning conditions);
• the system of studies quality management;
• the system and the culture of saving development and environment protection in an organization;
• the system of socially responsible activities and culture in an organization;
• the integral management system (of quality, nature protection, social responsibility, safety and health) in organizations.

The quantitative and qualitative indices of higher schools activities presented by Ruževičius are more often applied, as seen in their content, to university-type higher schools. However, these indices may be used to characterize college activities. When analysing the functioning of HSPot in the aspect of innovations, it is possible to distinguish a higher school potential. Such a potential represents the HSPot innovative characteristic describing the higher school possibilities to generate, produce and implement novelties in teaching, in research and technical fields. As Bivainis and Drejeris note, a financial potential cannot be included in an innovative potential. Therefore, the elements of higher schools innovations potential correspond, in their structure, to HSPot elements. At present, only a small part of HSPot can be characterized as an innovative potential of a higher school.

Conclusions

1. The speeding up of the Lithuanian economy in the context of the EU is closely connected to the higher school potential development and improvement of its usage.

13 Ruževičius, J., supra note 6, p. 51–69.
2. Higher school potential means the whole of resources for developing research and technical novelties. It includes:
   a) material potential (buildings, equipment, instruments, materials, etc.);
   b) intellectual potential (teachers, researchers, investigators);
   c) informational potential (materialized informational resources);
   d) a corresponding structure (including an organizational management structure, the management system potential, clearness of purpose, goal orientation, etc.);
   e) non-material elements (image, shaped mission, values, strategies, including marketing, etc.).

3. The potential of a higher school under the conditions of market economy performs the following functions:
   a) marketing function (including the diagnostic and the analytical);
   b) study programmes corresponding to the development and realization of economic needs;
   c) scientific forecast (prognosis);
   d) development and realization of innovations (pedagogic, scientific–technical);
   e) realization of innovations in practice.

4. The functioning of higher school potential under the circumstances of increasing competition requires an active development of the marketing function.

References

Aukštosios mokyklos potencialas kaip socialinė ekonominė kategorija: samprata, esmė ir funkcijos

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3) mokslinio numatymo (prognozavimo);
4) inovacijų (taip pat ir naujų mokslinių, mokslinių-techninių rezultatų) kūrimo bei įvaldymo;
5) inovacijų (pedagoginių ir mokslinių, mokslinių-techninių) įgyvendinimo praktikoje.

Aukštoji mokykla, funkcionuodama rinkos sąlygomis, savo potencialą realizuoja ir kaip mokslinės-techninės veiklos, ir kaip švietimo bei išsilavinimo paslaugų potencialą.

Reikšminiai žodžiai: aukštoji mokykla, aukštosios mokyklos potencialas, inovacijos, aukštosios mokyklos potencialo funkcijos.


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