

SOCIO-ECONOMIC SYSTEMS: A SCHOOL OF PROFESSOR ROMUALDAS GINEVIČIUS

Oleg KAPLIŃSKI^{a*}, Friedel PELDSCHUS^b

^a Poznań University of Technology, Potrowo 5, 60-965 Poznań, Poland

^b Leipzig University of Applied Science, 132 Karl Liebknecht Str., 04227 Leipzig, Germany

Abstract: The management of complicated systems, including socio-economic systems (SES), is aimed at achieving their sustainable development. This process can be controlled only if the state of such systems can be quantitatively evaluated. Prof. R. Ginevičius was the first in Lithuania to undertake the research into the problems associated with quantitative evaluation of various types of SES, based on the long-term experience of comprehensive quantitative evaluation of various engineering systems. He investigated and quantitatively evaluated socio-economic development of various states and their regions, the effectiveness of the performance of higher and professional training schools, and determined the strategic potential of enterprises and other institutions.

Keywords: socio-economic systems, diversification of enterprise activities, scientific school.

1. Introduction

Parallel to the problems and concepts of sustainable development exist, and almost competing concepts and problems of socio-economic systems (SES). We live in the world of socio-economic systems (SES). People come across them in real life as often as across engineering systems. Socioeconomics or socio-economics or social economics is an umbrella form with different usages. „Social Economics“ may refer broadly to the „use of economics in the study of society“.

The main principles of the theory and practice of social economics are being more widely used not only in the field of economics but in management and in widely understood engineering. SES refers to the higher level systems because a socio-economic system is a social system in which an engineering system is integrated. The effective management of such complicated systems, aimed at their sustainable development, requires primarily quantitative evaluation of their performance.

Quantitative evaluation of socio-economic systems may be performed by using different methods, in this by multicriteria evaluation methods. These methods allow us to generate an integrated criterion reflecting various SES aspects observed in the reality. Given the methods of quantitative SES evaluation, we can solve such important problems associated with the economic

development of a country as the determination of enterprise development strategy, the formation of flexible enterprise organizational structures, etc. Attempts to quantify this problem are taken in Poland and neighboring countries.

2. A school of socio-economic systems

Research in this area have been undertaken in Lithuania and in the framework of international cooperation in the triangle Lithuania - Germany - Poland. Prof. Romualdas Ginevičius (Fig. 1) from VGTU was the first to undertake the research into the problems associated with quantitative evaluation of SES, based on the experience gained in complex quantitative evaluation of engineering systems.

Professor began scientific work after 1969. At that time a professor supervised nine PhD dissertations and successfully participated in the presentation of numerous PhD theses. He is the author of 3 monographs and co-author of 14 monographs. Achievements in research of SES are evident – for example: Ginevičius and Sudžius (2005), Ginevičius and Aukščiūnas (2007), Ginevičius and Silickas (2008), Ginevičius et al. (2005a and b, 2006).

* E-mail of correspondence author: oleg.kaplinski@put.poznan.pl



Fig. 1. Professor Romualdas Ginevičius
– Rector of Vilnius Gediminas Technical University.

The paper presented by Kapliński and Peldschus (2011) discusses the 166 items of references. Of course, research synthesis of Prof. R. Ginevičius and his team are presented there. Apart from this, it can be seen a very wide list of researchers who have worked with Professor.

Partners and co-authors of the publications are as follows (in alphabetical order): Andruskevičius A., Antuchevičienė J., Aukščiūnas V., Bivainis J., Brauers W. K. M., Bruzė Š., Butkevičius A., Chlivickas E., Čirba S., Ginevičienė V. B., Ginevičius T., Ginevičius A., Grybaitė V., Gudačiauskas D., Hausmann T., Hink W., Kaklauskas A., Kalašinskaitė K., Komka A., Korsakienė R., Krivka A., Kutut I., Lisauskaitė V., Malinauskas P., Martinkutė R., Melnikas B., Merkevičius J., Mikelis D., Pabedinskaitė A., Paliulis N. K., Patalavičius R., Petraškevičius V., Podvezko V., Rakauskienė O. G., Raslanas S., Rimkus L., Rutkauskas A. V., Schafir S., Šečkutė L., Šimkūnaitė J., Stankevičienė J., Staškevičius A. J., Stasytė V., Stein H. D., Sturm R., Sudžius V., Tamošauskas P., Tamošiūnas A., Tvaronavičienė M., Ustinovichius L., Zavadskas E. K., Zubrecovas V., Zubrecovas V.

We can see from the list of publications that Prof. V. Podvezko was (and is) most active collaborator with Prof. R. Ginevičius (c.f., Ginevičius and Podvezko, 2008).

In addition to the problems of quantitative evaluation of socio-economic systems Professor analyzed above all the problem of enterprise diversification activities. He and his team analyzed and studied the problems distinguished in Figure 2.

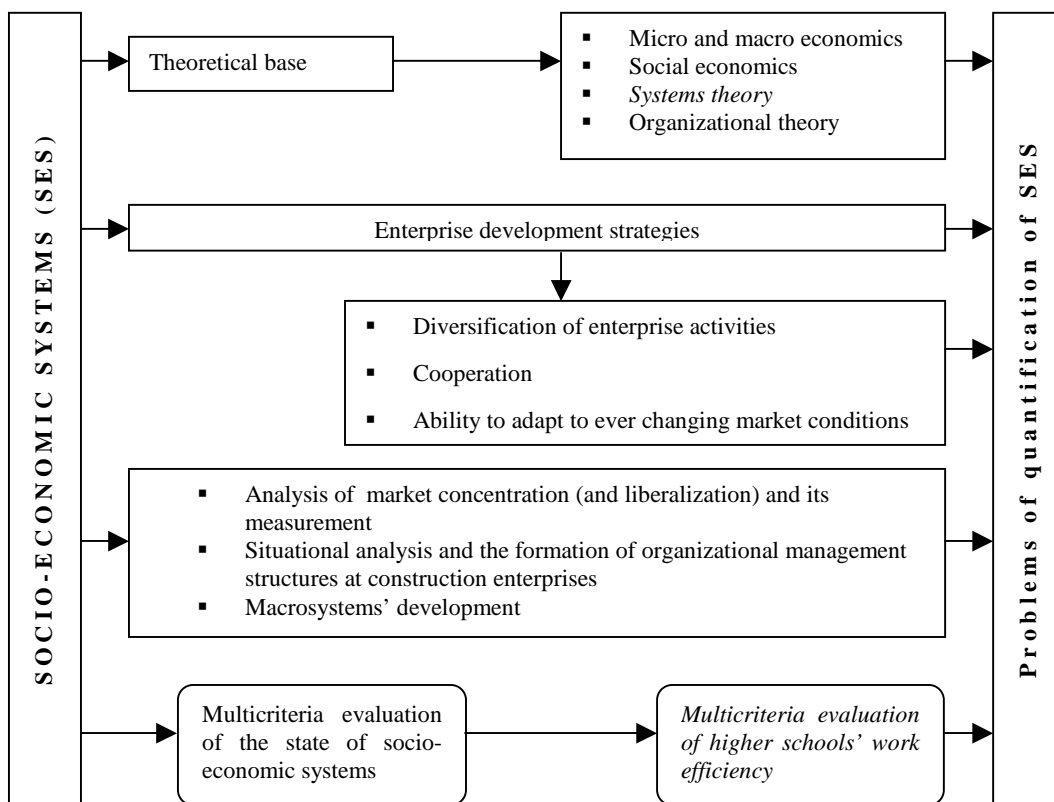


Fig. 2. Research problems investigated by Prof. Ginevičius and his team.

Jointly analyzed the development strategy in the framework of research on the survival of enterprises in market conditions. Professor suggested a new criterion for quantitative evaluation of enterprise diversification (Ginevičius 1998, 2008, 2009, 2010) and demonstrated by calculations that this criterion is more accurate than Herfindahl-Hirschman index, which is most widely used now (Ansoff, 1965; Horowitz and Horowitz, 1968).

The ability to adapt to ever changing market conditions was also investigated. Research to situational analysis and the formation of organizational management structures at construction enterprises has been implemented. Professor offered a set of criteria for describing enterprise organizational management structure.

The investigations performed by R. Ginevičius may be subdivided into four main groups. Table 1 presents the main results obtained in these groups of investigations.

As shown in Figure 2, multicriteria methods have been developed and used for evaluating the performance of socio-economic systems and for solving the problems associated with engineering systems. Prof. R. Ginevičius in these methods offered or suggested:

- offered some new methods, such as the use of mathematical statistics in developing a set of criteria for evaluating a research object,
- suggested the way of arranging a large number of evaluation criteria into the hierarchical structure and thereby to reduce the number of criteria which should be assigned the weights by experts,
- offered a new method of determining the criterion weight, allowing us to considerably increase the number of criteria whose weights should be determined,

- suggested the way of applying the well-known methods of multicriteria evaluation to the analysis of a hierarchically structured system of criteria,
- suggested a graphical-analytic multicriteria evaluation method.

He collaborated with a Professor E. K. Zavadskas and his team in the field of multicriteria optimization (c.f., Zavadskas et al., 2004; Kaklauskas et al., 2006).

3. Final remarks

The achievements of the school of socio-economic systems led by Professor Ginevičius are significant and are of international rank.

Professor Romualdas Ginevičius is celebrating his 65th birthday this year. Professor is the chair of the Department of Economy and Management of Enterprises at the Faculty of Business Management and Rector (from 2002) of Vilnius Gediminas Technical University. He is also a Doctor honoris causa of Belorussian State Technological University, Tbilisi David Agmashenebeli Technical University, Karaganda State Industrial University, Kiev National Aviation University and an academician of International Academy of Information. Professor Romualdas Ginevičius is editor in chief of three journals. Professor Romualdas Ginevičius is also one of the organizers and active participants of the Colloquiums in the German–Lithuanian–Polish Scientific Triangle.

We can celebrate the jubilee of Professor during the conference organized by the Bialystok University of Technology.

Table 1. Four main groups of the investigations performed by R. Ginevičius and his team.

Main areas of research	The main results obtained
Systems theory	A description and thorough analysis of the mechanism of systems' formation and the suggestion of a universal system's definition; a description of the mechanism of socio-economic system's formation and the suggestion of a formalization model allowing for quantitative evaluation of the state of these systems.
Organizational theory	The suggestion of methods of thorough analysis and formation of organizational management structures of construction enterprises, allowing for the formation of flexible organizations' structures easily adaptable to ever changing internal conditions.
Enterprise development strategies	Thorough analysis of the problem of enterprise activities' diversification, the suggestion of a more accurate indicator of diversification level (compared to the currently used ones), the determination of the dependence of diversification effect produced on enterprise performance on the market state; the selection of the indicator of the cooperation level of enterprises and its use for calculating the cooperation effect on enterprise commercial activities.
Market concentration	The suggestion of the criterion, evaluating the concentration of the markets and its role in the calculation of the cooperation effect on enterprise performance.

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**SYSTEM SPOŁECZNO-EKONOMICZNY: SZKOŁA
PROFESORA ROMUALDASA GINEVIČIUSA**

Streszczenie: Zarządzanie złożonymi systemami, w tym systemami społeczno-ekonomicznymi (SES) ma na celu osiągnięcie zrównoważonego rozwoju. Proces ten może być osiągnięty, gdy stany systemów mogą być określone ilościowo. Prof. R. Ginevičius był pierwszym na Litwie, który podjął się badań nad problemami ilościowej oceny różnych typów SES. Ocenę przeprowadzano w ujęciu kompleksowym. Prowadził badania i dokonywał oceny jakościowej rozwoju społeczno-gospodarczego poszczególnych państw i ich regionów. Badał skuteczność organizacji szkół wyższych oraz określał strategię adaptacji przedsiębiorstw budowlanych i innych instytucji w gospodarce rynkowej. Wykorzystał między innymi metody wielokryterialnego wspomaganie decyzji. W referacie przedstawiono główne założenia i osiągnięcia szkoły naukowej z zakresu systemów SES.