

## Regional Development Strategy of E-economy Case Study For Vojvodina

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**Abstract:** The main objective of this paper was discuss the causes of weak results of the implementation of e-technologies and the development of e-economy and e-business in Vojvodina (area in Serbia which has the status of NUTS-2 region with a high degree of institutionally regulated autonomy in the field of public regulation of economy and economic development). The National Statistics Office reports on the use of information and communication technology in households and enterprises, carried out annually since 2006. was the starting point for this paper. They were complemented by author's research on their technological and economic efficiency. The analysis indicates that the state of IT infrastructure resources is much better than its effectiveness, especially according to the criteria of the European model an endogenous and sustainable regional development. Results of research suggests that the reasons can be found in the fact that the current institutional arrangement (national, regional and local public administration and research system) and especially the current political and cultural model does not show enough interest and ability to assist enterprises in implementing e-technology and the development of e-business as a component of globalization of business activities.

**Key words:** *Key words: Vojvodina, E-economy, Public regulation, Institutional system, Effectiveness*

### I. INTRODUCTION

E-economy in the last two decades was one of the main generators of restructuring of complete business environment in the function of adaptation to global change and at the same time developed into a new powerful market segment. Holders of these changes were the financial industry and large international enterprises. In accordance with these introductory remarks, this paper will discuss the reasons for the weak and slow development of e-economy and e-business in Vojvodina (which within the frames of Serbia as state has the status of NUTS-2 region with a high degree of institutionally regulated autonomy in the domain of public regulation of the economy and economic development in accordance with specific resource, economic, national and cultural characteristics compared to other parts of the country). Serbia and Vojvodina, both, declared as their basic socio-economic priority goal European Union membership. Joining EU imposes a radical modernization of the entire socio-economic system, whereby the implementation of IT technology and the development of e-economy and e-business have key role in the initiation and maintenance of economic development based on knowledge, which is commitment of European Union.

The basic guideline in this paper is the analysis of institutional system in terms of increasing effectiveness of IT tech-

nologies and applications in order to improve global competitiveness of regional industries. Term institutional system in this paper refers primarily to composition of the following elements: (1) National, regional, local public administrations responsible for regulation of the economy and (2) Research system, which is quite respectable in many of its dimensions (organizations, researchers, space and equipment to some extent), but is almost entirely state owned. The term effectiveness is treated as the summary of effects from institutional system in terms of economic and development incentives for e-business technology and development supporting industries in order to increase global competitiveness of regional industries.

Due to internal and external circumstances beyond the scope of this paper, Serbia and Vojvodina started the development of e-economy and e-business at the beginning of this millennium. In the past ten years, there have been some positive developments in the introduction of e-technologies in business and development of e-economy, but in parallel with them continued some very negative trends.

Let's see the positive results of introducing e-technologies and development of e-economy. By taking the largest part of the financial market by foreign banks was made the transfer of appropriate electronic technologies. It coerced also the majority of the remaining domestic banks to invest significant resources for the implementation of electronic banking technologies. The current limitations in the application of electronic banking technologies are, primarily, a result of internal weaknesses and problems related to the underdevelopment and high operating costs of IT infrastructure, low standard of a substantial part of the population, low computer literacy of users and little confidence in the security of electronic transactions. Similar is the situation with enterprises in other sectors, which took over the foreign capital from modern market economies.

The key negative tendency is that there was no spillover of economic effects of application of electronic technology on domestic production and traffic structure. Specially is negative the trend in the field of technological innovations. Production investments over two decades are below the level of simple reproduction, and in the structure dominated construction works in relation to the value of the built-in equipment. The participation of civil works in the period since 2001 by 2009 was about 60% of the investment value, but in Serbia and Vojvodina, there are plenty of empty and under-used production and transportation facilities. Also worrying is the fact that the in value of equipment - imported equipment participated only slightly more than 1/3. Considering the state of national production, it can be concluded that the share of modern equipment is marginal. This does not mean

that enterprises are not investing in IT physical, organizational and human resources component of the IT infrastructure. According to results of inquiry in Serbia and Vojvodina, practically every enterprise with more than ten employees applying IT technologies [12]. However, the manner of its application in business has been completely overcome [12]. This situation in majority of enterprises is excused with lack of funds for investments, although it is completely certain that there are a number of activities that do not need large investments, but means a disposal of certain number of IT literate staff in enterprise, but most of all, the awareness of management that the e-technologies and active participation in the e-economy is one of the necessary conditions for survival in the market.

At the beginning of the third millennium, it seemed that e-technologies and development of e-economy open a space for Serbia and Vojvodina, although they are small and poor with devastated technology and human capital and collapsed education system, to engage in global competition [1] [8] [9] [10] [11]. However, the time has shown that it was only about the potential, which is not promptly and effectively used. Because chances are missed, the costs and risks concerning the implementation of e-technologies and development of e-economy have increased significantly and become one of the barriers to development. At the current time, the problem of implementation of e-technologies and development of e-economy must be viewed in the context that both, Serbia and Vojvodina are forced to join the project of re-industrialization on the basis of globalization of the entire internal production structure if want any kind of return on a development path.

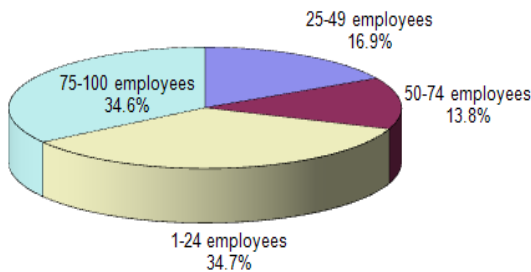


Figure 1. Participation of enterprises by number of employees that use computer at least once a week

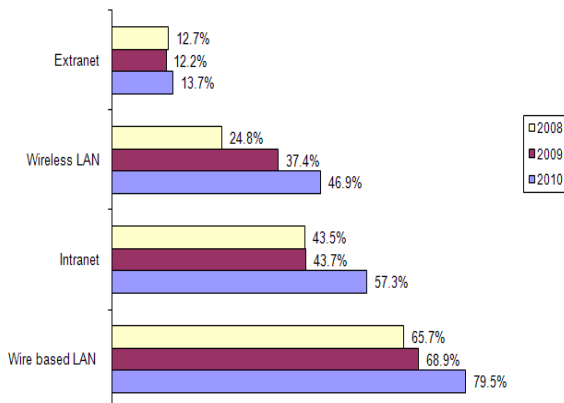


Figure 2. The use of IT technology in enterprises

In this contents, the basic subject of this paper is analyzes of needs for public support for the micro-economic implementation of e-technologies in the function of the globalization of business activities, ie including enterprises in trends of global business and trade. Thereby the presentation is focused on the components of public support for the implementation of e-technologies and development of e-economy in Vojvodina, as a region of Serbia. The reason for this choice lies not only in need of relying on the European concept of endogenous regional development, but primarily in the specifics of the production structure of Vojvodina and combination of available factors of development, which impose the need to search for solutions that will enable the mass globalization of business activities of small and medium production enterprises on the segments of the classic production of food and metals where there is a very tough competition.

## II. PRIMARY DETERMINANTS FOR THE INTRODUCTION OF E-TECHNOLOGIES AND E-ECONOMY DEVELOPMENT IN VOJVODINA

The key problem of e-economy development in Vojvodina is a product. Product, or better, several of them that should represent the subject of global electronic business and trade, simply, *has to be really good*. However, if from focus of observation we eliminate the product, ie, the problem of ensuring its quality and delivery conditions (prices, terms, post-sales support, etc.) there are a number of other obstacles to the implementation of e-technologies and the development of e-economy [2]. I will state the most important:

- Rigid and outdated institutional and administrative infrastructure for the regulation of external economic relations;
- Lack of strong, integrated and deregulated national, regional and local IT infrastructure;
- Lack of operational national, regional and local INTERNET strategy;
- Underdevelopment of internal (business) IT infrastructure practically in all enterprises under the control of public factors and domestic capital;
- Inadequate organizational structure, above all, weak links between purchase, cooperation and sale, both at the level of organizational units, and the level of executors;
- Low IT literacy and language barriers, primarily due to a not knowing of English language and poor awareness of the need of continuous additional education with work at the vast majority of entrepreneurs, managers and experts.

The mentioned problems are typical for most countries and regions, such as Serbia or Vojvodina with underdeveloped economy and shallow market, but what is worrying is the fact that three decades ago, both Serbia and Vojvodina disposed with bigger potential of e-technologies than most of the states in the environment, while today the backlog can be measured with five to ten years. On the other hand, for Ser-

bia and Vojvodina is characteristic that, in spite of underdevelopment of e-technologies and e-economy, is continuously present a big outflow of the best personnel in this field, which clearly suggests the existence of large deformations, as in the labor market as on market of offers of e-technologies and e-economy.

In the analysis of the role of regional regulation of e-technology implementation and development of e-economy, it must be accepted as an axiom, that the forming and development of global electronic business and trade - in any form and extent - by definition, entrepreneurial business. In this context, the concrete micro-economic application of trend of e-technologies implementation and development of e-economy, ie, e-business in function of the globalization of business processes includes three components.

The first component is realized with purchasing of adequate imported technologies and knowledge - mainly purchasing of equipment and intellectual know-how. This segment of the e-economy in Vojvodina is sufficiently developed and its capacities actually exceed the demand at the regional and appropriate local markets.

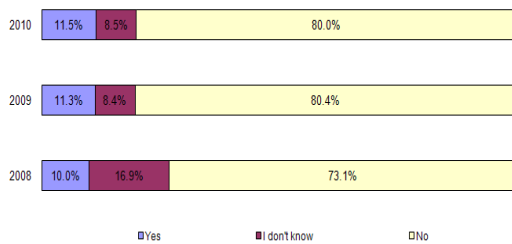


Figure 3. The use ERP systems in enterprises

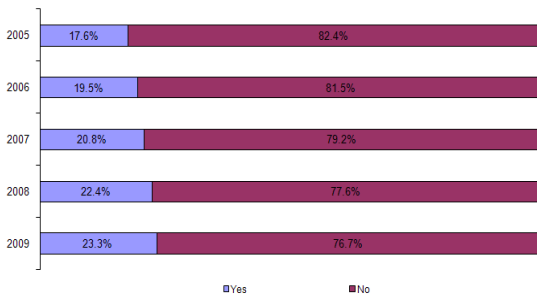


Figure 4. The use ERP systems in enterprises

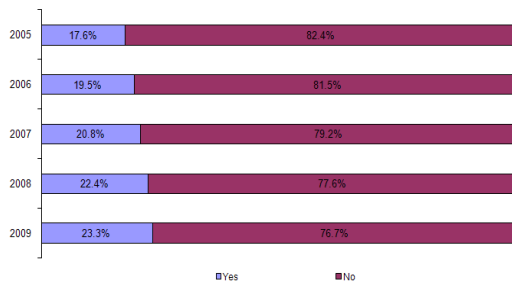


Figure 5. Participation of enterprises using the Internet for purchasing from other persons

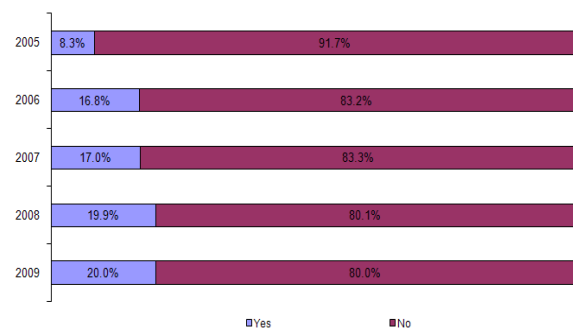


Figure 6. Participation of enterprises that use the Internet to receive orders from other persons

The second component involves the development of internal organization and external and internal computer networks adjusted to concrete needs of enterprises. A key stimulus comes from the market of sales and purchase, but in terms of shallow, underdeveloped and deformed market there are no clear or precise stimulation for generating and implementation of organizational innovations, which stand behind this claim, and in accordance with this are the results. As a rule, in regional enterprises is present a big gap between the structure of the organization of business and the use of e-technologies. The result is a low economic efficiency of e-technologies and overall business activities. However, it is not in the forefront of entrepreneur's activities, or managers, because of total internal socio-economic constellation, profits from other activities, such as cooperation with the holders of political power make a bigger use than the hard and painstaking work on improving of economic effectiveness.

The third, and also the most complex component include forming and developing of global electronic business and trade adjusted to concrete needs of enterprises. Therein lays the key for low economic efficiency of e-technologies, and (under)development of e-economy in Vojvodina. In fact, the entire socio-economic system favors imports as primary economic category - from the gain for the individual, to the realization of fiscal revenue through value added tax and excise taxes.

The exposed indicate that the presented content of micro-economic diffusion of e-technologies in business can not be treated as autonomous and a partial segment of the regional (economic) policy, which deals with the relatively isolated techno-organizational problems of building of one supportive (micro-economic) frame, but must be viewed in a much broader context. Namely, the implementation of e-technologies and the development of e-economy is a very complex process, which on the one hand, depends on the enterprise's internal capabilities, while, on the other hand, depends on the ability (in terms of economic efficiency) of functioning of a wide range of regional and local economic and social institutions. In the case of Vojvodina, no ability of entrepreneurs and management teams can not compensate the additional costs caused by nomenclature capitalism, monopolistic constituted market of sale and purchase, low level of social and environmental culture and business ethics, poor efficiency and reliability of the administrative system.

At the end of this exposure it is necessary to say something about the role of the market and its actual achievements. Certainly, the competitive pressure on the market is the primary and the most powerful mechanism that drives businesses, entrepreneurs and managers at the inducing of changes in human resources, products and processes. However, the market is not a sufficient mechanism to ensure the necessary direction and tempo of changes. Implementation of e-technologies and the development of e-economy impose cooperative behavior. So induced interdependence enables enterprises to through the effects of learning, cooperation and joint ventures provide the necessary resources and performance for the rational implementation of the global concept of electronic business and trade.

### III. THE PROBLEMS OF SECURING THE PUBLIC SUPPORT

At the highest level of abstraction, models of public support for the micro-economic implementation of the global concept of electronic business and trade can be divided into (conditionally) active and passive. Active is the form of public support which, in this case regional, state and its institutions are trying to play an active role in the process of selection of directions and tempo of organizational, personnel and technological restructuring at the macro, meso and micro levels. This kind of public support assumes a high level of administrative efficiency of state institutions and a clear concept of development policy, and (in the case of Vojvodina), especially industrial policy, development strategy of agro-industrial complex, development strategy of STIEOT (Science + Technology + Information + Education + Organization + Telecommunications) infrastructure and development strategies of foreign economic relations. In contrast, the passive approach assumes that the implementation of the global concept of electronic business and trade fully in the competence of the enterprise, and a task of (regional) state is to provide general frames of these processes in the function of exogenous standards dictated, above all, with the demands of the global environment.

Although Serbia and Vojvodina made a notable efforts that the business environment in which operate enterprises, entrepreneurs and managers make it more coherent in terms of institutional arrangement of public support for the requirements and recommendations of international, especially European political, economic and financial institutions, it seems that are not enough understood the specificity with which face the enterprises in the process of globalization of business. National and regional public regulation are still refers with ignorance to two characteristic phenomena that have their origins before the appearance of e-technologies and e-economy. The first and certainly a key is a phenomenon of voluntaristic and unclear political and bureaucratic intervention in the selection of management and business mode in sector of service of public administration and public goods, which are directly reflected on the operating conditions of the private sector. The second is less noticeable, but no less disastrous, and this is a phenomenon of not proper spending of all forms of public support for the improvement of human, technological, marketing and organizational performance of enterprise.

Without idealize the national, regional, sub-regional and local real personnel, organizational, infrastructural and economic performance to overcome these problems in the short term and thus open paths for more effective public support, there are urgent and immediate needs for some forms of public intervention that would directly affected on the more effective implementation of e-technology in enterprises and development of e-economy. The first is the needs for more intensive information about new opportunities, new channels of communication, new distribution channels, primarily in the function of creating conditions for the no-addressed improvement of process of business analysis and decisions. Second are the needs that for providing technical support and public funding of activities for preparing of production enterprises for globalization of business activities develop new more flexible decentralized schemes at all levels of spatial organization, especially local and sub-regional.

### IV. THE BASIC PRINCIPLES OF PUBLIC ACTION

In order to Serbia and Vojvodina exit from a state of entropy of foreign economic relations as the main barriers to development, it is necessary to revitalize export performance of all enterprises, primarily in the domain of knowledge and quality and processes improvement, where it is clear that one of the key role must have e -technologies, while the inclusion in the e-economy, ie e-business implies in itself [4] [5] [6] [7]. At the level of public actions, that means the need to develop a good business environment in which must be implemented the following value system:

- Priority should have the knowledge, commitment and flexibility in the export economy;
- In particular should evaluate the excellence in the implementation of e-technologies and the development of e-business and find solutions for their individual evaluation on the level of enterprise;
- It is necessary to create the overall socio-economic climate for clearer and more precise delineation of consequences of risk related to the implementation of e-technologies and the development of e-business as a result of misuse of public resources and efforts;
- If these requirements convey into operational level, necessary is a public commitment to;
- Renewing the spirit of innovation and production enterprises according to very clear criteria that stem from coping with challenges and risks of globalization of business activities;
- Wider promotion of the culture assurance of quality of processes, intangible and financial products to the criteria of preservation and development of environment and social stability;
- Improvement of administrative and fiscal frame that will support the mass implementation of e-technologies in all forms of business activities;
- Breaking the rigid and monopoly constituted IT infrastructure in order to increase the degrees of freedom and economic efficiency of involvement in global networks;

- Improvement of financing of investment in IT infrastructure in enterprises and educational institutions.

Institutions, measures and instruments of public support for regional efforts to implement e-technologies and the development of e-economy can be divided into four groups (Table 1):

- Institutions, measures and instruments for the development of new knowledge and business culture;
- Institutions, measures and instruments for the promotion of cooperation;
- Institutions, measures and instruments to encourage competition;
- Institutions, measures and instruments to encourage investment and increase the efficiency of public and internal infrastructure

TABLE I. REVIEW OF AREAS, INSTITUTIONS, MEASURES AND INSTRUMENTS FOR PUBLIC SUPPORT OF IMPLEMENTATION OF E-TECHNOLOGIES AND E-ECONOMY DEVELOPMENT IN VOJVODINA

Development of new knowledge and business culture	Encouraging collaboration and cooperation	Encouraging competition	Modernization and increasing the efficiency of STIEOT infrastructure
Policy of linking education along with work in the system of secondary education in accordance with the experience of FR Germany; Development of system of continuous education for entrepreneurs and managers; Development of system of continuous education for professional teams in enterprises; Accurate, clear and transparent policy of selection of managers and new employment in the public sector;	Fostering connections of medium and small enterprises in export clusters; Local programs of support of development of small businesses, small and medium enterprises; Local projects of development of business incubators, industrial zones and technology parks;	Educational policy in function of encouraging competition in the system of higher education in accordance with the Anglo-Saxon experiences; Deregulation and strengthening of competition in the IT sector;	Fiscal incentives for the modernization of IT infrastructure in enterprises; Completion of the e-state; Promotion of standardization; Forming of regional network of laboratories for certification in accordance with the needs and peculiarities of the regional economy;

The exposed classification of institutions, measures and instruments of public support for regional efforts to implement e-technologies and development of e-economy, indicate to the following key moments:

First - One of the goals, institutions, measures and instruments, overlaps with key components of other strategies, sector and spatial policies, especially with the strategy of preparation of Vojvodina for European integration, strategy of development of IT sector, and especially industrial, trade and educational policies, and development strategy of agro-industrial complex and policy of planning the use of space. That is why there is no need for explicitly defined policy of implementation of e-technologies and the development of e-economy, but it is necessary to incorporate its elements in listed strategies and policies. Particular importance should get a regional policy of transformation of the production services of public policy and public goods in public service in the service of entrepreneurs, enterprises and population.

Second – The range of measures and instruments of policy of implementation of e-technologies and development of e-economy is very limited if immediate not find solutions for: (1) activation of market and non-market forms of motivation for productive enterprise, (2) if does not create conditions for expand the time horizon for making key economic decisions from six months or a year to at least three years and (3) if does not stop fast with the politics in which the gains of the generation and implementation of innovations are marginal compared to other possibilities for acquiring economic and other status gains.

Third - The practice show that the direct and indirect financial encouragement does not automatically lead to implementation of e-technologies in the function of the globalization of business activities. In the past forty years in Serbia and Vojvodina is present the tendency of using of all forms of public direct and financial support to enterprises and processes for other purposes. Abuse and their not sanctioning are justified with high fiscal and para-fiscal obligations. However, these commitments are in close and distant environment, generally larger, which gives no right to internal actors for their use as compensation for financing the ongoing business activities.

Fourth - It seems that the priority should have, at least at first, institutions, measures and instruments that have passive characteristics. Namely, in the case of Vojvodina, we have a situation in which enterprises and their managers are not enough able to capture the real internal situation and its evaluation in the direction of opening the e-business as one of the key factors of existence and development, and the public sector is not able to correct those deficiencies. With this the maneuvering space of public intervention is significantly narrowed and located in the domains: (1) upbringing, education and accessibility to capabilities, (2) better regulation in terms of efficient use of available national legislation and (3) improving IT infrastructure in enterprises, about what will be more in next paragraph.

## V. THE MAIN DIRECTIONS OF PUBLIC ACTION

In the spirit of the statement at the end of last paragraph, some directions of public actions in function of encouraging the implementation of e-technologies and development of e-economy will be exposed [2].

### A. Upbringing, education and accessibility to capabilities

Vojvodina (and Serbia) must accept and cultivate a new spirit of enterprises and entrepreneurial skills from the youngest days. The general knowledge relating to the spirit of entrepreneurship and new concept of globalized enterprise must become an integral part of education and upbringing processes at all levels. It is unfortunately the future, and after twenty years of restoration of capitalism, while Vojvodina need urgent action. In fact, it is in big delay with the promotion of initial program of continuous education of entrepreneurs, managers and professionals which can be easily epitomized with slogan:

The main requirement for inclusion in e-business and international economic trends: Entrepreneurs, managers and

professionals = Fluent knowledge of two foreign languages + Full IT literacy

Because even the basic preconditions are not completed for the realization of such program, should not be surprising that there was a disappearance almost of all used to be export industries and pushing down of production enterprises from the focus of public actor's actions.

### *B. Better regulation and more effective implementation of legislation*

In the past ten years in Serbia was made a big step in terms of liberalization and internationalization of the institutional basis for the regulation of foreign economic activities and IT-sector in terms of their adjustment to international standards and recommendations. However, with implementation failed. This is a special problem because for a long time was belief that in Vojvodina (which by the end of World War II was within the Austria-Hungary Monarchy), there is a spirit of respect and law enforcement. It proved not to be true, which is a particular problem. In the analysis of this issue two aspect of implementation of legislation will be considered.

The first concerns the area of regulation of foreign economic relations. On first sight, liberally were regulated the business activities of purchase, sale, cooperation and financial transactions with foreign countries. But, foreign economic relations have not been completely cleansed of excessive administration, and particularly the discretion rights of executive authority on exemptions and granting privileges (primarily to importers – author's note).

The second relates to the regulation of the IT sector. Here of the vague reasons in liberal concept regulation was built in a long time delay in function of protecting the private interests of present actors. That is why was missed the opportunity for more intensive development of private networks and introduction of a variety of commercial services, while the cost of using IT infrastructure are high.

### *C. Development of it infrastructure in enterprises*

The key problem of development of e-economy (besides the weak product) in Vojvodina is the underdeveloped internal IT infrastructure in the production, and especially in small and medium enterprises which form the basis for regional economy under the control of domestic factors. In considering of this issue into view must be taken the technical and institutional aspects. Watching from a purely technical aspect - staff, equipment, networks, and the situation is respectable, especially in light of the overall economic potentials and other problems. But, from an institutional aspect in which the crucial role has a regional cultural model, this system, at least from an economic point of view, as does not exist. It turned out that neither the national nor the regional state did not succeeded to find the right paths that in the form of technical support, direct and other indirect financial support and program of additional training and retraining provide the minimum level of organizational personnel and technological capability of enterprise to through e-technologies to involve in e-business. Author's analysis shows that the main reason for this situation is that the insti-

tutional arrangement that is behind these projects (national, regional and local public administration and research system) are far from the ability to help enterprises to ensure effective valorization of e-technologies and development of e-business as component of the globalization of business activities.

## VI. CONCLUSION

Serbia and Vojvodina seriously lagging behind in implementation of e-technologies and the development of e-business. It is a very serious problem because exclude a significant part of resources from productive and economic functions. On the socio-economic plan, it is the result of lack of development effectiveness of national, regional and local public institutopnal system. In such context, there is no modern institutional system, not a satisfactory effectiveness in the performance of public and private affairs.

What's the lesson of all this? For more effective implementation of e-technologies and e-economy development in Vojvodina, two factors are needed. The first - economic, educational, cultural and any other effort to change ignorant relation toward business and technological innovations and their endogenousation in institutional infrastructure as basic factors of development of modern market economies. The second is responsible social and especially political effort for replace deficits which produce the current institutional system.

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