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THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF THE TELEMATICS PRODUCTS AND SERVICES FOR THE SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT

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The author's research is interconnected with the socio-economic policy of the Republic of Belarus. Structural components and metrics of economic efficiency in the scientific work are studied based on government demand, which is reflected in the National Strategies for Sustainable Socio-Economic Development of the Republic of Belarus until 2020 and 2030.

Introduction. In a transitional economy, socio-economic systems are undergoing significant changes for sustainable development at the micro-, meso- and macro-levels. At the same time, the strongest aspects of the system are considered as the main criteria and foundation for growth, which in the transition period is a driver of development and support for many areas of the economy. Considering the national economy of the Republic of Belarus, in analyzing and substantiating the ways of long-term development, we proceed from the goals and objectives of state program documents describing strategic steps to achieve the final result in the socio-economic sphere. Among these documents is the National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus until 2030, in which the basis for sustainable development and ensuring socio-economic security is the basing of the Belarusian economy on innovative solutions, the effective use of national resources, as well as the country's comparative competitive advantages [1]. If we consider growth and development, which, in principle, are not interchangeable or equal categories, then for their balanced position it will be important to rely on the advanced development of science and the information technology sector, as they are the structures for optimizing the production process, as well as drivers of sustainable development of the national socio-economic systems. In our opinion, telematics as a socio-economic category covering the field of informatics and telecommunications can have a significant impact on the long-term and proactive growth and development of the national economy. It was pointed out, that telematics and economic solutions designed on its basis are poorly studied in Belarusian science. In the fund of the National Library of the Republic of Belarus, the author found only 3 Belarusian dissertations and only in the technical section: S.N. Kandybo considered analytical phototriangulation using the GPS method for determining the coordinates of the design centers of aerial photographs [2], O. V. Kravchenko presented automated systems processing of geodetic information based on the technology GPS-electronic tachometer [3], ON Pisetskaya studied the determination of the shape of the earth using GPS-measurements [4]. As we can see, the above presented Belarusian fundamental works demonstrate the technical side of the issue of GPS service, which is part of the structure of telematic solutions. Telematics in technical aspect from the perspective of geodesy and mapping was considered by such researchers as O. Gruber, E. Merrita, F. Acherman, L. E. Blankerberg, H. Burman, K. Torlegard K., A. Lobanova, V. I. Pavlov, I. D. Kargopolova, I. T. Antipova, Sh. E. Kuznetsova, S. A. Khmelevsky, S. I Belikov; issues of designing geodetic networks are presented in the studies of Y. I. Markuze, V. D. Bolshakov, V. A. Kougy, M. M. Mashimov, A. A. Solomonov, A. S. Yarmolenko, etc. In fundamental research of the Russian school the most relevant works for us are the following: M. Ozherelyev, who studied improving the quality of information support for transport and telematic systems in cities and regions using the example of dispatch control of passenger transport [5]; B. Shamsi, who investigated the integration of INS / GPS-GLONASS in order to correct the orientation angles of a moving object [6]; S. Dolganiuk presented methods and algorithms for information processing for positioning mobile industrial facilities based on GLONASS / GPS [7]; P.V. Artamonov assessed the durability of load-bearing metal structures of dump trucks using a GPS satellite monitoring system [8]; G. Kiselevich substantiated the structure of information support for monitoring and controlling the movement of vessels using GLONASS / GPS [9]. The above dissertations are valuable in terms of the structural construction of a telematic solution, using it in various areas of socio-economic relationships. Furthermore, our research demonstrated that both telematics and telematics solutions do not have an appropriate definition in socio-economic aspect in Belarussian studies. Therefore, using foreign experience is valuable opportunity in order to formulate author's approaches in definition formulation. The economic vision of telematics solutions was presented in researches of the following foreign scientists: G. Waksman, M. Harkin, O. Tettero, D. J. Out, H. M. Franken, J. Schot, M. Duplaga, M. Leszczuk, K. Zielinski, E. A. de Castro, C. Rodrigues, C. Esteves, A. da Rosa Pires, Shu-Hao, Chin-Yuan Fan, A. Sachez-Macian, J. E. Lopez de Vergara, E. Pastor, L. Bellido, R. Janecki, S. Kraviec, G. Sierpinski, K. Schilling, H. Roth, M. Pajak, L. Muslewski, M. Woropay, Z. Smalko.

Methodology. The author puts forward the assumption that telematics solutions can have a positive impact on the socio-economic development of the national economy, thereby being the drivers of growth and development of the national economic system. Research methods include analysis, synthesis, generalization, induction, deduction, observation. The novelty of the research lies in the author's study of telematics solutions as drivers of the development of the national economy. The exclusivity of the research is emphasized by the lack of existing fundamental works in the Belarusian science on the topic of telematics, considered in the socio-economic aspect.

Main research. At the beginning of our studying, it was important to define the main research categories: telematics and telematics solutions. We note that telematics consists of two interrelated concepts, such as telecommunications and informatics (information technology). At the same time, telematics is inextricably linked with GPS tracking technology, which was originated in the 1960s, when the US Department of Defense and the Applied Physics Laboratory of Johns Hopkins University began developing a global positioning system (GPS) [10]. GPS used satellites in the sky and a receiver on the ground to help the US military track military personnel, installations, facilities and equipment. GPS has also improved American missiles, making them more accurate in targeting and airborne control. Basically, telematics is a new concept, and for the first time it was mentioned in 1978 in the work of French scientists Simon Nora and Alain Minc. When writing a report for the French government, they described telematics as the process of transmitting information using telecommunications [11]. In the process of development, the terminology underwent changes, and subsequent formulations were relative to the scope. Analysis of the existing approaches in defining the category of "telematics" showed that in many respects the conceptual apparatus of scientists and researchers is similar in structure, and, at least, means a technology, a set of technological tools or a field of technology. Further, this fundamental approach covers the structure of the telematics complex, considering the scope and type of monitoring objects. At the same time, as a result of the study of the concept of "telematics" as a socio-economic category, we come to the conclusion that its definition does not have a universal character and for the topic of the dissertation research, in our opinion, should be clarified in the direction of commercialization and business, which is important for the formation of telematics solutions as of a driver of the development of the national economy at the micro-, meso-, macro-levels. The author's definition has not only theoretical value, but also practice-oriented significance in the development, creation and implementation of telematics solutions in the domestic and international markets. Thus, the category "telematics" in the author's supplemented definition is presented as follows. Telematics is a related area of socio-economic and information-technological relationships regarding the development, creation, development and promotion, as well as the implementation of telematics solutions to meet the various needs of the national economy, taking into account the specifics of market supply and consumer demand. The author's terminology covers the area of related telematics applications. At the same time, for the process of creating telematics products that are interesting to the market and the consumer, an in-depth study of the theoretical and structural components of telematic solutions is essential, among which there is a telematics complex that forms the structure of a telematics solution. The theory and methodology of the formation of economic solutions based on telematics services are interrelated components in the creation, promotion and implementation of a telematics product. Today, there are many approaches to creating, managing and marketing a product. We share the opinion of O. V. Ilyina on the organization of product marketing management; the concept of life cycle management is among the key components of the researcher's methodology. The model focuses the business on forecasting short and long-term trends in supply and demand, as well as conducting a comprehensive and systematic work to assess the competitiveness of each service and developing control actions to increase its level, planning and developing new services, using an integrated approach to the formation of marketing activities at all stages of creation, implementation and implementation of services, i.e. at all stages of the life cycle [12, p. 4]. In our opinion, O. V. Ilyina's research is valuable in constructing the structure of marketing problems that arise at the stages of the life cycle of high-tech products. This concept allows you to timely respond to changing market conditions, track supply and demand to increase the demand for the product, as well as improve the tools for its promotion to the market. We understand that with the increase in the quantitative and qualitative level of supply in the telematics services market, the life cycle of a telematics product decreases due to increased competition and decreased demand from the consumer. In studying the parameters of demand and factors influencing it in the process of forming a telematics solution, we consider it valuable to consider the position of A.M. Levin, who represented demand and price factors through the prism of mathematical measurements. According to the scientist, if we analyze the demand curves and supply curves from the point of view of the manifestation of the vector properties of the price, then these properties do not appear, since the price functionally depends on the quantity of goods that is not a vector quantity. Among the alternative opinions of economists, we single out the usefulness of the research of R. A. Abdullaev, who in his dissertation, when forming the price of a good or product, is guided by the problem of consumer surplus studied earlier, which was presented by J. Hicks and falling prices for goods [13, p. 37; 14]. At the same time, the opposite opinion was expressed

by P. Samuelson that the theory of consumer surplus should be abandoned due to its ineffective use in applied research [15]. However, we agree with the opinion of R. A. Abdullaev that the analysis of consumer surplus is useful, since it can be used when deciding on preferences in determining the effective price or the rationality of introducing "discriminatory prices" depending on the welfare of the consumer and the current market -economic situation, etc.

F.K Kotler, in his concept of a four-level product model, imagined that each element of the aggregate product increases the consumer value of the product - all together they form a hierarchy of consumer value. The purpose of the product is to demonstrate benefits through satisfying a need. Thus, through the formation of an economic solution based on telematics services, the business creator determines what will be valuable components for the consumer in the product structure, what added utility each component will bring individually or in batch use [16]. Another model of F. Kotler, the theory of the "Black box" [17], allows you to correctly determine the final composition of the telematics solution. This theory was originally applied to define consumer behavior. An imaginary black box - consumer thinking and behavior at the time of analysis and purchase of goods, works and services. In the telematics business, the "black box", according to the author, is a space of consumer requirements and needs that must be satisfied by a telematic product or service. Thus, at the entrance, the telematics company analyzes the demand from a potential buyer, identifies his needs and weaknesses of his existing solution, in order to further present a unique offer suitable for a specific client. At this point, we conclude that the final service or product of the telematics business is directly related to the level of demand and competition among companies offering similar services to consumers. In this regard, the more detailed we approach the analysis of the components of the "black box", the greater our chances of meeting the approval of a potential buyer and making a sale. The structure of the "black box" usually contains the following components:

1. Purpose of purchasing a telematics solution
2. Desired result (consumer motivation, what value he is looking for)
3. Customer experience (positive or negative) and possible objections
4. Available alternatives and competitors' proposals.

Results: Based on the studied existing research and scientific works in the field of formation, marketing and product management, the author enclosed that, in general, experts focus on the theoretical component of the issue, since it is the foundation for building and promoting a product to the market. Just like in business or in negotiations with a large consumer, the creator of a telematics solution must be sure that he has made the necessary preparation for presenting his product, work or service to the market. However, the analyzed models cannot fully represent the necessary steps for the formation of economic solutions based on telematic services, since the telematics field and the components that are included in the structure of telematics solutions require an individual approach in analysis and selection. Our model of the formation of economic solutions based on telematics services is aimed at applied application. The value of the model lies in the detailed and deep study of the issues that arise at each stage of the formation of a telematics solution and the model of its sale and promotion in the telematics market. The advantages of the model:

1. Versatility. It is focused both on existing users / integrators of economic solutions based on telematic services, and on beginners (startups).

2. Fundamentality. It allows you to carry out the necessary preparatory research and study the issues of forming, collecting and implementing decisions based on existing experience, which reduces the risks of making incorrect administrative decisions and increases the chances of project success.

3. Proactivity. The author's model is focused on the prospects for the development of a telematics solution, considering the current situation and future changes, which allows timely monitoring the competitive supply and socio-economic situation in the region of implementation, and, as a result, it allows to respond to dynamic market conditions to maintain / increase consumer demand.

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