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ENVIRONMENTALLY ORIENTED SHARING ECONOMY AND ITS FUTURE WITHIN DIGITALIZATION OF SOCIETY

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Abstract

The object of the research in the article is sharing economy, its future in the context of digitalization of society and the fourth industrial revolution and its impact on the ecosystem, in particular on the environment. The concept “Sharing Economy” has been formulated relatively recently, the main prerequisites for its occurrence, opportunities and risks. The forms of sharing economy have been briefly reviewed in various fields of activity. The main attention is paid to the sharing economy in transport and energy, its impact on the environment. It is shown that the improvement of environmental generators, and the reduction of harmful emissions into the environment contributes to the joint use of vehicles as taxis, carsharing, carpooling, ridesharing, in transport logistics; sharing of energy generated by personal generators, wind turbines, small hydropower plants, etc. A number of problems (legal, organizational, economic, etc.) has been identified that arise during the introduction of the sharing economy and which should increase the effectiveness of its impact on the environment. Recommendations on the elimination of negative consequences are proposed. Digitalization of society and the environment are the prerogative of the global economy and public administration of individual countries, which increases the significance of the discussion below and the issues the article addressed.

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1. Introduction

In the context of the fourth industrial revolution, under the influence of globalization and the growing digitalization of society the structure of the world economy is changing based on the widespread use of the Internet, information and communication tools, Big Data technology, artificial intelligence, the Internet of things, cloud, space and other information technologies (Allen, 2015; Armando & Dubolazov, 2019; Dubolazov & Nunez, 2019; Testoedov et al., 2018): many traditional industries lose their significance, new industries are developing rapidly, new organizational forms of business are being introduced, new production and public relationship. In particular, the concept of a sharing economy has appeared. Many experts note sharing economy appearance around 2010, after which it becomes popular in the media, economic and other magazines.

Sharing economy (SE) is a dynamically developing socio-economic model aimed at obtaining benefits from the consumption of goods and services coordinated using the Internet and other information tools, when you can share what you own and what you can do for a fee, without losing ownership (Cheng, 2016; Edelman et al., 2017).

2. Problem Statement

The role of digitalization and SE in solving environmental problems.

- Ecological problems and limited resources also gradually change the attitude towards the consumer culture towards the transition from a consumer society to an SE characterized by the collective use of goods and services. Excessive consumption is the main culprit for serious environmental problems that ultimately cause other problems, in particular the depletion of natural resources. SE gives the opportunity to use goods and services to those (consumers) who do not need them constantly or if their purchase and operation are unprofitable and expensive, and the owners receive additional income or cover costs. SE has certain advantages: it offers manufacturers new forms of independent work with the possibility of generating additional income, helps reduce unemployment and poverty, creates additional income for the unemployed or for those with unpopular specialties; help reduce age and gender differences, differences in specialties, education, etc.
- Goods and services can be offered at a lower price to the consumer, which leads to lower costs and significant savings. Consumers get more opportunities to choose the necessary goods or services, since the range of suppliers is now not limited only to companies (Hamari et al., 2016; Martin, 2016). Citizens of different countries are given the opportunity to take advantage of their place of residence. SE significantly enhances both demand and supply, as a result of which the optimal price is determined, which is most suitable for market conditions. The level of competition in the market is increasing: commercial companies should actively innovate and improve the quality of their goods and services. SE virtual platforms allow their users to offer services themselves (Dubolazov & Nunez, 2019).

- SE increases the level of competition in the market, as a result of which companies must actively innovate, produce new products, reduce prices and improve the quality of services; creates conditions for self-organization and mutual assistance, improving the quality of life; it allows you not only intelligently manage your own property and budget, but also to cultivate respect for the work, time and property of others. Business models based on the principles of SE and electronic platforms lead to the exclusion of intermediaries, reduction of inefficient costs of companies and expenses of the population. Due to more intensive sharing of existing assets without the need to invest in new assets for exactly the same consumption, there will be a reduction in environmental impact (Miller, 2016; Slee, 2017).
- On the other hand, SE creates certain problems for society: transport organizations and professional drivers lose their earnings, sales from car manufacturers and car dealers fall, tour operators and travel agents go bankrupt, hotel occupancy decreases, crowdfunding and its varieties constitute serious competition to credit organizations, the number of self-employed, freelancers are growing.
- Problems arise in the areas of labor relations, social protection of the population, taxation, pensions, security and quality of services, leakage of personal data, professional risks, psychosocial risks and many others.

3. Research Questions

- The study raised the following questions.
- Consider the concept and advantages of SE.
- How does sharing economy work?
- What are the areas of applications of sharing economy?
- How is sharing economy regulated?
- What are the prospects for the development of digitalization and the fourth industrial revolution, their impact on the environment?

SE is actively developing; the scope and forms of its application are expanding. The study identified the following key forms of SE: online taxi service (Uber, Yandex and others); ridesharing and carpooling - vehicle sharing; carsharing - short-term car rental; coparking - sharing of parking spaces); short-term rental of private housing around the world (Airbnb and others) (Shvab, 2016); coworking - centers for renting a workplace for the necessary time; coliving (community living) - co-existence of a group of people with similar views or life values; crowd funding - people's cooperation on the voluntary pooling of money or other resources; exchange of knowledge and skills in the field of education; in the energy sector - sharing energy from private generators; sharing of free computing power data, SMS; in transport logistics (sharing logistics); food sharing— free distribution of disposable, usable products to the needy; electronic commerce - the purchase and sale of goods between private individuals; home sharing - the provision of free or for a small fee housing in exchange for assistance provided to the homeowner; joint tourism and many others.

In accordance with the stated topic of the article, we consider the impact on the ecosystem of SE in transport and energy. Transport aggregates / services represent one of the most promising market segments

based on the shared economy model (Sundararajan, 2016). The growth of urbanization, the number of citizens and cars leads to the fact that large cities cannot cope with traffic. The complication of traffic, the increase in the number of traffic jams on the city roads, parking problems lead to a decrease in the quality of life, the efficiency of people at work, environmental degradation, etc.

Transport is one of the main air pollutants. Its share in the total volume of emissions of pollutants into the atmosphere from stationary and mobile sources in Russia is about 40%, which is higher than the share of any other industry. By type of transport, pollutant emissions are distributed as follows: 87% of the total emissions are from road transport, about 8% from the railway, 2% from the road complex, just over 1% from air transport and 2% from river and sea (The action plan (“road map”) of the national technology initiative “AUTONET. Appendix No. 2 to the Minutes of the Meeting of the Presidium of the Presidential Council on the modernization of the economy and innovative development of Russia dated April 24, 2018).

The impact of vehicles on the ecosystem is primarily expressed in the pollution of the atmosphere, water bodies and lands, changes in the chemical composition of soils and microflora, in the creation of high levels of noise and vibration, the release of heat into the environment when internal combustion engines work, the alienation of lands for the construction of roads, in the consumption of atmospheric air, oil products and natural gas, water, etc.

The Government of the Russian Federation by order of April 28, 2018 No. 831-r “On Approving the Strategy for the Development of the Automobile Industry of the Russian Federation for the Period until 2025” approved its strategy for the development of the automotive industry until 2025. It defines the goals, priorities and key indicators for the development of the automotive industry. This is, first of all, the electrification of vehicles (the use of electric vehicles), the use of gas motor fuel, increasing the autonomy of cars, the development of telecommunication systems, restricting the entry of cars with a low class of Euro exhaust standards (for example, in Moscow from 2019 the entry of heavy trucks of the Euro class -3 and below has been restricted), the application of new business models for the sharing of vehicles, which include online taxi, ride sharing, carpooling, car sharing, collaboration for vehicles.

In Russia, with a lower level of the number of personal cars per 1000 inhabitants compared with developed countries, there will be a faster penetration of SEs in transport (Dubolazov & Nunez, 2019). According to expert estimates, the prospects for the development of the Russian market suggest an increase in the share of cars used in car sharing to 10 percent by 2025. In the world, by 2030, the share of passenger cars can reach 9 percent of total sales (10 million common cars, 115 million cars in 2030) (Dubolazov & Nunez, 2019).

Users in business models of transport sharing (online taxi, ride sharing, carpooling, car sharing, etc.) are attracted by the lower price, less waiting time for the car to be delivered, the ability to place an order and track its execution using the mobile phone application. Confidence in the service increases the ability to evaluate the direct contractor (Sundararajan, 2016; Schor, 2016). With the advent of transport aggregators, each driver himself has the opportunity to see incoming orders and, focusing on his own load and proximity of the call, can accept it. This significantly speeds up the process of receipt of the order from the consumer to the direct contractor. In the process of using transport and transport services, a lot of data is accumulated, the use of which can become the basis of new types of business that provide people with

comfort and personalization. The model of using transport services instead of owning transport is one of the most promising market segments based on the model of shared economy (Dubolazov & Nunez, 2019).

4. Purpose of the Study

The purpose of the study is to systematize and analyze well-known and emerging forms of SE, primarily in transport and energy, to consider the contribution of SE to solving environmental problems, as well as to understand what organizational, economic and legal issues need to be addressed (Dubolazov & Nunez, 2019).

SE helps significantly relieve urban infrastructure (especially transport). Transport services represent one of the most promising market segments based on the model of shared economy. According to analysts, a personal car is used no more than 2 times a day, the time spent on the journey even in a large metropolis is no more than 2 - 3 hours a day. This requires a place where the car will stand idle while it is not in use. In the framework of new business models of SE, a car is used four to ten times more intensively. According to Frost (2010), the concept of intellectual mobility can help reduce traffic congestion by up to 30%, carbon emissions by 10%, optimize driving speed by 60%, also reduce the territory intended for parking, both public and private. The congestion of city highways will decrease, transport accessibility and the environmental situation will improve, the transparency of the services provided and the safety of passengers will increase.

As a result, the atmosphere is less polluted by emissions, equipment is used more efficiently, the number of cars on city streets is reduced. According to Frost (2010), the spread of car sharing and ride sharing will allow the world to save \$ 5.6 billion annually, reduce carbon dioxide emissions by 15% and increase the speed of urban traffic by 60%, reduce the territory intended for parking lots, both public and private.

It is estimated that by 2025 transport units (Yandex taxi, etc.) will occupy 20-50% of the human transportation market (Goldman et al., 2017). By 2030, 40% of all vehicles will still have individual owners, but the share of their use will be reduced to 5% (Edelman et al., 2017). Aggregators / servers appear in transport logistics, providing the possibility of sharing a single vehicle by several companies. The development of a vehicle-sharing business model has led to the spread of Mobility as a service technology (MaaS), which manages real-time multimodal transportation from the start of the route to the destination using different modes of transport (public transport, rent a car, taxi, shuttles on request, etc.) and allowing you to choose the best route according to many criteria (time, cost, user preference, etc.) (Puschmann & Alt, 2016). With the correct construction of logistics processes, the manufacturer can save up to a third of its logistics budget. Keeping your own fleet of vehicles in these conditions is becoming less profitable, therefore, enterprises are increasingly transferring logistics to specialized companies for outsourcing. Car sharing in several cities and countries is encouraged by the government to reduce the number of cars on the road. The media discusses following issues as supporting the joint use of vehicles: the allocation by the city administration of additional funds to subsidize short-term car rental operators; provision of transport tax benefits; introduction of an environmental tax; provision of free parking within the city; access to lanes for block vehicles; preferential rate for civil liability insurance of the vehicle owner; concession when using paid sections of roads. However, these proposals are not obvious, difficult to implement, require deep study.

For the development of car sharing in large cities, it is advisable to organize fixed free parking places for such cars near metro stations, railway stations, airports, as well as in the central part of the city. For example, in Switzerland, Italy and France, car-sharing companies do not pay for parking, and sometimes their cars are even allowed to use the public transport lanes (Dubolazov & Nunez, 2019).

SE affects social issues. So, online taxi, car sharing and ride sharing, especially when providing them with benefits, can cause dissatisfaction with city taxi services and car owners. For example, in Europe, in a number of countries (Belgium, France, Spain, etc.), demonstrations were held against Uber, accusing it of unfair competition, failure to comply with local rules regarding security, taxes and licensing, and a sharp decrease in taxi drivers' earnings (Vaughan & Daverio, 2016). In February 2017, the Brussels Economic Court banned the operation of the Uber service in Belgium. Only drivers with a Brussels license and a luminous taxi signal on the car roof could be engaged in such kind of transportation.

There are many problems in transport sharing economy. The legal status of participants and the forms of contractual relations between them are not obvious. The debatable question is what constitutes an aggregator: a provider of information services or transport services like, for example, Uber, Yandex. In first case, the aggregator has an international status, has the right to act in all countries without permits, can be registered in any state, for example, where taxes are less; in the second case - to register only in the country of activity, its activity is under the control of national authorities and may even be prohibited. Aggregators who are information intermediaries, as a general rule, are not responsible to consumers for the quality and terms of the provision of the goods and services offered on their platform.

Aggregators establishing contact between customers and contractors do not always provide adequate security or guarantees regarding the goods and services provided, although there is a possibility for the user to evaluate the contractor, but only after the customer has hired and used the service. Companies that work on the principles of SE, they themselves create a large number of criteria so that users have the opportunity to choose those who can be responsible for the product or service. But even such measures do not provide full guarantees or insurance against accidents, theft, crime or inadequate quality of goods and services. Risks are always present when the community regulates the system of analysis, rating, feedbacks independently (Dubolazov & Nunez, 2019).

Certain information intermediaries are required to comply with statutory requirements. So, drivers registered on the site of the aggregator in the field of road transport must comply with the requirements for licensing their activities, the proper condition of the car, etc.

There is a lot of debate about what contract should be concluded between the aggregator and the executor - driver: labor or civil law (agency, contracting or the provision of services and performance of work). Due to the lack of labor regulation, people working with the aggregator often have an excessively high pace of work based on their needs, exceeding working hours in many cases without any benefit or protection, without social security. Gradually, in EU countries, transport aggregators are obliged to conclude labor contracts with drivers (such a law, for example, was introduced in France in February 2020).

5. Research Methods

In Europe, the energy industry begins to develop a joint consumption of electricity from generators installed in private houses. Citizens receiving electricity from their own wind generators or solar panels can

supply surplus to the public network, and then receive its equivalent exchange. In those periods when the need of the owner of the generator is small (during the period of reduced load), he can share with other consumers, giving electricity to the network, and when the deficit (during the period of peak load) - pick up. The key issue here is the financial conditions for receiving electricity into the network and supplying it from it. In Switzerland, the number of small, sometimes private, hydroelectric power stations is expanding, which are networked and operate on the principles of sharing.

With this method of the future on decentralization of energy production, the world will gain more control and energy savings, better preserve the environment. Currently, the main aspects of such a revolution in the electric sector are the opportunity for consumers to earn income from their long-term investments in solar panels and wind and other generators, as well as the fact that at some point energy can become completely free. This joint energy, formed from the excess production of small producers, private individuals, is provided to other consumers, thus ensuring the efficient redistribution of resources. The consumer gets the opportunity to manage and use the purchase and sale of energy, which allows him to choose and use the energy necessary for consumption, and, therefore, optimize renewable resources. This ability to respond to demand allows consumers to actively participate in the supply chain of energy supplies, which will have great advantages both in terms of electricity production and in the choice that consumers should have access to through a more efficient, flexible and economical supply.

An example is the Sonnen Community. This is a community of battery owners who operate in Germany, Austria, Switzerland and Italy. By becoming a member of the Sonnen Community, you can share energy with other members of the Community. Using Community energy, there is no need for a conventional energy supplier. The Sonnen Flat-Box platform connects thousands of battery users and integrates many individual home storages into a giant “virtual storage” of electricity, which helps stabilize the public utility grid. Households will save 100% of their energy costs, and the general population will also benefit from this technology. According to a Greenpeace study on the role of society in energy governance, the democratization of the energy sector could be the basis for creating collaborative platforms for renewable energy.

6. Findings

Sharing economy is a stable global intensively developing organizational and economic model that has firmly entered into life, which is greatly facilitated by the digitalization of society. In recent years, the economy of co-consumption has acquired such a scale that they started talking about it as an alternative to the traditional economy.

By sharing existing assets without having to invest in new ones for exactly the same consumption, there will be a reduction in environmental impact through more stable activities, the exchange of existing assets without the need to invest in something new for the same use, less impact to production (Dubolazov & Nunez, 2019).

The ecosystem is particularly affected by the economy of co-consumption in transport. The growth of urbanization, the number of citizens and cars leads to the fact that large cities cannot cope with traffic. The complication of traffic, the increase in the number of traffic jams on the city roads, parking problems lead to a decrease in the quality of life, the efficiency of people at work, environmental degradation, etc. In

the framework of business models of sharing economy, cars are used much more intensively, first of all, by reducing the number of vehicles while ensuring the required level of mobility. As a result, the atmosphere is less polluted by emissions, equipment is used more efficiently, the number of cars on city streets is reduced.

The economy of joint consumption is developing, the scope and forms of its application are expanding.

Summing up some results, it can be argued that a growing number of entrepreneurs are basing their projects on the principles of SE in various industries: transport, housing, travel, energy, money, etc. A business gains access to cheap resources, but at the same time acquires great risks, in particular legal ones (Dubolazov & Nunez, 2019). The issue related to taxation also needs to be considered. The state generates or tightens more taxes, but a well-coordinated system for their collection is still lacking. Currently, the efforts of many states are aimed specifically at developing a new tax policy adapted to the economy of the future, including SE. To do this, you need to arrange payment online (Dubolazov & Nunez, 2019).

Relations related to transport, housing, tourism and many other SE facilities are closely intertwined with legal relations in the field of insurance (Dubolazov & Nunez, 2019).

It is required to develop a system of legal regulation to protect the interests of individuals and legal entities in the event of certain insured events at the expense of cash funds formed by insurers from paid insurance premiums (insurance premiums), as well as at the expense of other funds of insurers when using SE business models (Dubolazov & Nunez, 2019).

The concept of sharing economy (SE) is formulated - a dynamically developing socio-economic model in the context of digitalization, the widespread adoption of the Internet and other information tools. The main positive factors of SE have been identified: the population receiving additional income, reducing unemployment, increasing the load and income of less busy people, lowering prices for goods and services, increasing the level of competition in the market, etc. Much attention is paid to the study of the impact of various organizational forms of SE on the ecosystem when they are introduced in various areas of economic activity, primarily in transport. World practice shows positive results in this by reducing the number of vehicles when used jointly by people and organizations, while ensuring the required level of mobility and the performance of work volumes. It is shown which legal, organizational and economic issues should be resolved when implementing SE.

7. Conclusion

Studies have shown the importance and complexity of SE, which contributes to the active informatization of society. The scale and pace of development and penetration into public relations of SEs is striking, which has a significant impact on the incomes of people and organizations, unemployment and employment, competition in the market, on the environment, etc. The newest example concerns the exchange of energy from solar panels installed in private homes. The energy excessively accumulated in the batteries of one house is used by others (Dubolazov & Nunez, 2019). Thus, energy has no cost to these communities. With this method of the future, the world will gain greater control and energy savings and better preserve the environment. But this requires the solution of many technical, legal, social, organizational, economic, environmental, behavioral and other problems. Specialists in the field of

information systems have a big task to develop aggregators, which should not only allow the consumer to get acquainted with the services provided, their performers and feedback on them, but also conclude contracts for the provision of services between them, charge money and make settlements between participants, calculate and pay taxes, carry out banking operations, etc. State and local authorities must create appropriate infrastructure.

The authors as economists are concerned about the unresolved nature of many legal organizational and economic issues, insurance issues in SE. Among them are the legal status of participants in transactions, types of agreements concluded, participants' liability, security, etc. The greatest danger is the departure of "in the shadow" of joint operations. It is necessary to organize accounting or exclude cash payments, solve the problem of taxation and insurance premiums for self-employed and freelancers, deal insurance, especially in transport, motivation to reduce harmful emissions into the atmosphere and many others. This not only makes it difficult to work in SE conditions, but also reduces budget revenues at various levels. In our opinion, insufficient attention is paid by theorists and practitioners of EMF. This is at least indicated by the practically absence of materials on SE in the IPS Consultant Plus and GARANT.

Digitalization of society, a change in lifestyle and values lead to the transformation of the consumption model, the development of SE, and the greening of the economy. SE is a relatively new trend in the socio-economic development of all countries, but very promising, will be actively developed. In this regard, one of the essential issues that need to be urgently addressed is the legal, economic and environmental regulation of its business processes (Dubolazov & Nunez, 2019). State bodies, lawyers, economists and other specialists face big challenges in solving theoretical and practical issues of organizing sharing economy, the legal status of participants, taxation, online payments, licensing, insurance, security, quality of services, etc. The urgent problem is continuous computer literacy of the population at the user level and above (Dubolazov & Nunez, 2019).

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