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Investments in the Sharing Economy and their Impact on the Employment Structural Changes

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ABSTRACT

The article examines topical issues related to structural changes in employment in the Russian economy, due to the intensive development of the sharing economy. The **aim** of the study is to systematize disparate knowledge in assessing the impact of investments in the sharing economy on the employment structure, providing an understanding of the labor market, which is influenced by transformation processes in consumption patterns and factors of digitalization of the economy, as well as to develop recommendations for improving state policy in the field of employment. Based on the **methods** of theoretical research (analysis and synthesis, generalization), the authors reviewed scientific literature and information from various sources, identified the main elements characterizing the model of collaborative consumption, considered by various researchers and online platforms. The study highlights the scientific concepts and approaches to the definition of the sharing economy, including the concept of a shared economy; collaborative economy as well as access-based consumption (to resources); network interaction; commercial exchange systems. The **novelty** of the study lies in the fact that the authors show how investments in the further development of the infrastructure of the sharing economy, including the development of digital online platforms, lead to an increase in the number of employers and workers by removing barriers and reducing transaction costs. The authors propose **recommendations** for solving employment issues: to form a system for measuring the sharing economy and accounting for it in official statistics; provide a regulatory framework for the functioning of digital platforms; ensure the privacy of personal data and the safety of citizens participating in the sharing economy. It was **concluded** that the implementation of the proposed measures will have a positive impact on the Russian labor market and increase the investment attractiveness of the most important sectors of the sharing economy.

Keywords: sharing economy; labor market transformation; investments; employment; innovations; professions of the future; structural changes; Russian economy

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INTRODUCTION

Currently, the issues of digitalization of the economy and key processes in the social sphere have given a new impetus to further research of the sharing economy, including debatable ones. At the same time, new models for business processes and collaborative consumption of goods are under discussion. The sharing economy, as well as the platform economy, the system of organizational, economic and social relations arising between entities in the process of temporary use of goods and services are an important direction for scientific research. The major issue of regulation, monitoring and evaluation of the main processes of the sharing economy is that it covers various industries and activities and does not fit easily inside official classification schemes, such as the European Nomenclature of Economic Activities (NACE), the Russian OKVED, and others functionally organized systems. According to the foreign authors (Christophe Degryse, 2016; Katre Eljas-Taal, Neil Kay, Lucas Porsch, Katarina Svatikova, 2018), typical economic variables such as income, revenue and employment are difficult to trace because digital online platforms are able to spread supply across an array of small-scale non-professional providers [1, 2].

LITERATURE REVIEW

The literature provides different definitions for the “sharing economy”, however, there is no clear single concept. The authors defined the following as its main concepts:

- sharing economy;
- collaborative economy;
- access-based consumption;
- networking;
- commercial sharing systems;
- cooperative economy;
- peer-to-peer economy.

The scientific review of research shows the significant interest in the sharing economy in recent years. It is also confirmed by

the trends in the number of publications on the sharing economy in eLibrary and Scopus (Fig. 1).

Table 1 presents the summary of the key scientific concepts and approaches to the “sharing economy” definition. When studying this consumption model, researchers most often use the terms “collaborative economy” and “sharing economy”. The collaborative economy is a broader concept and includes interactions between individuals, between legal entities, as well as between individuals and legal entities, while the sharing economy is usually considered when analyzing P2P transactions (between physical persons).

Later, many authors defined the sharing economy as the cooperative economy, implying activities based on digital platforms that form an open market for the temporary use of goods and/or services [30–36].

Important characteristics of the collaborative economy include no change of ownership (which corresponds to the definition by the European Commission, 2016)¹, as well as fast-growing platforms that have entered such sectors as transport and housing, except e-commerce and social media. At the same time, the authors identify four major segments of the collaborative economy: transport, housing, finance and services.

Some studies regard to the sharing economy as to a business model with the following features:

- network model of business organization;
- core competencies are focused on software;
- liquid assets dominate in the property structure;
- the company’s strategy is focused on customer experience;

¹ European collaborative economy forum, shared thinking for a collaborative Europe. 2016. URL: http://eucolab.org/wp-content/uploads/2016/09/Industry-viewssurvey_FINAL_SCREEN.pdf (accessed on 16.05.2020).

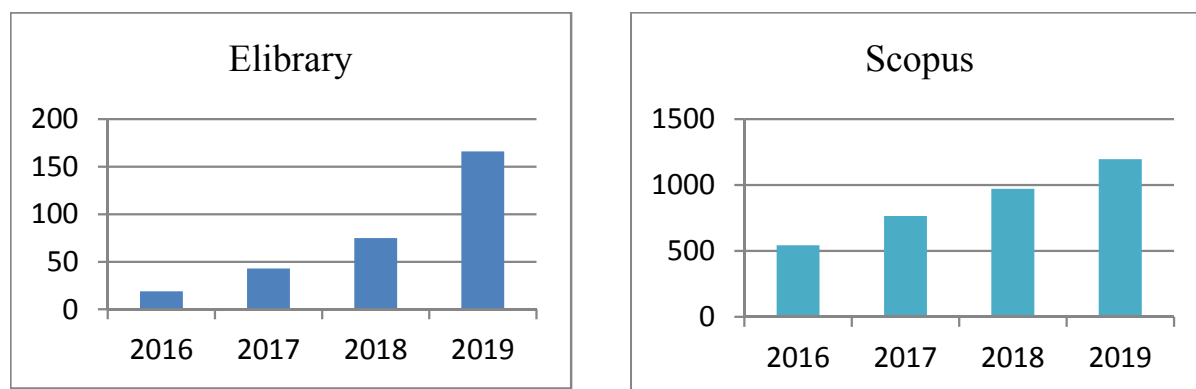


Fig. 1. Trends in the number of publications on the sharing economy in Elibrary and Scopus

Source: eLibrary. URL: https://elibrary.ru/query_results.asp (accessed on 10.07.2020); Scopus. URL: <https://www.scopus.com> (accessed on 10.07.2020).

- the need for labour resources is not fixed, as in traditional business models, but is attracted when needed.

While B 2B, B 2C and B 2G represent the traditional model, the sharing economy is complemented by peer-to-peer (P2P) communications.

Systematizing the main approaches to the definition of the sharing economy allowed to identify common features:

- peer-to-peer communications (P2P) between individuals;
- temporary access to underutilized goods and services, which promotes recycling and increases efficiency in the use of goods and services;
- availability of a digital platform and networking via the Internet;
- exchange of goods and services can be free or for a certain payment.

Some researchers consider the sharing economy as a social process of exchange, implying social ties based on such values as trust, openness, equality, participation, and care [37].

In general, researchers identify various factors in the sharing economy development. For example, Ch. Degryse (2016) identifies three key factors: the Internet, big data analysis and the development of mobile devices and applications. This leads to a completely new labour market and an

increased demand for IT specialists. While the current total number of jobs in Russia in mobile technologies is 470 thousand people, by 2022 it will increase to 1.1 million people. According to the RAEC, The average annual growth rates will be about 24%.² For example, 1.729 million people are involved in this segment in the United States, and 579 thousand people in Japan. According to the RAEC, in 2019, the demand for highly qualified personnel in IT and communication engineers in other economic sectors (excluding ICT) was more than 150 thousand people, and about 300 thousand people including ICT.

The literature review revealed two key approaches to assessing the impact of investments in the sharing economy on changes in labour relations, the structure of the labour market, and regulation of social relations [38–40].

The followers of the first approach believe that developing the sharing economy in the spheres of transport, real estate, finance, household and professional services will cancel hired labour and will lead to the complete liberalization of services and the expansion of global competition. This will require a revision of basic labour law and

² The Sharing Economy. URL: https://raec.ru/upload/files/sharing_economy_facts-figures_rus.pdf (accessed on 15.05.2020).

Table 1

Characteristics of the main conceptual approaches to the sharing economy definition

Concept	Authors	Main characteristics highlighted in research
The concept of the sharing economy	K. Dervojeda et al. [3]; D. Allen, C. Berg [4]; B. Cannon, H. Chung [5]; D. Roos [6]; D. Woskowiak [7]; R. Vaughan and J. Hawksworth [8]; L. Hirshon, M. Jones, D. Levin, K. McCarthy, B. Morano [9]; A. Felländer, C. Ingram, R. Teigland [10]; T. Meelen, K. Frenken [11]; N. John [12]; Pricewaterhouse Coopers LLP*; P. Grifoni, A. D'Andrea, F. Ferri, T. Guzzo, M.A. Felicioni, C. Pratico, A. Vignoli [13]; G. Kane [14]; P. Goudin [15]; S.-Y. Oei, D. Ring [16]	<ul style="list-style-type: none"> – Information and communication technology mediation; – increasing consumer awareness; – functioning within web communities; – social commerce/information exchange within these communities; – distributing underutilized assets
The concept of the collaborative economy	M. Felson, J.L. Spaeth [17]; R. Belk [18]; K. Stokes, E. Clarence, L. Anderson, A. Rinne [19]; R. Bostman [20]; J. Hamari, M. Sjöklint, A. Ukkonen [21]; P. Husemer [22]; J. Owyang, A. Samuel [23]; S. McLean [24]; S.J. Barnes, J. Mattsson [25]; R. Vaughan, R. Daverio [26]	<ul style="list-style-type: none"> – Peer-to-peer interaction; – mediation of online platforms; – interaction within network communities; – access to goods/services provided by the owner; – monetary/non-monetary compensation; – global and local interaction
The concept of the access-based consumption	F. Bardhi, G. Eckhardt [27]	<ul style="list-style-type: none"> – Providing temporary access to goods/services; – no transfer of ownership during interaction
The concept of the networking	L. Gansky [28]	<ul style="list-style-type: none"> – Mediation of information and communication technologies; – real-time interaction; – functioning within web communities; – providing temporary access to goods/services
The concept of the commercial sharing systems	C. Lamberton, R. Rose [29]	<ul style="list-style-type: none"> – Market regulation; – providing temporary access to goods/services; – no transfer of ownership during interaction

Source: compiled by the authors.

* PricewaterhouseCoopers LLP. The Sharing Economy: Consumer Intelligence Series. The Sharing economy. 2015. URL: <https://www.pwc.com/us/en/technology/publications/assets/pwc-consumer-intelligence-series-the-sharing-economy.pdf> (accessed on 16.05.2020).

regulation of working hours; as well as the introduction of digital technologies into the human resource management systems of organizations. These processes have been partially used in regulating labour relations. For example, the introduction of electronic work books, legislative consolidation of new forms of remuneration and employment. Investments in developing digital platforms, the base for the sharing economy, will lead to changes in both the service sector and industrial production. For instance, in the service sector, the relationship between the provider and the employer, the algorithm for providing work, calculating labour remuneration, an employment contract, negotiations on wages, employment termination or account deactivation will change; as well as the standards for social security, labour protection, safety, etc.

In the industrial manufacturing sector, the ways of production will change, the interaction between the worker and the (intelligent) machine, and the monitoring and control of the worker will increase.

The followers of a different approach believe that investments in the sharing economy and developing online platforms open up new opportunities in the service sector, where the implemented collaborative projects will focus on the sharing of high-value goods such as cars, housing, etc., on collaborative financing, and not bank loans. They will also provide more opportunities in industry, where more intelligent production will influence the contribution of workers and create a new form of cooperation between people and machines. The main advantage of the new economic model based on the sharing economy is zero marginal cost, which should stimulate economic growth and job creation.

The impact of investments in the sharing economy on the labour market is differentiated and depends on the sector, industry and type of activity.

The labour market is influenced in the following directions:

- changes in the forms of labour organization that become more flexible, take the form of a project, become more open to the ecosystem and much more efficient, especially in terms of innovations;
- arrangements of workplaces, working hours, as well as the subordination between the employer and the employee;
- the impact on the dynamics and structure of the number of self-employed and freelance workers, whose number is steadily growing in the United States, the Netherlands, Germany, France, Russia and other countries with the developed sharing economy.

ANALYSIS OF THE DEVELOPMENT OF THE SHARING ECONOMY IN RUSSIA

A key advantage in the development of the sharing economy as a new business organization model is to benefit from large-scale network effects, access to a global audience, which allows achieving high rates of market share growth. The sharing economy is the result of the simultaneous action of long-term mega-trends, driven mainly by advances in technology, resource scarcity and social change (R. Vaughan, 2015). This model can be used in other areas of the economy, such as energy, telecommunications and retail.

Companies operating in the sharing economy (P2P financing, crowdfunding; online staff, freelancers; coworking; real estate; transport; food sharing; digital content) are startups funded by venture capital. Investments are limited to the costs of building, delivering and maintaining an IT platform, a mobile application and an easy-to-use and secure payment system. The investment is relatively small and represents a manageable fixed cost. To break even, the platform should reach a critical mass of transactions, for which firms typically charge a 1–10% commission of the product

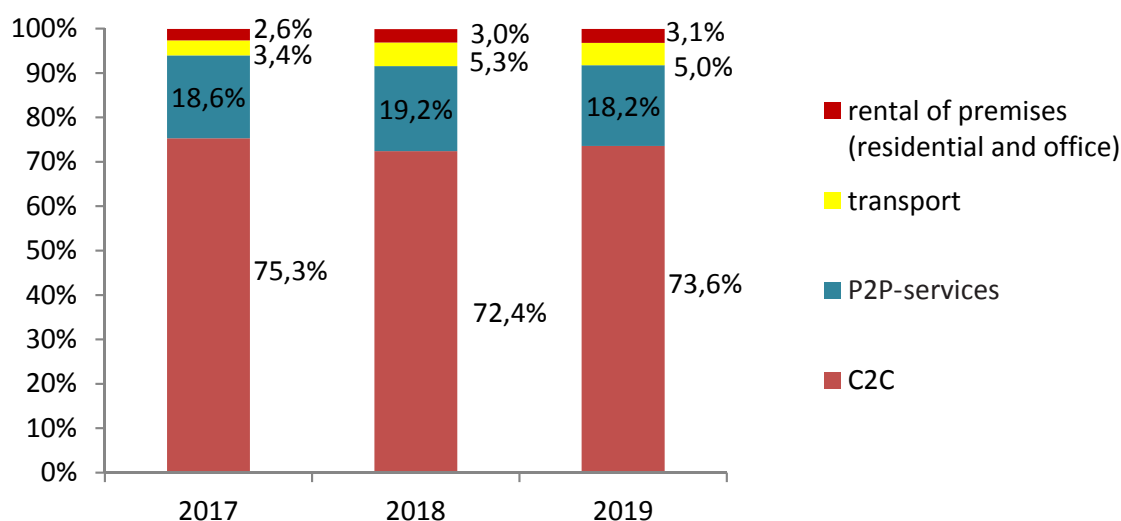


Fig. 2. Sectoral structure of the sharing economy in Russia in 2017–2019, %

Source: Sharing Economy in Russia. 2019. URL: <https://tiarcenter.com/sharing-report-2019> (accessed on 28.05.2020).

or service value. Once the critical mass is reached, each new user and transaction will increase the margin. Thus, investors should first look at the resilience and potential size of a company's user base, as well as how often users access the platform when analyzing the value of a newcomer to that market.

Using online platforms in various sectors of the sharing economy destroys traditional competition models, since they do not incur the costs associated with the operation and maintenance of assets, their costs are only determined by the cost of transactions, which tends to zero. In particular, players like Airbnb or any other similar platform can achieve higher growth rates than traditional hotel chains, as their development is not constrained by construction and material management.

The Russian Association of Electronic Communications identifies the following sectors of the sharing economy: C2C; P2P services (online freelance exchanges); transport (car sharing, carpooling, means of individual mobility); rental of real estate (residential and office); crowdfunding (co-financing of projects); rental of items.³ Ac-

cording to the RAEC, the sectoral structure of the sharing economy in Russia is as follows (Fig. 2).

Thus, in the sharing economy structure, C 2C has occupied more than 73% over the past three years, followed by P2P services (online freelance exchanges) — about 18%, transport — 5% and rental of real estate (residential and office) — just over 3%.

An important factor for the further development of the sharing economy is the regulatory framework for key sectors: car sharing, crowdfunding, P2P services, renting real estates, coworking, etc. Today, regulatory issues remain unsolved, since legislative regulation does not cover all areas of the sharing economy. The Russian legislation still does not define the concepts of “car sharing”, “P2P financing”, “online staff”, “freelancers”, “food sharing”. As for the timeshare, the activities of such enterprises are not licensed, and the Federal Tourism Agency does not control their activities. In Russia, the current regulatory legal acts and federal laws of a civil law regulate general legal issues between the parties of the shared property. Currently, many experts note an urgent need for legislative study of issues of labour relations (online freelance exchanges), security (car

³ Sharing Economy in Russia. 2019. URL: <https://tiarcenter.com/sharing-report-2019/> (accessed on 28.05.2020).

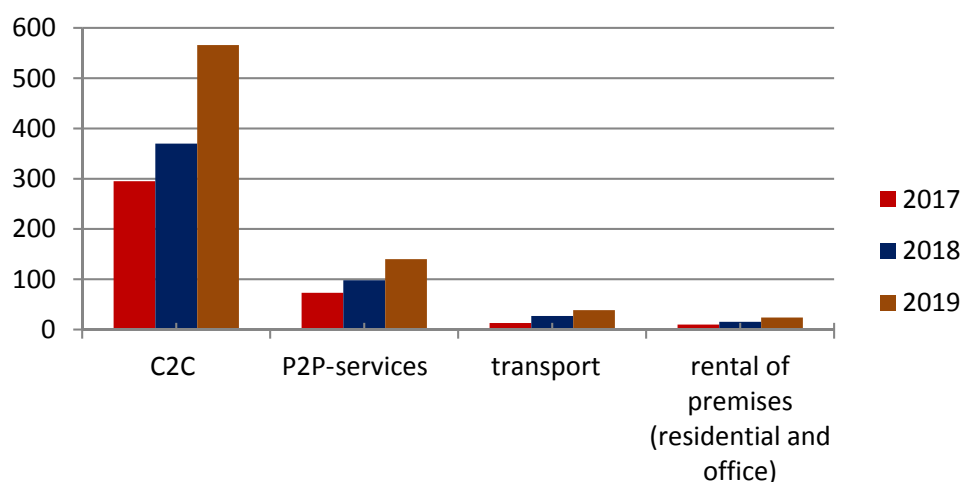


Fig. 3. Volume of online services transactions by key sectors of the sharing economy in Russia, billion rubles

Source: Sharing Economy in Russia. 2019. URL: <https://tiarcenter.com/sharing-report-2019> (accessed on 28.05.2020).

sharing), and tax administration (real estate) in the sharing economy. Sharing economy industries such as crowdfunding and rental of things make up about 0.1% in total. Many experts note the stagnation in crowdfunding, partly due to the lack of a legal framework for crowdfunding online platforms. However, since January 1, 2020, Russia has a Federal Law regulating the operation of online platforms. The law enshrines such concepts as utilitarian digital rights, investment platform, etc., restricts attraction of investments. The Central Bank of the Russian Federation registers these investment platforms (crowdfunding platforms). Nevertheless, experts rate high the growth potential of these sectors of the sharing economy (Fig. 4). According to the World Bank, by the end of 2020, the volume of crowdfunding will increase to \$ 90 billion.

Currently, 96.7 million people in Russia are active Internet users, which indicates the further development of the sharing economy industries. Besides, infrastructure support and operation of digital online platforms are an important condition for the development of the current and new sectors of the sharing economy. This leads

to certain structural changes in employment in the labour market. The rise of online freelance exchanges, the second largest industry in the sharing economy, opens up opportunities for increasing the share of the self-employed in the economy. In 2019, 2.5 million self-employed worked as freelancers on online platforms. Considering the current rise in unemployment in many traditional sectors of the economy, the development of online freelance exchanges can become an effective tool in solving employment problems.

Table 2 shows the digital platforms where the industries of the sharing economy in Russia are based. Held by the RAEC in 2017, the round table “Sharing Economy in Russia” provided a definition of the shared economy company. The sharing economy is defined as “an online platform that allows people and companies to unite in a community to share or exchange resources they own”.⁴ In our opinion, it is not correct to equate the concepts of “sharing economy companies” and “online platforms”. Indeed, companies operating in this area cannot exist without

⁴ The Sharing Economy. URL: https://raec.ru/upload/files/sharing_economy_facts-figures_rus.pdf (accessed on 15.05.2020).

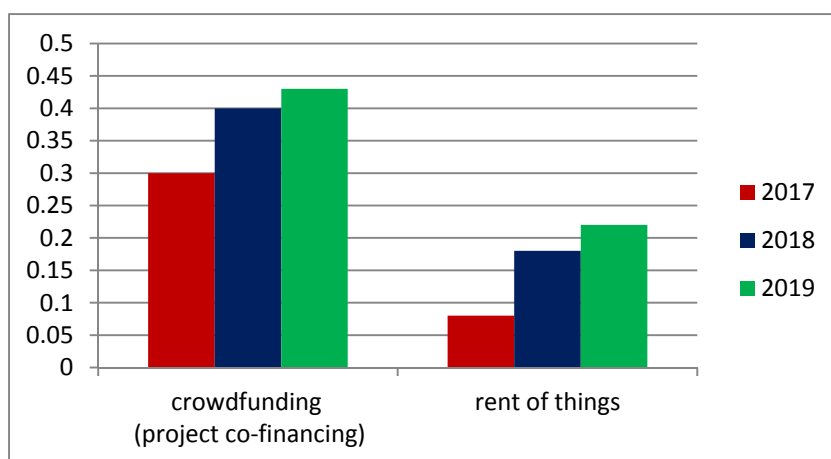


Fig. 4. Dynamics of the volume of transactions of online services in the industries of crowdfunding and rental of things in Russia, billion rubles

Source: Sharing economy in Russia. 2019. URL: <https://tiarcenter.com/sharing-report-2019/> (accessed on 28.05.2020).

a digital platform, but these concepts are not identical.

Structural shifts in the labour market are accompanied by changes in the educational services market, namely, the growth of educational online projects, 48% of which were created in 2019. By the end of 2019, about 20% of startups in Russia are educational projects. Companies have to attract staff with new competencies in IT, which stimulates the demand for educational services in this area.

First large companies appeared in the sharing economy in 2006–2007. In 2007, about 40 companies in the world attracted \$ 43 million in venture capital investments. There was a sharp increase in the number of companies both in Russia and in the world until 2015. In 2010, they more than doubled compared to 2007 and there were about 85 companies. In 2013, the number of companies was about 271. Since 2015, the growth rate of companies in the sharing economy slowed down, and in 2019, the amount of attracted venture investments on average per company decreased to \$ 4.8 million (*Table 3*).

The high growth potential of companies in the sharing economy requires a certain

institutional structure and improvement of the regulatory framework both at the national and international levels. In 2019, the international non-governmental non-profit economic organization Global Alliance of Sharing Economy (GLASE)⁵ was established. The main goal of the company is to unite the business communities of the sharing economy, facilitate the exchange of resources and business opportunities. The revenues of the sharing economy companies will grow according to the forecasts by international analytical and consulting companies such as PWC, BCG, and statista.com, as shown in *Fig. 5*.

According to the forecasts of companies such as PWC⁶, BCG and Juniper Research⁷, the development prospects for the sharing economy are quite optimistic and demonstrate high growth rates. We think, in the current global economic crisis caused by

⁵ URL: https://www.globalase.org/about_7.html (accessed on 28.05.2020).

⁶ Sharing or paring? Growth of the sharing economy. URL: <https://www.pwc.com/hu/en/kiadvanyok/assets/pdf/sharing-economy-en.pdf> (accessed on 18.03.2020).

⁷ Sharing economy revenues set to triple, reaching \$ 20 billion globally by 2020. URL: <https://www.juniperresearch.com/press/press-releases/sharing-economy-revenues-triple-reach-20bn-2020> (accessed on 23.05.2020).

the virus pandemic, considering the IPO results of the largest sharing economy companies achieved in 2019, the growth rates will be lower. In particular, before the IPO, investors estimated Uber at \$ 120 billion, but in June 2020, the company's market capitalization was only \$ 51.34 billion. Another large sharing economy company in the American market — Lyft lost more than 40% of its capitalization by the end of 2019. Another coworking company, We-Work, failed to go public with the IPO. The financial losses resulted in the companies' plans to reduce the number of employees.

DEVELOPMENT RISKS OF THE SHARING ECONOMY

Currently, the risks associated with the sharing economy are largely due to the lack of elaboration of the mechanism for protecting consumer rights, personal data, as well as the safety of individuals and legal entities using certain digital platform services [41–46]. Each sector of the sharing economy has certain specific risks. Timeshare is one of the most risky segments. Some researchers consider timeshare as a financially risky way to own a resort property reserved for a client at certain times of the year. In other words, timeshare is a shared ownership model of vacation property whereby multiple owners have exclusive use of a property for a period of time according to the timeshare agreement. Timeshare has been developed in countries such as the United States, Spain, Thailand, Israel, etc., however, a lot of countries have faced serious problems with deceived customers and unscrupulous companies. For example, the UK has launched a unique timeshare hotline service (<https://timesharehelpline.net/>). This is essentially a free service for timeshare owners and consumers provided by KwikChex.⁸ The main

risks to the development of the sharing economy, including timeshare, are as follows:

1. Unfair companies. KwikChex has estimated that in the UK well in excess of £ 150 million has been lost by consumers to the activities of unscrupulous timeshare companies over the last 5 years.⁹

2. Lack or decrease in trust to digital platform services. Companies like Uber and Airbnb, as well as other services in the sharing economy, cannot exist without the right number of users and funding. Here, an important factor is the trust of citizens, based on ensuring information security and personal data protection.

3. Pricing policy risks. There must be a clear understanding, which part of customers should be subsidized and which should be charged. Due to competition, this factor may lead to the platform shut-down. For example, ride-sharing service Sidecar appeared before Uber or Lyft, but it did not succeed. It was just impossible to create a sufficient base of drivers and passengers, as well as to attract the necessary venture capital.

4. Weak protection of customer personal data.

5. Low security of digital data exchange.

6. Timeshare is not tourist service, thus, does not have special legislative acts and regulatory institutions. In particular, there was non-profit organization “Club Companies Association of Russia”. In 2016, this organization was liquidated. In 2018, the Rus-time Association was established in Russia to protect the interests and rights of timeshare owners. Due to the great number of deceived customers, timeshare has not been properly developed in Russia.

7. It is almost impossible to sell a timeshare, since there is no secondary market for this type of service.

⁸ URL: <https://kwikchex.com/aboutus/>.

⁹ URL: <https://rdo.org/news/important-advice-re-increasing-risks-related-to-timeshare-claims-businesses/>.

Table 2

Major digital platforms by industry in the Russian sharing economy

C2C	P2P-services (online freelance exchanges)	Transport (car sharing, carpooling, means of individual mobility)	Rental of real estate (residential and office)	Crowdfunding (co-financing of projects)	Rental of items
Avito	Avito	Uber	Avito	Planeta.ru	Next2U.ru
Youla.ru	Youla.ru	Yandex.ru/drive	Airbnb	Boomstarter	RentMania
VK.com	Youdo	Delimobil.ru	Cian.ru	Crowdrepulic	Avito
Odnoklassniki.ru	Profi.ru	Belkacar	Regus	Kickstarter	
Instagram	freelancehunt	Blablacar	Workki		
	fl.ru	VK.com	Sok		
	freelancehunt	Odnoklassniki.ru	Wework		
	freelance.ru	Poehalivmeste	Deworkacy		
	weblancer	Samocat	Coworkstation. ru		
	kwork	Whoosh			
	kadrof	Togo			

Source: compiled by the authors.

Table 3

Global dynamics of the number of companies and the volume of attracted venture capital investments in the sharing economy

Indicator	2007	2010	2013	2016	2019
Number of companies	40	85	271	420	768
Growth rate of the number of companies, %		213	319	155	183
Venture capital investments, USD million	43	130	1740	23 400	3700

Source: compiled by the authors based on ListoTop Sharing economy data. URL: <https://www.crunchbase.com/hub/sharing-economy-companies#section-people> (accessed on 23.05.2020).

8. Property risks associated with possible damage or loss of property value. This is particularly relevant for rental of real estate and timeshare.

9. Financial risks associated with the fact that the development of the sharing economy requires venture capital investments in online platforms. At the same time, it is difficult to reach breakeven. In particular, many car sharing services are still unprofitable. The net loss of Uber reached 8.5 billion dollars by the end of 2019.

9. The legal and regulatory framework for the sharing economy companies requires significant improvement in terms of consolidating the basic concepts (timeshare, car

sharing, freelancing, etc.), as well as regulating labour legal relations, taxation and digital security issues. In 2020, the US court recognized Uber and Lyft drivers full employees, and not independent contractors, as before. This incurs additional costs for Uber and Lyft related to benefits, including overtime, guaranteed minimum wages and insurance.

Thus, the development of the sharing economy involves certain risks. Establishing a legal framework for all participants in the cooperative economy can reduce these risks. The sharing economy can be built into the business ecosystem as a whole only in case it is regulated by laws.

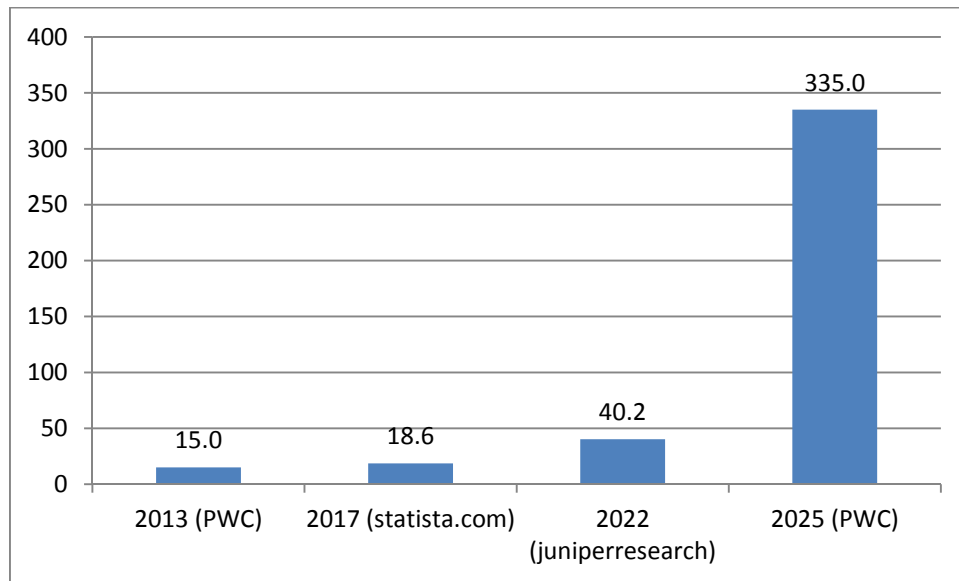


Fig. 5. Global sharing economy revenue, billion rubles

Source: Sharing or paring? Growth of the sharing economy. URL: <https://www.pwc.com/hu/en/kiadvanyok/assets/pdf/sharing-economy-en.pdf> (accessed on 18.03.2020); Revenue of platform providers in the sharing economy worldwide in 2017 and 2022. URL: <https://www.statista.com/statistics/878844/global-sharing-economy-revenue-platform-providers> (accessed on 23.04.2020); Sharing economy revenues set to triple, reaching \$ 20 billion globally by 2020. URL: <https://www.juniperresearch.com/press/press-releases/sharing-economy-revenues-triple-reach-20bn-2020> (accessed on 23.05.2020).

ASSESSING THE IMPACT OF INVESTMENTS IN THE SHARING ECONOMY ON THE EMPLOYMENT STRUCTURE

Important qualitative parameters of Russian and foreign labour markets is the employment structure by type of economic activity [47]. We believe that investments in developing the sharing economy sectors will contribute to intensive structural changes in the labour market. We cannot build a correct regression model allowing to assess the employment growth in the field of information and communications under the influence of investments in the sharing economy, since the statistics for the development of the sharing economy sectors in Russia cover only 2017–2019. However, the statistics on investment and employment in the sharing economy sector for foreign countries allowed us to build a regression model to assess the impact of investment in the sharing economy on employment

growth in this sector. We carried out all calculations in the Ipython Notebook program in the Python programming language. The graphs were built by means of the Matplotlib.pyplot module, and the regression model used the Scipy, Numpy, SkLearn modules.

The resulting indicator was the employment in the sharing economy sectors, and the free variable was the total venture capital investments attracted by these companies. The model exploited the data from 50 sharing economy companies.¹⁰

The correlation coefficient for a free variable was determined by the formula

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{n\sigma_x\sigma_y},$$

¹⁰ List of top Sharing economy. URL: <https://www.crunchbase.com/hub/sharing-economy-companies#section-people> (accessed on 23.05.2020).

where n is the number of observations; x is the values taken by variable X ; y is the values taken by variable Y ; \bar{x} , \bar{y} are average values of X and Y ; σ is the standard deviation of the corresponding statistically significant factor attribute.

The correlation coefficient for variable X_1 (total venture capital investments) was 0.795.

To build a regression model, we find a linear approximation by the least squares method:

$$B_1 = 7.28,$$

$$B_0 = 2522.13.$$

The general regression model is as follows:

$$Y = B_0 + B_1 \cdot x_1 + B_2 \cdot x_2 + \dots + B_n \cdot x_n.$$

We get the following regression model:

$$Y = 7.28 \cdot x_1 + 2522.13.$$

The determination coefficient was $R^2 = 0.91$.

Fig. 6 shows aligning regression model and data.

The correlation and regression analysis showed that investments in the development of the sharing economy lead to the growth of employees in this sector. The rapid growth of employees in sharing economy companies leads to structural shifts in the labour markets in the countries with investments in this sector, primarily China, the USA, Germany, and France. Currently, 12 global platforms in Europe dominate in many sectors of the economy. According to a study published in 2016, there are about 176 global platforms in the world, most of which are concentrated in Asia and North America (Peter C. Evans, Annabelle Gawer, 2016) [31]. The market capitalization of these public companies exceeds \$ 4 trillion. The number of employees in these companies exceeded 1308 million people. The specific impact of digital platforms on employment and labour markets is that their functioning implies employment growth due to the creation of third-party ecosystems, which is proved by a number of studies (*Table 4*).

Since the first companies in Russia are quite recent — Avito (2007), Uber (2009), Youdo (2012), Profi.ru (2014), Youla (2015), Yandex Drive (2018), etc. — the indicators of the sharing economy are not high enough compared to the countries such as China and the United States. At the same time, the development of this sector impacts the labour market, which also experiences employment structural shifts. *Table 5* shows the structure of employment by type of economic activity in the Russian labour market.

We divided all economic activities into five main groups. We combined them according to the methodological approach proposed by A. V. Kashepov [48]. This approach is based on the expert assessment of economic activities divided into “conditionally regressive”, “conditionally neutral” and “conditionally progressive”. An important supplement of this study is that “conditionally regressive” activities include agriculture and mining (Group I), “conditionally neutral” — utilities and social services, public administration (Group III), and “conditionally progressive” activities include the ones from Groups II, IV and V.

Thus, considering the employment structure in the Russian labour market by type of economic activity, we noted structural changes in all five groups in the period of 2005–2019. Compared to 2005, in 2019, there was a decrease in the share of employees in Group I and Group II in the employment structure in the Russian labour market. The increase in the share of employees was in Groups II, IV and V. Investments in the sharing economy became more active in 2014–2015, although the first company in this sector, Avito, appeared in 2007. In 2019, the number of employees in the field of information and communications increased, as well as in professional, scientific and technical by 146% compared to the base year of 2005. *Table 6* shows the growth rates of the number of employees by groups.

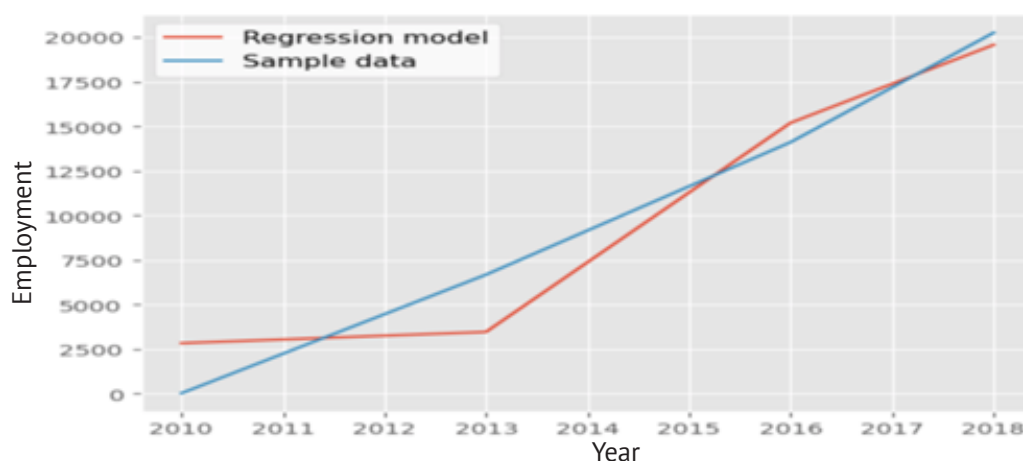


Fig. 6. Aligning Regression Model and Data

Source: compiled by the authors.

Table 4

Geographical distribution of economic platforms of publicly traded companies

Region	Number of platforms	Market capitalization, USD billion	Number of employees, million
Asia	82	930	352
North America	64	3123	820
Europe	27	181	109
Africa and Latin America	3	69	27
Total	176	4303	1308

Source: Peter C. Evans, Annabelle Gawer. The Rise of the Platform Enterprise A Global Survey. URL: https://www.thecge.net/app/uploads/2016/01/PDF-WEB-Platform-Survey_01_12.pdf (accessed on 23.05.2020).

Table 5

The structure of employment by type of economic activity in the Russian labor market

Indicator	2005		2009		2013		2019	
	People, thousand	Share, %	People, thousand	Share, %	People, thousand	Share, %	People, thousand	Share, %
Employed – total	66 191	100	69 410	100	71 391	100	71 933	100
Group I (agriculture, mining)	7 948	12	7 100	10	6 532	9	5 827	8
Group II (manufacturing, construction)	16 297	25	15 234	22	15 723	22	15 250	21
Group III (utilities and social services, public administration)	19 704	30	22 500	32	22 654	32	23 091	32
IV group (trade, transportation and storage, hotels, catering, finance and insurance, real estate)	18 501	28	20 247	29	21 825	31	22 299	31
Group V (activities in the field of information and communication, as well as professional, scientific, technical)	3 740	6	4 330	6	4 657	7	5 467	8

Source: Labour market, employment and wages. URL: https://gks.ru/labour_force (accessed on 28.05.2020).

Table 6

Growth rates of the number of employed in the context of the grouped types of economic activity, compared to the base year 2005, %

Groups of economic activities	2006	2009	2013	2016	2019
Group I (agriculture, mining)	101	89	82	81	73
Group II (manufacturing, construction)	102	93	96	94	94
Group III (utilities and social services, public administration)	104	114	115	119	117
IV group (trade, transportation and storage, hotels, catering, finance and insurance, real estate)	108	109	118	120	121
Group V (activities in the field of information and communication, as well as professional, scientific, technical)	110	116	125	133	146

Source: Labour market, employment and wages. URL: https://gks.ru/labour_force (accessed on 28.05.2020).

The number of employees mostly increased in Group V, and the growth rate increased in 2019. Thus, the need for employees with professional competencies in the field of information and communication, scientific and technical spheres is increasing more intensively.

The sharing economy sectors developing in Russia have a significant impact on the labour market and its structure, because:

1. They contribute to the growth of employees in the IT and high-tech sectors of the economy, as evidenced by employment structural changes by type of economic activity (the share of employees in “conditionally progressive” types of activities is increasing).

2. The development of sectors such as on-line freelance exchanges and transport contributes to the legalization of the gray labour market. This is traced in the increase of self-employed citizens and the decrease in the number of illegal employees in the taxi market. This is proved by the research that studied the influence of Uber on the socio-economic development of Russia in the cities with a million-plus population: Moscow, St. Petersburg, Kazan, Yekaterinburg and Novosibirsk [49]. Published in 2017, this research estimated the future development of Uber in case of optimistic scenario. The scenario assumes total employment legalization in the market by 2020 and the transition of the illegal workers to the Uber system. Optimistically, due to the development of only one sharing economy company, the number of legal employees in the economy of the cities may reach 23.7 thousand people. [49]. The advantages of sharing economy companies in the transport services segment are: the ability to independently determine the work schedule, the ability to organize self-employment for many categories of the population, including the unemployed, the opportunity to earn.

3. Investments in the sharing economy companies create a demand for highly qualified personnel, since they function on digital online platforms [50]. Looking ahead, investments in the progressive sectors of the sharing economy will require higher levels of education, communication and cognitive abilities, as data collection and processing will be carried out by means of artificial intelligence and machines.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, we provide recommendations to solve employment problems. The implementation of these recommendations will improve the labour market and increase the investment attractiveness of the most important sectors in the sharing economy.

First, it is necessary to make a system to measure the sharing economy and account for it in official statistics. This will allow assessing the development of the sharing economy sectors and their impact on the quantitative and structural parameters of employment in the Russian labour market.

From the perspective of the state regulation and the impact on the processes in the labour market, it is necessary to provide a regulatory framework for the digital platforms, to form a legislative framework for their activities in the field of labour relations, labour rights, taxation and investment issues.

Another important direction is to guarantee the confidentiality of personal data and safety of citizens participating in the sharing economy.

The above measures and directions for improving state regulation of the sharing economy will accelerate its intensive development and enhance the positive influence on the Russian labour market.

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