



ROLE OF INNOVATION AS A COMMUNICATION CHANNEL IN THE DIGITAL ECONOMY

PAPEL DA INOVAÇÃO COMO UM CANAL DE COMUNICAÇÃO NA ECONOMIA DIGITAL

VALERIIA SEMENOVA

Moscow Polytechnic University, Russia. Orcid: <https://orcid.org/0000-0001-7625-9033>
E-mail: semenova.valeriia.v@yandex.ru

NINA GORIDKO

Peoples' Friendship University of Russia (RUDN University), Russia. Orcid: <https://orcid.org/0000-0001-8961-0232> E-mail: alisavalera@rambler.ru

ROBERT NIZHEGORODTSEV

V.A. Trapeznikov Institute for Control Studies RAS, Russia. Orcid: <https://orcid.org/0000-0003-3798-4835> E-mail: bell44@rambler.ru

ANNA GOROKHOVA

V.A. Trapeznikov Institute for Control Studies RAS, Russia. Orcid: <https://orcid.org/0000-0002-5820-1687> E-mail: agor_80@mail.ru

VLADIMIR SEKERIN

V.A. Trapeznikov Institute for Control Studies RAS, Russia. Orcid: <https://orcid.org/0000-0002-2803-3651> E-mail: bcintermarket@yandex.ru

ABSTRACT

Objective: The article examines the role of innovation as a communication channel within the digital economy, emphasizing its impact on socio-economic development and effective innovation management.

Method: The study utilizes an analytical approach, reviewing existing literature, including academic journals, industry reports, case studies, and theoretical works on innovation, communication, and the digital economy.

Results: The research highlights that innovation acts as a communication channel that facilitates the interaction between consumers and manufacturers, leading to improved decision-making and sustainable development. It underscores the transformation of socio-economic processes through innovative communication strategies.

Conclusion: The study concludes that viewing innovation as a form of communication enhances the effectiveness of socio-economic development and aids in the adoption of sustainable development practices. It stresses the need for effective communication strategies to manage the noise and ensure the utility of innovations.

Keywords: Innovation, Communication, Knowledge economy, Innovative knowledge, Need, Technology, Resource, Development.





RESUMO

Objetivo: O artigo examina o papel da inovação como um canal de comunicação dentro da economia digital, enfatizando seu impacto no desenvolvimento socioeconômico e na gestão eficaz da inovação.

Método: O estudo utiliza uma abordagem analítica, revisando literatura existente, incluindo periódicos acadêmicos, relatórios do setor, estudos de caso e trabalhos teóricos sobre inovação, comunicação e economia digital.

Resultados: A pesquisa destaca que a inovação atua como um canal de comunicação que facilita a interação entre consumidores e fabricantes, levando a uma tomada de decisão melhorada e desenvolvimento sustentável. Sublinha a transformação dos processos socioeconômicos através de estratégias de comunicação inovadoras.

Conclusão: O estudo conclui que a visualização da inovação como uma forma de comunicação aumenta a eficácia do desenvolvimento socioeconômico e auxilia na adoção de práticas de desenvolvimento sustentável. Enfatiza a necessidade de estratégias de comunicação eficazes para gerenciar o ruído e garantir a utilidade das inovações.

Palavras-chave: Inovação, comunicação, economia digital, desenvolvimento socioeconômico, desenvolvimento sustentável.

INTRODUCTION

The global development of humankind at all times depended on information: the acquisition of new knowledge (innovation), its storage and use for the benefit of society determining its current state and priority directions (Korlyarova et al. 2023; Zaitseva, 2023). In connection with global political and economic changes, the importance of information capable of carrying new knowledge (innovation) has increased (Bobkov et al. 2020). The main method of transmitting information evolutionarily is communication (Hernández García de Velazco, 2022). Due to the development of digital technologies, it acquires new characteristics, expanding the possibilities of collecting, processing, storing, and using information in the creation of innovative knowledge, products, and technologies (Sergeeva et al. 2023). While forming a knowledge economy, information is considered a source of new knowledge (innovation), thereby being the basis for the socio-economic development of the modern world community through the creation and implementation of innovations (Kenzhin et al. 2021). However, information has two components: useful information (signal) which contributes to technological evolution, and destructive information (noise) which poses a danger to socio-economic development (Sørensen & Whitta-Jacobsen, 2010).





Competitive advantages both at the national and international levels are determined by innovative technologies, as well as their use in significant socio-economic processes (Koval et al. 2023; Zhdanova, 2023). Modern digital technologies are defined as information technologies as they are based on the use of information to achieve technological, social, and economic progress (Batashev et al. 2023). The ability to use more information as a source of knowledge necessary for the development of knowledge has historically been a stimulus for socio-economic development (Matvienko et al. 2022; Voronina et al. 2023). For example, the invention of the printing press caused an explosive growth of information and promoted economic growth (Figure 1) (Silver, 2021).

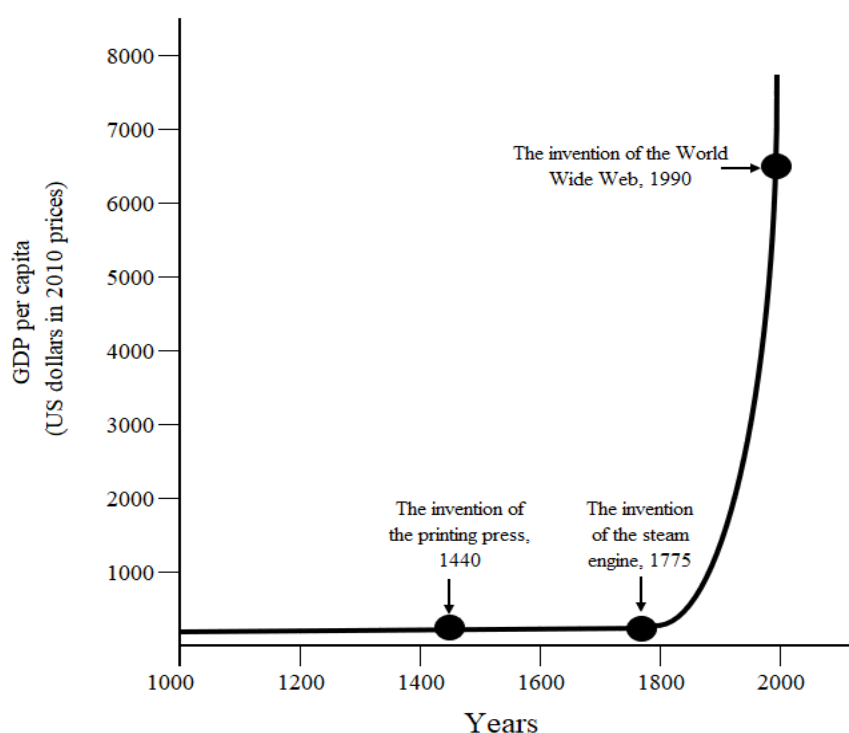


Figure 1. Global GDP per capita growth (Silver, 2021)

However, “whenever information grows faster than our understanding of how to process the data obtained, there is a danger. The last 40 years of human history have shown that turning information into useful knowledge can take a long time and that if we are not careful enough, we can easily take a step backward” (Silver, 2021, p. 120). This quote defines the current problems of global development (Abdullaev et al. 2023). Digital technologies have caused an information boom, as a result of which large volumes of information are not always as constructive and useful as innovative knowledge, i.e., they cause social (Grudtsina et al. 2022), economic, and political



crises (Bodina & Telysheva, 2023). The fact that technological development exceeds a person's ability to adapt to it is confirmed by the appeal of E. Musk (Future of Life Institute, 2023) and several leading IT specialists. If we compare the traditional economy and the knowledge economy (digital economy) (Muradyan et al. 2023), here is the key difference: in a traditional society, strategic factors of economic growth are determined by the availability of material and human resources, as well as new sources of energy; the formation and development of the knowledge economy is based on intangible information and communication factors (Mityakov et al. 2023; Loseva et al. 2023). The combination of information and communication factors forms knowledge disseminated through information-based communication (Voskresensky et al. 2024; Olshyang et al. 2024).

We need to use various types of analysis to put forward hypotheses, confirm or refute them, compare the results obtained and scientific theories, justify their use, review current approaches to the study of innovations and modern communications within the digital economy under formation, and consider features and patterns of innovation activity, which is reflected by a continuous transformation of socially significant processes at all levels of the social hierarchy. In the modern business environment, innovation is the only reliable resource that ensures survival. Innovation is based on new knowledge. In the emerging knowledge economy, a competitive advantage in any area is one's ability to create and use new knowledge (Franken & Braganza, 2006). Competition is more unpredictable when it is based on new knowledge in the form of innovation and its flexible use, rather than on efficiency. Unpredictability stipulates the need for more effective communication between the consumer and the manufacturer.

The modern consumer has new qualities and characteristics. For example, they have higher expectations for manufacturers to meet their needs. The main features of the modern consumer are as follows: a relatively high level of education, significant disposable income, a variety of consumer choices, and knowledge of the basic mechanisms of business processes. Clients (consumers) are the drivers of growth. Establishing lifelong relationships with clients is the core of a smart organization in the 21st century (Duffy, 2000).

Innovation is becoming a competitive advantage that can ensure the survival of not only an organization but also the economy. Innovation and everything related to its creation (the emergence of a new idea or new knowledge, the transformation of





knowledge into an innovative product, ways to promote innovative products, the creation of new markets, the emergence of new needs and ways to satisfy them), promotion, and use is eagerly sought knowledge since it forms the knowledge economy and develops IT.

This study sets the task of substantiating the assumption that innovation in modern society plays the role of communication between a business-literate and demanding consumer and a producer of goods who cannot produce “the same thing” but is forced to produce “something new” (innovation) to ensure their survival and meet market demands.

METHODS

This article adopts an analytical approach to study the intricate relationship between innovation and communication within the digital economy.

Within the framework of this article, the main method of data collection is an extensive review of existing literature, including academic journals, industry reports, case studies, and theoretical works on innovation, digital economy, communication, and socio-economic development.

An evaluation criterion is established to assess innovations, focusing on the efficiency of the communication process, the mitigation of noise, and socio-economic results. These criteria are applied systematically to the reviewed case studies and theoretical insights to assess the effectiveness of various innovations as exemplified by communication channels.

RESULTS

The term “communication” has become a common word for modern people. This is explained primarily by its relevance and wide use by the professional media in scientific theories, practices, and research and in everyday life. Indeed, such popularity implies many definitions of this term, with each definition emphasizing the area of knowledge or practice in which it arose and is used.

Within the framework of this study, the basis for understanding communication is the definition given by R. Verderber and K. Verderber (2003): “Communication is the process of creating and transmitting meaningful messages in an informal conversation, group interaction or public speaking. This process includes participants, context,





channel, presence or absence of noise, and feedback” (p. 16). This definition of communication can be considered classic and contains two components:

- Communication is the process of creating and transmitting meaningful messages in an informal conversation, group interaction, or public speaking;
- Communication involves participants, context, channel, presence or absence of noise, and feedback.

The development of social interaction technologies is rapid. Therefore, the above-mentioned definition needs to be corrected and clarified with due regard to current changes.

In modern society, the “process of creating and transmitting meaningful messages” refers to the creation and transmission of information of a certain quality, content, and volume. Due to the development of IT, channels can unite and create information flows. The possibilities for communication have become much greater due to the Internet, which is the most significant digital IT of the last century.

Considering new parameters influencing the communication process, the following definition of communication can be formulated: “Communication is the process of creating and transmitting information from the sender to the recipient”. This definition is more specific and traces the direction of information flows.

However, the second part of the classical definition of communication has remained unchanged: communication still requires participants, context and messages (information in the modern sense), channels in which noise may or may not be present, and feedback that determines the effectiveness of communication (Figure 2). During the transition from one state to another, information can be distorted. Let us consider the communication process based on the proposed definition:

- Sender: a person thinks one thing, but for various reasons, they do not always convey their thoughts accurately. For example, they cannot find the necessary words to convey their thoughts, so the encoding process often contains distortions;
- Coding: the transmission of encoded information through communication channels also requires some transformation, which may be associated with the rules for transmitting information through a given channel (cultural, speech-based, technical, political, etc.);
- Channel: almost every information transmission channel to one degree or another contains noise that can change the context;



– Channel-decoding: during decoding, information that already has inaccuracies compared to the original data acquires new distortions determined by the individual characteristics of the recipient and the environment in which the latter received the information;

– Decoding-recipient: the processes of comprehending, accepting (decoding), and creating (encoding) information are characterized by a high degree of individuality in the perception, interpretation, and use of the information received; a review of the usefulness of the information received should be included into feedback or feedback communication.

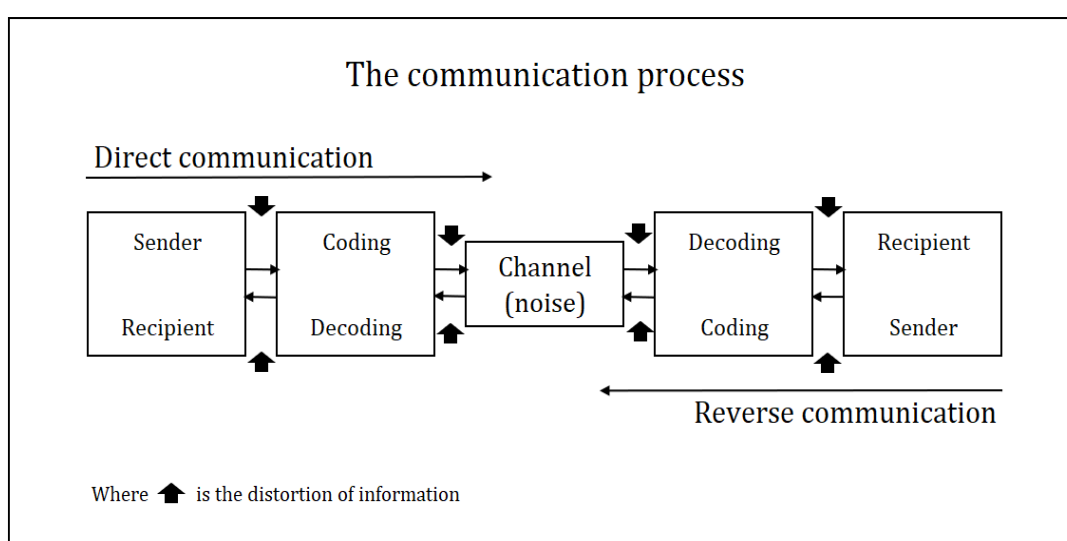


Figure 2. The communication process (forward and backward communication)

Communication is an evolutionarily formed way of exchanging information (regardless of its form): gossip, conversations, tests, drawings, knowledge, news, scientific theories and discoveries, technological diagrams, symbols, signals, etc. Since the concept of communication permeates all spheres of human interaction, such concepts as cultural communication, intercultural communication, social communication, political communication, etc. have emerged. We can say that communication, along with economics and politics, form the “three pillars” of modern human society. Communication lays the basis for any professional activity and acquires specific characteristics inherent in the field of activity in which it is implemented. Therefore, it is possible to consider, study, and develop innovative technologies that increase the effectiveness of social communication, medical communication, marketing communication, political communication, economic communication, etc.



However, the development of digital technologies involves not only new communication technologies and channels (flows) of transmission, processing, storage, and use of information but also grants the opportunity to consider the development, creation, and implementation of innovation as the communication process (a type of economic communication). Since the basis of digital IT is innovation, drawing an analogy between the process of communication and the creation of innovation, innovation can be considered the result of communication (interaction) between the consumer and the producer of this innovation (Figure 3). The consumer's request for innovation, when transferred to the manufacturer, undergoes distortion in the same way as in the case of communication:

- Consumer-coding: the consumer is not always aware of their needs, and some needs may not be conscious, however “the most important thing in communication is to hear what was not said” (Drucker, 2015, p. 26). Modern technologies require constant innovation (improvement, transformation, modernization) to survive in the market, but many of them can be regarded as noise that hinders the consumer from understanding their needs or their changes and correctly transmitting their request to the manufacturer;

- Coding-channel: the use of modern technologies aimed at studying the target audience (marketing research, problem interviews, etc.) helps the consumer to encode information. They can also be considered channels for transmitting information that contains noise of different origins;

- Channel: modern IT allow to make the channel of interaction between the customer of an innovation and the manufacturer of an innovation almost noiseless. However, it is impossible to avoid noise completely. In addition, there is always a danger of identifying meaningful information as noise, and vice versa;

- Channel-decoding: the same message from a consumer to different manufacturers competing with each other for a given consumer or market segment can be decoded differently, which also distorts the initial request from the consumer;

- Decoding-manufacturer: the manufacturer decodes the request for such an innovation based on its capabilities, resources, expected benefits, and future developments, which also transforms the initial request. According to P.F. Ducker (2015), “the goal ... is to know and understand the customer so well that the product or service fits them and sells itself” (p. 53). The use of IT, in which some channels can be characterized as practically noiseless (the others contain too much noise of artificial



origin: informational stuffing, fakes, etc.), cannot ensure a perfect match of the information encoded and decoded (Figure 3).

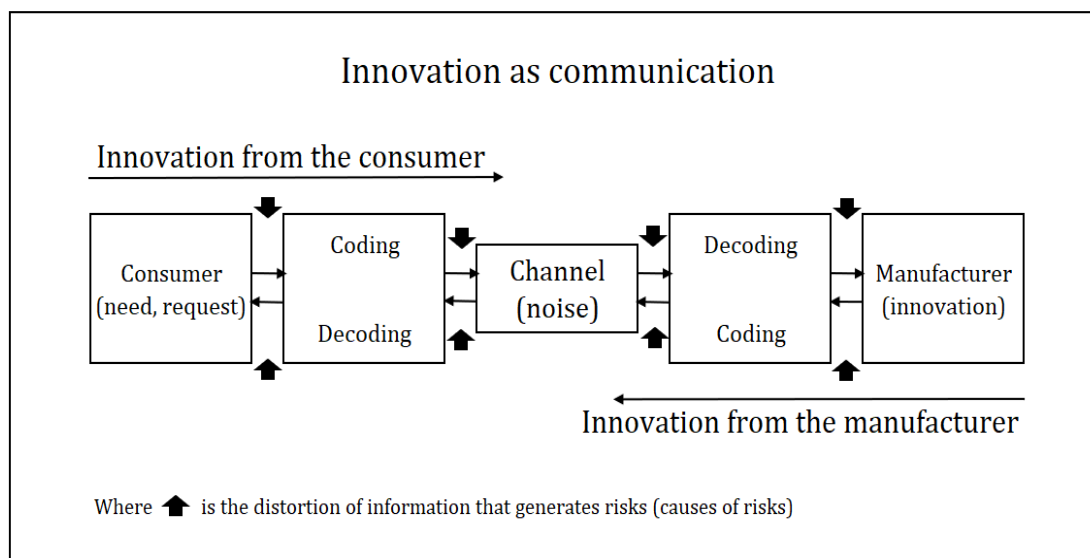


Figure 3. Innovation as communication

DISCUSSION

If we understand the creation of innovation in such a way (the innovation process), two options are possible (Figure 3):

1. The consumer (client) becomes the initiator of innovation, which is comparable to direct communication. In this case, innovation is determined by a social need that has formed and requires satisfaction, while the request to satisfy this need can be both at the macro and micro levels, and the need itself can take various forms (product, service, knowledge, etc.). Innovation is a response to the consumer's request that has a certain need and should be satisfied (Semenova et al., 2023b).

2. The initiator of innovation is the manufacturer. For the manufacturer, innovation represents a value realized in the form of a resource since innovation in modern conditions ensures survival in fierce competition and provides competitive advantages. Thus, innovation is not only a need whose satisfaction ensures stability and development but also a necessity that ensures competitiveness and survival. This form of innovation represents a resource for long-term development and contributes to the formation of leadership in the market (Semenova et al., 2023a).

Continuing with the analogy of communication and innovation, one of the main problems of the communication process is the transformation and distortion of information, which causes a decrease in economic efficiency, loss of profits, and



increased costs. The development of IT based on innovation has raised requirements both for the key characteristics of information, including accuracy and reliability, transferring it into the category of knowledge, and for information channels, their purity and accuracy. Any distortion of information can cause bankruptcy, man-made disasters, or political conflicts. Distorted information during its transfer from the customer (consumer) to the contractor (manufacturer) represents a risk (**R**). In this case, the portfolio of innovation risks is a weighted sum of such risks in the process of transfer and transformation of information from the customer to the contractor, which does not contradict the basic economic postulates (equitation 1).

$$R = \sum_{i=1}^n c_i R_i$$

Equitation 1. Risk of the innovation process (where c is the weight coefficient of noise in the information channel)

The ability to assess the risk caused by information distortions allows one to select an alternative channel that reduces noise. In addition, the analysis of noise risks at each stage of information transmission determines which stage is most susceptible to noise impacts and helps develop ways to reduce noise, i.e., the risk of information distortion, etc.

CONCLUSIONS

Political and economic instability increases fierce competition in all spheres of activity. Information used to produce new knowledge, the flexibility of using new knowledge to meet social needs, the ability to generate and implement new ways to satisfy needs – all this not only forms reliable competitive advantages that ensure the viability of business processes but also helps to secure a leading position. This is evidence of the constructive use of information (new knowledge) to create innovations. This ensures technological independence and sovereignty. Information distortions that lead to the creation of an innovation that does not meet the consumer's needs can be a fatal mistake for the manufacturer and lead to bankruptcy, loss of independence, loss of competitiveness, etc. According to some experts, "a sharp reduction in the costs of communication and information processing with a growing role of the knowledge necessary for their use" (Cowan & Foray, 1997, p. 595) has led to the fragmentation of actions and a project approach in organizing the work of enterprises and organizations.





This circumstance may also be the cause of additional innovation risks (noise) discussed in this article.

REFERENCES

- Abdullaev, I., Prodanova, N., Bhaskar, K. A., Lydia, E. L., Kadry, S., Kim, J. (2023). Task offloading and resource allocation in iot based mobile edge computing using deep learning. *Computers, Materials & Continua*, 76(2), 1463-1477. doi: 10.32604/cmc.2023.038417
- Batashev, R., Ollanazarov, B., & Shichiyakh, R. (2023). Impact of innovative activities in the process of education of future specialists of the tourism industry. *Revista Gestão & Tecnologia*, 23, 278-286. <https://doi.org/10.20397/2177-6652/2023.v23i0.2723>
- Bobkov, V. N., Simonova, M. V., Loktyuhina, N. V., & Shichkin, I. A. (2020). Peculiarities of unstable employment in the era of a digital economy from data of social media of Russia. *Digital Transformation of the Economy: Challenges, Trends, and New Opportunities. Advances in Intelligent Systems and Computing*, 908, 235-243.
- Bodina, E. A., & Telysheva, N. N. (2023). Actual problems of higher education in the modern world. *Anthropological Didactics and Upbringing*, 6(6), 28-35.
- Cowan, R., & Foray, D. (1997). The Economics of codification and the diffusion of knowledge. *Industrial and Corporate Change*, 6(3), 595-622.
- Drucker, P. F. (2015). *Innovation and entrepreneurship: Practice and principles*. London; New York: Routledge, 346 p.
- Duffy, J. (2000). Measuring customer capital. *Journal of Strategy & Leadership*, 28(5), 10-15. <https://doi.org/10.1108/10878570010379392>
- Franken, A., & Braganza, F. A. (2006). Organizational forms and knowledge management: One size fits all? *International Journal of Knowledge Management Studies*, 1(1-2), 18-37. <https://doi.org/10.1504/IJKMS.2006.008843>
- Future of Life Institute. (2023). Ilon Mask prizval priostanovit razrabotku i obuchenie neirosetei. Podpisi pod otkrytym pismom postavili bolee 1000 ekspertov [Elon Musk called for suspending the development and training of neural networks. More than 1,000 experts signed the open letter]. <https://futureoflife.org/open-letter/pause-giant-ai-experiments/>
- Grudtsina, L., Guliyeva, M. E. kyzy, Zhdanov, S., Sangadzhiev, B., & Shestak, V. (2022). Application of Digital Technologies in Law. *Jurnal Cita Hukum*, 10(3). LP2M Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta. <https://doi.org/10.15408/jch.v10i3.26095>
- Hernández García de Velazco, J. J. (2022). Sociedades del conocimiento y ciencia abierta en la nueva normalidad. *JURÍDICAS CUC*, 18(1), 1–4. Recuperado de <https://revistascientificas.cuc.edu.co/juridicascuc/article/view/4475>





Kenzhin, Z. B., Tulegenova, A. U., Zolkin, A. L., Kosnikova, O. V., & Shichkin, I. A. (2021). Labour market under economy digitalization. E3S Web Conf., 311, 08007. <https://doi.org/10.1051/e3sconf/202131108007>.

Kotlyarova, V., Isakova, G., Vaslavskaya, I., Gorlova, O., Putrik, I., & Molochnikov, N. (2023). Impacto da civilização tecnogênica na evolução do pensamento científico. Synesis, 15(4), 172–184. <https://seer.ucp.br/seer/index.php/synesis/article/view/2741>

Koval, V. N., Protsevsky, V. A., & Zenin, S. S. (2023, July). Environmental Policy and Law In The New Reality. Journal of Law and Political Sciences, 38(3), 95.

Loseva, A., Balashova, I., Lymareva, O., Prikhodko, A., Gayazova, S., & Shelygov, A. (2023). Oportunidades y desafíos en la preservación del capital intelectual y humano: estrategias para la preparación en un contexto socioeconómico complejo. Nexo Revista Científica, 36(03), 352–362. <https://doi.org/10.5377/nexo.v36i03.16457>

Matvienko, E., Zolkin, A., Suchkov, D., Shichkin, I., & Pomazanov, V. (2022). Applying of smart, robotic systems and big data processing in agro-industrial complex. IOP Conference Series: Earth and Environmental Science, 981, 032002. <https://doi.org/10.1088/1755-1315/981/3/032002>

Mityakov, S., Bolonicheva, T., Kolesov, K., Mityakova, O., & Murashova, N. (2023). El análisis comparativo de los modelos de transformación ESG de sistemas socioeconómicos en varios países. Nexo Revista Científica, 36(05), 147–168. <https://doi.org/10.5377/nexo.v36i05.17303>

Muradyan, S., Mikhaylenko, N., Skachko, A., Ivanova, Y., Rogachev, E., & Alimamedov, E. (2023). Mining of cryptocurrencies: Analysis of law enforcement practice and problem solving in legal regulation. *Jurnal Cita Hukum*, 11(1), 21–32. LP2M Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta. <https://doi.org/10.15408/jch.v11i1.31161>

Olshvang, O., Gvozdeva, D., Deputatova, N., Batueva, A., Sokolova, N., & Tretyak, E. (2024). The motivation of master's students with the use of online courses. *Revista Conrado*, 20(97), 441-448. Recuperado de <https://conrado.ucf.edu.cu/index.php/conrado/article/view/3677>

Semenova, V., Petukhov, N., Skachkova, M., & Trenev, N. (2023a). Innovation as a necessary condition for the formation of the knowledge economy: A view from Russia. *Revista Relações Internacionais do Mundo Atual Unicuritiba*, 2, e-6527.

Semenova, V., Sekerin, V., Gorokhova, A., & Gayduk, V. (2023b). Influence of innovative educational technologies on the formation of the knowledge economy. *Revista Conrado*, 19(92), 165-169.

Sergeeva, S., Gladilina, I., Bulochnikova, N., Shichkin, I., Kochetkov, E., & Filonova, A. (2023). Impact of Green Fintech Solutions on Achieving ESG Principles. *Revista Gestao & Tecnologia-Journal of Management and Technology*, 23(1), 335-345.

Silver, N. (2021). The signal and the noise: Why most predictions fail – But some don't. New York: Penguin Group, 534 p.





Sørensen, P. B., & Whitta-Jacobsen, H. J. (2010). *Introducing advanced macroeconomics: Growth and business cycles* (2nd ed.). Edinburgh; Berkshire: McGraw-Hill education.

Verderber, R., & Verderber, K. (2003). *Psikhologiya obshcheniya [Communicate!]*. St. Petersburg: PRAIM EVROZNAK, 320 p.

Voronina, L., Iakhiaev, D., Grigorishchin, A., Shiryaevsky, D., & Oshomkov, T. (2023). Assessing the influence of factors on the development of digital infrastructure in Russia. *Revista Gestão & Tecnologia*, 23(3), 323-332. <https://doi.org/10.20397/2177-6652/2023.v23i3.2749>

Voskresensky, A., Elchishcheva, E., Romanenko, I., & Romanenko, Y. (2024). Futurology of education: anthropological and educational strategies in a post-global world. *Revista Conrado*, 20(96), 575-581. Recuperado de <https://conrado.ucf.edu.cu/index.php/conrado/article/view/3618>

Zaitseva, A. (2023). Perspectivas filosóficas sobre a política linguística estatal e seu impacto no desenvolvimento da terminologia russa em robótica. *Synesis*, 16(1), 253–265. <https://seer.ucp.br/seer/index.php/synesis/article/view/2906>

Zhdanova, O. A. (2023). Digital Financial Assets As Links Between The Innovation, Intellectual Property, And Financial Markets. *Journal of Law and Political Sciences*, 36(1), 72.

