



FEATURES OF QUALITY MANAGEMENT OF ELECTRONIC SERVICES IN UKRAINE IN THE CONDITIONS OF DIGITALIZATION

Características da gestão da qualidade dos serviços eletrônicos na Ucrânia nas condições de digitalização

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ABSTRACT

Purpose – to investigate the features of quality management of electronic services in Ukraine in the context of digitalization intensified by the COVID-19 pandemic. Research methodology – analysis of statistical data published in traditional media, analysis of annual monitoring studies of private commercial companies, the study of the regulatory framework, published in free access to the Internet research on the problem of managing the quality of electronic services, as well as the author's sociological research, which allows assessing the level of e-services in Ukraine. Findings – there were highlighted the main criteria for business development in a fundamentally new digital environment of communication and social interaction, due to the intensive development of IT technologies, which implies the introduction of innovative methods of working with consumers in virtual environments based on messenger platforms. The conducted sociological research made it possible to highlight the reasons for the decline in the quality of service provision due to weak cyber protection, imperfection of the regulatory framework in the context of determining quality criteria, the legal unresolved issue of responsibility for disclosing personal data of consumers, a low level of digital culture of citizens, a fairly large volume of false content, dissatisfaction with the speed of the mobile Internet. Research limitations – the lack of systematization of the types of electronic services, the imperfection of the methodology for organizing the system for managing the procedure for the provision of services, the lack of regulatory certainty, which makes it possible to establish responsibility for quality and confidentiality.

An interdisciplinary approach has led to the development of key determinants for evaluating e-service delivery. Highlighted business problems when working on Internet platforms, the elimination of which will improve the quality of electronic services. The economic, social, legal, and technical prerequisites for reducing the quality of e-services have been established, as well as a comparative analysis of the technical capabilities of mobile providers providing coverage and penetration of the Internet in the country.

Key-words: Digital life. Accessibility. Quality of the Internet. Electronic infrastructure of the state. Electronic security. Electronic government. E-service. Digital economy.

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CARACTERÍSTICAS DA GESTÃO DA QUALIDADE DOS SERVIÇOS ELETRÔNICOS NA UCRÂNIA NAS CONDIÇÕES DE DIGITALIZAÇÃO

Features of quality management of electronic services in Ukraine in the conditions of digitalization

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RESUMO

Objetivo – investigar as características da gestão da qualidade dos serviços eletrônicos na Ucrânia no contexto da digitalização intensificada pela pandemia de COVID-19. Metodologia de investigação – análise de dados estatísticos publicados em meios tradicionais, análise de estudos de acompanhamento anual das empresas comerciais privadas, estudo do quadro regulamentar, publicação em acesso gratuito à Internet investigação sobre o problema da gestão da qualidade dos serviços eletrônicos, bem como como a pesquisa sociológica do autor, que permite avaliar o nível de serviços eletrônicos na Ucrânia. Constatações – foram destacados os principais critérios para o desenvolvimento de negócios em um ambiente digital de comunicação e interação social fundamentalmente novo, devido ao intenso desenvolvimento de tecnologias de TI, o que implica a introdução de métodos inovadores de trabalho com consumidores em ambientes virtuais baseados em plataformas de mensagens. A investigação sociológica realizada permitiu evidenciar as razões do declínio da qualidade da prestação do serviço devido à fraca proteção cibernética, a imperfeição do quadro regulamentar no âmbito da determinação dos critérios de qualidade, a questão legal não resolvida da responsabilidade pela divulgação de dados pessoais de consumidores, um baixo nível de cultura digital dos cidadãos, um volume bastante grande de conteúdo falso, insatisfação com a velocidade da Internet móvel. Limitações da pesquisa – a falta de sistematização dos tipos de serviços eletrônicos, a imperfeição da metodologia de organização do sistema de gestão do procedimento de prestação de serviços, a falta de segurança regulatória, que permite estabelecer a responsabilidade pela qualidade e confidencialidade.

Uma abordagem interdisciplinar levou ao desenvolvimento de determinantes-chave para avaliar a prestação de serviços eletrônicos. Problemas de negócios destacados ao trabalhar em plataformas da Internet, cuja eliminação melhorará a qualidade dos serviços eletrônicos. Foram estabelecidos os pré-requisitos econômicos, sociais, legais e técnicos para a redução da qualidade dos serviços eletrônicos, bem como uma análise comparativa das capacidades técnicas dos provedores móveis que fornecem cobertura e penetração da Internet no país.

Palavras-chave: Vida digital. Acessibilidade. Qualidade da Internet. Infraestrutura eletrônica do estado. Segurança eletrônica. Governo eletrônico. E-serviço. Economia digital.

INTRODUCTION

The social constraints associated with the COVID-19 pandemic, which began in spring 2020, contributed to the intensification of digitalization processes and therefore became a powerful impetus for the transition from the information society to the digital one. This trend, of course, affected all, without exception, spheres of life, having the greatest impact on the economy. The transition of the business to online has actualized the issue of the quality of both electronic services and the development of the infrastructure of the Internet network, which is a platform for their provision.

Specialists of the private search engine «Surfshark» have been conducting annual testing of the digital quality of life around the world for five years – «Digital Quality of Life Index» 2021 (DQL), according to the results of the published rating Ukraine in 2021 rose by 18 positions at once and took 47th place, finding ourselves between the Philippines and Serbia. Denmark is ranked first in the Digital Quality of Life ranking, followed by South Korea, followed by Finland. It should be noted that «DQL» is based on the results of monitoring studies covering 110 countries of the world and 90% of the total population of the planet. The compilers of the rating noted that in Ukraine there are quite high indicators of the availability of Internet networks (28th place) and cybersecurity (25th place), however, in parallel with this, the sphere of electronic governance (61st place), as well as the development of electronic infrastructure (42nd place), of particular concern is the quality of the Internet, which is only 22%, which is the lowest indicator for our country in the ranking (only 68th place). The electronic infrastructure of Ukraine is approximately 10% ahead of the weighted average for the post-Soviet countries, which allows it to take 18th place in the world in terms of the number of people using the Internet. In total, 93% of all Ukrainians use the Internet in one way or another (Digital Quality, 2021).

Such high rates make it possible to talk about the opening ample opportunities for the development of electronic services and trade, which presupposes major changes in the structure of both domestic and world markets. In this regard, the problem of managing the quality of the provision of electronic services today is extremely relevant both for Ukraine and for the countries of the European Union.

1. STUDY OF THE PROBLEM OF QUALITY OF PROVIDED SERVICES

1.1 Analysis of the main research of this problem

The system for the provision of digital services in Ukraine is at the stage of active formation. Therefore, the scientific experience describing the problem of managing the quality of electronic services does not lose its relevance. Within the framework of our study, several scientific paradigms were used to describe the key aspects of the formation of consumer behavior in an intensively developing digital society.

The theory of quality management is inextricably linked with the name of the American scientist William Edwards Deming, who became its founder and popularizer of the 8 principles of the business management system (Deming, 2000). He was the first to introduce the concept of «quality management» into scientific circulation, describing 14 key principles. Taking the theory of W. Deming as a basis, Japan was able to make an economic breakthrough in the post-war economic blockade of the middle of the twentieth century. Therefore, in our study, we took the position regarding the definition of quality through a system of assessments inherent in a group of consumers of a product or service as a methodological basis.

The theory of income distribution of Vilfredo Pareto was used by us to classify the determinants of the quality of the provision of electronic services. The universal law of V. Pareto reads as follows: «20% of efforts give 80% of the result. The remaining 80% of the effort is only 20% of the result» (Schumpeter, 2011). Thus, using the method of analysis, the determinants of quality were divided into the following categories – a few essential and

numerous insignificant. According to the author of the distribution theory, the concentration of attention on the most important problems most of all affects the achievement of the desired results, provided that the 20/80 rule is strictly maintained. In the theory of probability, V. Pareto's distribution refers to the methods of evolutionary economics, since it is a continuous two-factor and complements the theory of systems. The use of this scientific paradigm makes it possible to calculate some types of behavioral functions based on the available statistical data arrays that directly relate to the object of research and determine a number of possible «unexpected» probabilities, such as the appearance of several stable stationary states, the transition between states, the appearance of unstable states and chaos. Given the lack of clear quality criteria and the instability of the emerging market for electronic services, V. Pareto's theory is the most optimal paradigm for studying this problem.

The theory of social interaction, described by J. Homans, allows a comprehensive analysis of the mechanisms of work of the consumer-seller system since the main feature of social life is the interaction of individuals, social groups within the framework of relevant social institutions. In economic processes, social interaction is realized through the implementation of a social action that binds market participants. In the digital economy, with the active development of electronic services, there is a mutual adaptation of the actions of each of the market participants, unanimity in understanding the situation, understanding the meaning of actions, which determines the emergence of a certain degree of solidarity between them.

Considering the probable possibilities of social interaction, J. Homans described them as a complex system of exchanges conditioned through balancing rewards and costs (Homans, Curtis, 2012). The scientist argued that subjects interact based on their previous experience. The four principles of interaction introduced into scientific circulation make it possible to analyze even complex types of social relationships within the framework of unstable systems, one of which is the digital economy. Considering the provision of services as a model in which one entity (individual, groups, communities) is simultaneously the cause and effect of the corresponding actions of other business entities (electronic services), it is possible to develop effective mechanisms for its management.

Thus, the layer of scientific research provides some insight into the problem of the quality of social interaction and its role in the economic sphere of society. However, the modern realities of the development of digital technologies and the transition of the market to the virtual space presuppose the emergence of new forms of consumption and therefore require changes in the principles of working with the buyer. The relevance of determining the determinants of the quality of electronic services is due to significant new relationships, the degree of personalization between market actors, which predetermines the need to manage these processes.

1.2 Research methodology

The methodological basis of the article was the analysis of statistical data published in traditional media, the analysis of annual monitoring studies of private commercial companies, the study of the regulatory framework, published in free access to the Internet research on the problem of managing the quality of electronic services, as well as the author's sociological research, allowing to assess the level of e-services in Ukraine. The article uses the results of the following sociological studies:

1. Annual monitoring research of analysts of the private search engine «Surfshark», the purpose of which is to test the digital quality of life around the world – «Digital Quality of Life Index» (DQL). In their research, Surfshark experts during 2021 assessed 110 countries around the world according to the following five criteria of digital life: the availability and quality of the Internet (wired and mobile), the electronic infrastructure of the state, electronic security, and electronic governance (Digital Quality, 2021).

2. Copyright sociological research conducted from September 17 to November 11, 2021, in Ukraine. According to the results of an online survey of the population of the city of Kyiv and the Kyiv region, n = 800 respondents were surveyed (with a total population of 2 million 967 thousand) aged 17 to 50, 46% of men and 54% of women. The sample-set is weighted to represent the adult population of Ukraine according to the main socio-demographic characteristics (gender, age, type of settlement, level of education). The study used a multistage

random sample, at the last stage – a quota sample. The method of collecting information was carried out by filling out a questionnaire by respondents, compiled in a Google Form, and posted on the most popular Internet platforms.

The statistical sampling error (considering the 1.1 design effect) does not exceed: 2.5% for indicators close to 50%, 2.2% for indicators close to 25%, 1.5% for indicators close to 10 %, 1.1% for indicators close to 5%. The coefficient of normal deviation directly depends on the probability with which we extrapolated the sample results to the general population; in our study, it is equal to 95.45%. Thus, the sample was defined as $n = 800$.

3. Secondary analysis of data obtained as a result of 1.5 million tests of the speed of fixed and mobile Internet – «Speedtest», conducted in the first half of 2021 by the American campaign-developer of services to determine the speed of connection to the mobile Internet «Ookla». The total number of tests was: «Kyivstar» – 546 thousand (Download 33.2 Mbps and Upload 15.7 Mbps); Vodafone Ukraine – 613.6 thousand (Download 30.37 Mbps and Upload 13.37 Mbps); Lifecell – 322.1 thousand (Download 15.72 Mbps and Upload 8.15 Mbps). («Kyivstar» beat «Vodafone Ukraine», 2021).

Thus, a broad methodological base made it possible to confirm practically our theoretical assumptions regarding the specifics of managing the quality of the provision of electronic services in Ukraine in the context of an actively developing digital economy.

2. THE PROBLEM OF THE QUALITY OF SERVICE DELIVERY

2.1 Comparative analysis of the features of the provision of traditional and electronic services

A feature of the development of modern business is the use of a network approach, which is an interweaving of social networks, which is understood as a set of stable ties between market participants (Radaev, 2003), which, in the context of the rapid development of the digital economy, makes it possible to catalyze breakthroughs in achieving higher levels of business efficiency processes in the electronic plane with the potential for super-profits.

The focus of digital business development is constant monitoring of changes in the motivation of consumer behavior, its chaos, and exposure to the influence of spontaneous impulses, which forces active market actors to build their strategies, the nature of which is determined by the structure of the existing connections between participants (Radaev, 2003). To achieve the maximum effect from economic interaction, especially in the context of actively developing digitalization, market actors are forced to focus on a high level of quality of services provided. The latest information and IT technologies allow creating an innovative level of service quality. In the era of global digital transformations, digitalization opens up new business opportunities, expanding the circle of consumers and increasing sales through e-services.

Traditional and electronic services have many identical and different determinants that fundamentally differently affect their quality, which is defined as the dependence of consumer expectations and perceptions regarding the provided service or product and is characterized by 11 components: reliability; efficiency; customization; confidence; competence; availability; politeness; safety; communicativeness; materiality; customer knowledge (Parasuraman, 1988).

The development of the digital economy made it possible to form a synthesized understanding of the key components of the quality of provided services: materiality, reliability, efficiency, knowledge, confidence, responsiveness, and empathy (Schneider, White, 2004).

Consequently, considering the conditions for the development of economic interaction, the methods of obtaining and providing services can be conditionally divided into traditional and innovative (electronic). For traditional services, the following are identified as characteristic determinants: perceptibility; reliability; safety; warranty; availability; responsiveness, empathy (the ability to understand the feelings and problems of other people). The element of consumer properties of services by E. Gummesson (Schneider, White, 2004) singled out information technologies on a par with services and a material element.

Based on the purpose of our research, under an electronic service we mean the activity of one party providing the other with a certain good, which is beneficial for this party, satisfies its needs, and can be carried out at the

initiative of the person or at his request, which is provided through the information and telecommunication system (Kharchenko, Utkina, 2021) and Internet service platforms.

Based on the key paradigms of V. Radaev's scientific theory, the following determinants of the provision of both traditional and electronic services were identified:

1. Sensibility (Lapidus, 2015). Since, in essence, the process of providing e-services is intangible in nature, perceptibility is one of the main characteristics of consumer loyalty. This determinant is manifested through the personal subjective perception of the degree of quality of the service received and the degree of satisfaction with the result regarding the process of providing an electronic service to the consumer.

2. Reliability of information systems, which implies reliability, durability, safety. Indicators of reliability and durability are subject to quantitative assessment. It is much more difficult to ensure reliability, since monitoring its state involves testing indicators based on analytics for failures, technical errors, which in turn is leveled out by special paid and free services.

3. Security (including informational). It is characterized by the provision of security, both physical (protection against personal data leakage, virus infection of the computer, scanning passwords and codes, phishing) and financial (preserving financial assets). Maintaining the confidentiality, integrity, and availability of enterprise information.

4. Warranty increases demand and sales. At the heart of such a quality criterion as the provision of guarantees is the modeling of customer behavior, which includes service for refunding money if the service does not meet the customer's expectations. E-service providers can provide free testing by offering a free (freeware) or contingently free (shareware) service. The marketing model based on the provision of a conditionally free service to the consumer is attractive to citizens, since payment is made only after approbation (testing) of the service and, as a rule, leads to implementation in 80% of cases.

5. Accessibility (search engine, physical). For a traditional service, territorial, technological, and price accessibility is important. The determinant of the quality of electronic service availability is the speed of search, infrastructural accessibility, a short time interval for receiving, and a convenient payment method.

6. Responsiveness, sympathy, empathy. A feature of the determinant of empathy is the implementation of social interaction within the framework of the communication model «person-person» (translator-recipient) and the creation of a «comfort zone» for the buyer by establishing contact when providing services at the levels of traditional or rational social action. A certain segment of consumers has no experience in building communication practices in messengers and on Internet platforms, therefore it is focused on direct contact with the seller, limiting the use of electronic services, denying the introduction of elements of robotics.

Specific characteristics of the quality of electronic services are rich and useful content; speed and reliability of the Internet resource; page loading speed; organic search conversion rate; the number of elements on the page: text, graphics, navigation, tags; the number of clicks to ensure site navigation; time of establishing a connection with the server; no problems when navigating the site while searching for information; the ability to receive instant help, the ability to meet the expectations of the buyer. The integration of the tools of the behavioral economy operating in the traditional sphere of sales and services into the digital one allows creating the foundation for the competitive advantages of the enterprise due to the possibility of using modern information technologies to collect and structure information about consumer preferences by using digital statistics recorded by Internet resources. The peculiarity of service quality management is to consider their key determinants, finding their balance to obtain results that are easily perceived in the management of business processes and are effective with the continuous growth and distribution of information to improve work processes (Goloborodko et al., 2021). As a result, a business providing electronic services can form the most likely scenarios for adapting business processes that best meet the likely expectations of consumers without additional capital investments.

2.2 Key indicators of the quality of the provision of electronic services

Along with the specified determinants of the quality of electronic services, special attention should be focused on the reliability, financial and physical security, the confidentiality of the provision of this or that information, that is, compliance with elementary cybersecurity standards.

It is necessary to highlight the unique determinants of the quality of electronic services, which are due to the peculiarities of the digital integration of economic processes, as well as the level of digital culture in society.

1. Simplicity and convenience. An optimal search engine infrastructure ensures ease of use, allows for quick and efficient navigation through the site, providing communication within the human-machine model, while a high level of service quality is achieved through standardization of individual process components.

2. System responsiveness and prompt assistance. In the event of a technical failure, the speed of prompt assistance should neutralize the emerging feeling of consumer dissatisfaction and prevent refusal to receive the service. Consequently, the likelihood of the implementation of an electronic service, the preservation of consumer confidence, depends on the speed of operational assistance.

3. Feedback, its speed, and responsiveness is important determinant of the quality of an electronic service. The key components of this determinant are infrastructural elements, the presence of a 24/7 support center, which significantly increases the possibility of re-applying for a service.

4. Information (content/perception). The main requirements for content are readability, volume, location on the site page, and a motivating description of the service. When designing your content, you need to consider the types of consumers. In one case, this is the provision of voluminous texts with metaphors and a strong associative range, in the other case – the need to adhere to laconicism.

5. Visualization (design, infographics). The focus of quality management of electronic services is the assessment of the psychological, emotional impact of infographics on the consumer. This means that the architecture of the storefront has a particular impact on the quality of service delivery.

6. Time of electronic service provision – the shorter the waiting interval by the consumer of the service, the higher the demand for the electronic service. The speed of customer service in a digital society is an absolute advantage and determines the scale of business growth.

7. Possibility of choosing types of services and mobility of packages provided to consumers. This determinant is determined by the demands of consumers for the quality of services and the filling of its content. The rapid growth of competition in this area of activity increases the influence on the provision of additional services and the expansion of options in the services provided.

Thus, the key factors affecting the quality of the service are competitive price, delivery time, product return policy, uninterrupted delivery, customer support, advertising activities, sales conditions, order confirmation by e-mail or cloud messenger, payment, feedback on the website. But the most significant determinants of e-service consumer satisfaction are on-time delivery and customer support.

Making payments online has its positive and negative features. The disadvantages include risks associated with the protection of information; the time gap between payment and receipt of the service; the lack of control over banking transactions by participants in trade relations (Unizhayev, 2019).

It is possible to recreate the imbalance by using a peer-to-peer (P2P) network in the implementation of economic processes. P2P networks open up tremendous opportunities in the field of information exchange. The use of «Peer-to-peer» technology means transferring a huge amount of files using devices located in various places on our planet. The optimization and development of peer-to-peer projects are aimed at making it easier to obtain information on the Internet and will help to improve the quality of the provision of electronic services (ArtisMedia Blog, 2021; Williams, 2019).

The protection of transactions today is provided by the use of a peer-to-peer network, as well as blockchain technology – a continuous sequential chain of blocks or linked lists containing information built according to certain rules. Most often, copies of blockchains are stored on multiple servers, independently of each other (Nakamoto, 2021).

Service quality management should be based on a technological platform, where the quality modeling process should be permanent to meet the dynamically evolving requirements of consumers of electronic services. The use of

digital technologies in business processes will make it possible to effectively manage the enterprise in general and electronic sales in particular.

A technological platform for the provision of high-quality electronic services is provided by information and telecommunication enterprises of Ukraine, which form the telecommunication services market, the sphere of circulation of certain telecommunication services, for which there is demand and supply for a certain time and within a certain territory (Law of Ukraine, 2017).

At the same time, the telecommunication services provided to enterprises and organizations of various fields of activity, in turn, are subject to multiservice requirements; broadband (the ability to flexibly and dynamically change the speed of information transmission in a wide range, depending on the current needs of the user); multimedia (the ability of a network to transmit multicomponent information: text, data, video, audio with the necessary synchronization of these components in real-time and using complex connection configurations); intelligence (the ability to control a service, call and connection by the user or service provider); invariance of access (the ability to organize access to services regardless of the technology used); multi-operator (the possibility of several operators participating in the process of providing a service) (Smelyansky, 2012). In this regard, it should be noted that ensuring the quality of telecommunications and information telecommunications enterprises depends on the modernization and development of infrastructure, where the main criteria are the availability of a sufficient number of repeaters that ensure the coverage density and speed of the Internet distributed by providers.

At the state level, in addition to the development of regulatory support for the modernization of the national communication network of Ukraine, it is necessary to create flexible problem-situational data processing centers, which will make it possible to form a market pool of telecommunication services ready for permanent implementation of innovative technical solutions, which will ensure an increase in the quality of electronic services. Development and improvement require broadband access networks, development, and implementation of 4G, LTE, 5G standards throughout the country.

Scaling of electronic services will be possible with an increase in the level of consumer access to information services, the provision of information using 3D visualization, an increase in the general culture of consumers, and compliance with cyber hygiene rules.

However, there is also a problematic area of the formation of high-quality telecommunication services, the reason for the formation of which is the following factors that impede intensive development:

- The insufficient interest of the state in supporting high-tech industries: software and hardware systems, software;
- Lagging of the regulatory and legal framework of Ukraine from the European standards of ICT development;
- the institutional imbalance between the content of university education, academic science, and business requirements in terms of ICT production and development;
- problems of ensuring information security, cybersecurity at the level of ICT networks and end-users, minimizing the likelihood of unauthorized access;
- very latent diffusion of modern technologies and services on the territory of the country;
- global economic challenges, as well as COVID-19;
- dependence on external innovations of technical support (Lehominova, 2018).

It is necessary to note the dependence of Ukrainian telecommunications enterprises on the supply of expensive imported equipment, which appears to be powerful global technological enterprises that sell telecommunications equipment to all regions of the world and invest heavily in innovative research (Kovshova, 2018). At the same time, the quality of equipment from well-known leaders, their manufacturers, ensures a high level of quality in the provision of telecommunications services but requires significant investments.

Thus, it can be assumed that the quality of the provision of electronic services has an innumerable set of determinants, which are a set of certain characteristics and properties of receiving a service, designed to satisfy the needs of the consumer, as well as to meet the increasing requirements of the digital economy.

3. MONITORING OF PUBLIC OPINION REGARDING THE QUALITY OF MOBILE NETWORK SERVICES

3.1 State regulation and security guarantees

In Ukraine, in 2020, for the first time, technical indicators of the quality of the mobile Internet were established, introduced by the decree of the Administration of the State Service for Special Communications and Information Protection. Clear requirements, according to lawmakers, should stimulate operators to improve the network in cities and villages. This standard assumes that the download speed of files for the user must be at least 2 megabits per second, and their sending must be at least 0.5 megabits per second. (Order of the Administration, 2020)

In 2021, at the level of the Ministry of Digital Transformation, it was decided to develop a 4G-5G mobile network in Ukraine. Such fixation of specific indicators of the quality of mobile communications has become an effective mechanism contributing to the improvement of coverage by operators in both urban and rural areas. Such constructive actions on the part of the state, of course, imply the need to invest additional funds in the construction of base stations, which will improve the quality of communication and improve the speed of the Internet, at the same time, exacerbate competition between operators in the mobile communications market. The standards that existed until recently were adopted back in 2010 and did not contain a single indicator that would regulate the signal strength, the level of the optimal data transfer rate, or the time of the possible connection delay. Given the rapid digitalization in the context of the pandemic, new standards have become urgently needed, since the lack of stable mobile network coverage of a significant part of rural areas has severely limited access to education and e-services for many categories of the population (Klymenko et al., 2021).

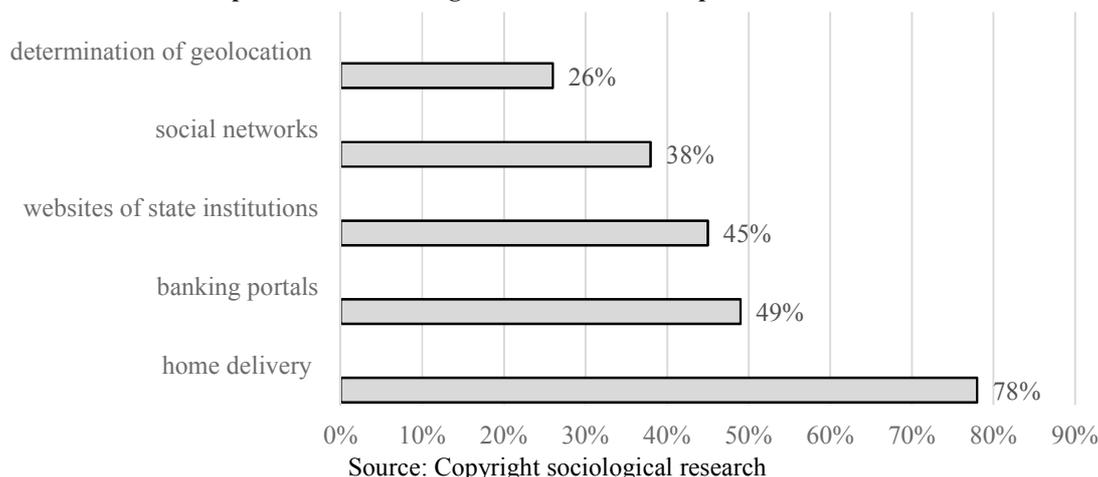
In addition, back in September 2020, the Government adopted the «Action Plan to improve the quality of mobile services for 2020-2022» to align the requirements and establish clear quality criteria for operators in the mobile market. The new requirements guarantee consumers a minimum sufficient communication quality for using the Internet and text messengers. Today, the situation in the mobile communications market is such that operators need to tune the network so that they provide services following these requirements and the quality of communication is the same in all settlements, both in rural and urban areas. (Order of the Cabinet of Ministers, 2020).

The main participants in the mobile communications market in Ukraine are three companies («Vodafone» – 18.8 million subscribers, «Lifecell» – 8.9 million subscribers, «Kyivstar» – 25.9 million subscribers). According to «Ookla» of the American company-developer of services for determining the speed of connection to the mobile Internet «Speedtest», the operator «Kyivstar» in the first half of 2021 distributed to consumers the highest average speed of mobile Internet, and also had the largest network coverage in Ukraine. In particular, in the reports of Ookla Speedtest, according to the results of large-scale tests, Ukrainian mobile operators received the following points: «Kyivstar» – 595 with a speed of 34.64 Mbps; «Vodafone» – 493 with a speed indicator of 32.05 Mbps; «Lifecell» – 321 with a speed of 15.24 Mbps (speed indicators will include information on the speed of Download and Upload operations) («Kyivstar» beat «Vodafone Ukraine», 2021).

To assess consumers of the quality of services provided by mobile operators for the provision of electronic services in the digital economy, an author's sociological research was carried out using the method of online filling in Google forms among residents of Kyiv and the Kyiv region, n = 800 (46% of men and 54% women). Since the use of electronic services in digital environments leads to an increase in the volume of transmission of personal data of citizens when receiving services or performing purchase and sale transactions, we were primarily interested in the level of confidence of Ukrainians in the procedures for maintaining the confidentiality and the frequency of communication of personal information (Figure 1).

A third of the respondents (33.2%) probably do not know why they provide personal information, however, 53.7% are sure that they understand why they are doing it, 13.1% do not think about the problem of transferring confidential data at all. In this context, the distribution of the respondents' opinions by age is very interesting.

Figure 1. Platforms on which Ukrainians most often leave their personal data (in%).
The respondents had the right to choose several options from the offered answers.



Thus, young people claim that they are well aware of the purposes of using their personal data (76.5%), while middle-aged people are more skeptical in their judgments – 62.7% are not completely sure that access to this information should be given to the creators of e-services. The distribution of the respondents' answers to the question about understanding the risks when transferring their personal data is as follows: 47.3% – confident in the security of the electronic services used, 34.5% – doubt it, 18.2% – do not attach importance. The most confident in the security of transferring confidential information are young people aged 18 to 25 (54.8%).

Among the most common fears noted by respondents are the threat of cyberattacks, government control, hacking of databases, and, as a result, getting personal data publicly available on the network, access to it by fraudsters and hackers.

Thus, state regulation and control over compliance with established standards are effective mechanisms for managing the quality of services in the Ukrainian mobile communications market.

3.2 Public opinion regarding the quality of services of mobile operators.

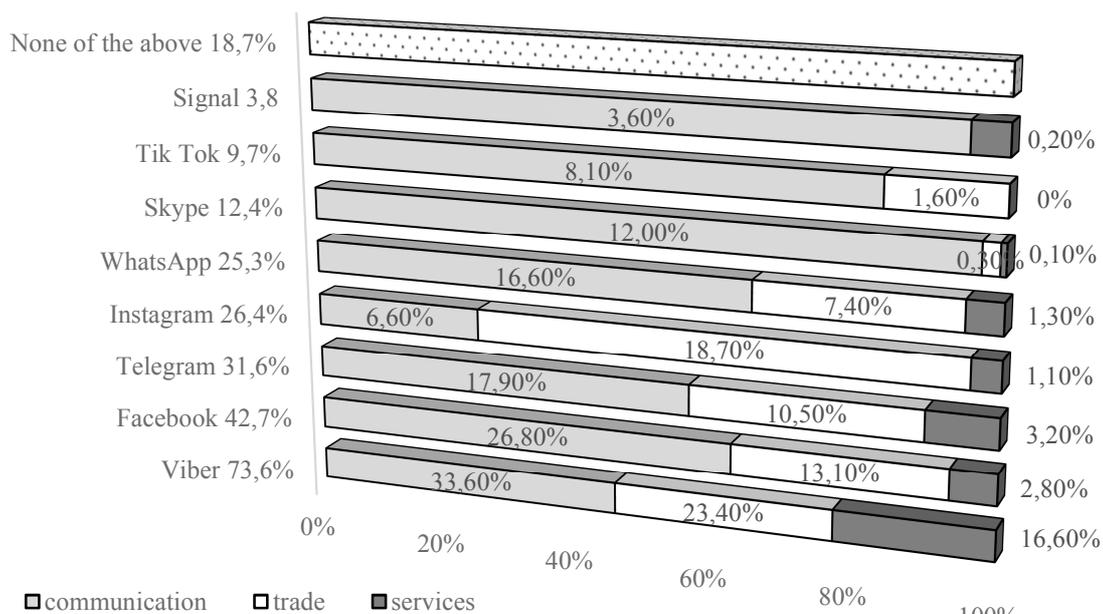
As a result of our sociological research, the preferences of respondents regarding the use of instant messengers and the percentage of the purposes of their use were established (Figure 2).

The most popular among all respondents with a mobile phone was «Viber» (73.6%), leading as a platform for communication (33.6%), and trade (23.4%), and for receiving services (16, 60%). The second most popular messenger is «Facebook» – 42.7%, which has high levels of communication activity – 26.8%, but significantly loses as a platform for sales – 13.10% and service delivery – 2.8%. In addition, this platform has age restrictions, since according to the survey, its audience is made up of people aged 35+, while young people prefer Telegram, which covers 31.6% of the audience and is a communication platform for 17.9%. and for 10.5% – an electronic trading platform. Viber's biggest competitor in e-commerce is Instagram, with 18.7% of the market, designed as a photo-sharing messenger, ideal as an advertising platform, but currently, only the fourth-largest audience. The least popular is the messaging channel – «Signal», the possibilities of which for such purposes as trade and services are used by only 0.2% of the respondents. The number of Ukrainians who do not exchange messages from a mobile phone at all in any of the mentioned applications is quite large and amounts to 18.7%. In terms of age, this audience, which

prefers personal communication, looks like this: 18-29 years old (1.6%), 30-39 years old (2.9%), 40-49 years old (10.3%), 50-59 years old (23.6%), 60-69 years old (26.8%), 70 years and older (34.8%).

When asked about the reliability of the information provided by electronic services, 39.2% of respondents noted that they had encountered false data, while 60.8% are confident in the truthfulness of the information received. Thus, potentially 1/3 of the respondents faced various types of fraud, which is a fairly high indicator and may indicate a low level of both digital culture and cyber hygiene. If you look at the gender perspective, men were faced with facts of deception 34.9% more often than women.

Figure 2. Rating of priorities for the use of instant messengers as a means of communication, trade, and services.



Source: Copyright sociological research

Understanding the direct dependence of the quality of electronic services on the stability of the Internet signal and the speed of uploading and downloading information, we asked the respondents the level of their satisfaction with the work of mobile network operators. The result was in line with Surfshark's «Digital Quality of Life Index» survey, which aimed to test the digital quality of life, in the range of $\pm 5\%$.

The share of respondents who are completely dissatisfied with the quality of mobile Internet in Ukraine is 27.1%, the answer «rather dissatisfied» was chosen by 22.4% of respondents, most of the respondents refrained from answering – 32.8% and only 22.1% are completely satisfied the quality of the service received. It should be noted that among the rural population, the part of the dissatisfied (37.6%) and rather dissatisfied (29.7%) is significantly higher, which is explained by the absence of continuous uniform coverage of rural areas with a mobile network. However, based on the number of people satisfied with the quality of mobile Internet, a similar problem exists among the urban population.

Thus, the sociological study helped to demonstrate the existence of certain problems in ensuring the quality of the provision of services by electronic services in the context of the development of the digital economy in Ukraine. The following problematic points were identified: lack of responsibility of the state to citizens for the safety of personal data, imperfection of the regulatory framework providing responsibility for disclosing confidential information, low level of digital culture of citizens, lack of effective mechanisms for filtering out false content and detecting fraudulent activities, low quality of mobile Internet.

CONCLUSION

A detailed analysis of the key determinants of the provision of services in the field of electronic services has made it possible to highlight the main criteria for business development in a fundamentally new environment of communication and social interaction, due to the intensive development of IT technologies and, as a consequence, the transition of Ukraine from information to digital type of society. Comparison of quality criteria for the provision of traditional and electronic services made it possible to highlight innovative methods of working with a client in virtual environments based on messenger platforms, as well as describe the features of digital integration of economic processes in the current conditions of active digitalization, and raise the issue of the need to increase the level of digital culture in Ukrainian society. The combination of several theoretical approaches to the implementation of quality management for the provision of electronic services has shown the feasibility of creating a system model for managing the quality of electronic services, as an integral part of the digital economy. Criteria for the quality of service provision were also identified and proposals were made for organizing monitoring, which was facilitated by the conduct of a sociological study, the results of which showed: a decrease in the quality of service provision due to weak cyber protection, imperfection of the regulatory framework in the context of determining quality criteria, legal unresolved responsibility for the disclosure of personal data of clients, a low level of digital culture of citizens, a fairly large amount of false content, dissatisfaction of citizens with the quality and speed of mobile Internet.

At the same time, in the field of providing electronic services in Ukraine, there are many problems associated with the peculiarities of communication models in virtual environments and somewhat different from traditional methods of social interaction. In our opinion, there is a certain lack of scientific research concerning the following aspects of business digitalization:

- there is no clear systematization of all types of electronic services that are or can be provided by electronic services;
- imperfection of the methodology for organizing the management system of the very procedure for providing services;
- lack of regulatory certainty in this area, allowing to establish responsibility for quality and confidentiality.

Taken together, these restrictions allow us to speak about the existence of a certain prospect for further scientific research of this problem.

The scientific novelty of the article is determined by an interdisciplinary approach, which made it possible to develop the main determinants of evaluating the provision of electronic services. In particular, the following performance indicators were proposed: efficiency, simplicity, urgency (timeliness, efficiency), convenience, openness, fair value, and availability. The results of the sociological study made it possible to highlight the problems faced by a business operating on Internet platforms, their elimination, in turn, will significantly improve the quality of the provision of electronic services, and constant monitoring of the operation of e-services will make it possible to adjust management models.

Considering the importance and scientific value of the study of the features of quality management of electronic services in Ukraine in the context of digitalization, as well as paying tribute to the achievements of scientists in the theoretical and practical issues of providing electronic services, it is necessary to state that we have carried out a comprehensive analysis of the main determinants of quality, established economic, social, legal and technical prerequisites for a decrease in the quality of e-services, as well as a comparative analysis of the technical capabilities of mobile providers providing coverage and penetration of mobile Internet in the country. All of the above makes it possible to talk about improving the quality management system for the provision of electronic services.

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