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Electronic Communications as an Element of Management

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Abstract: ***Electronic communications, which arose as a result of the achievements of science and technology of the second half of the twentieth century, has become a phenomenon of modern information exchange. Modern electronic communications are increasingly affecting socio-economic, socio-political and cultural relations in society. Being a product of innovative technology, they are programmed by society to further improve and use them. The article is devoted to the clarification of the essence of electronic communications as an innovative management tool. The types and peculiarities of the use of electronic communications in the management of a modern enterprise / institution / organization are investigated; The main principles of the use of certain types of modern electronic communications in management are considered.***

The purpose of our study is to clarify the impact of electronic communications on the management process in modern enterprises / institutions / organizations in terms of functional approach.

The systematization of literary sources and approaches to solving the problem of the functioning of electronic communications in the modern world has shown that the problem under investigation is relevant and insufficiently studied by modern science. For example, in terms of a sociological approach, electronic communications are viewed as an information exchange process implemented through electronic means of transmitting information; from a technological point of view, electronic communications are considered as a complex of hardware and software for the accumulation, processing and transmission of information electronically. This article summarizes the arguments and counterarguments within the scientific discussion of understanding the essence and application of electronic communications in management, based on the actual functional method in which electronic communications are considered as an innovative element of electronic governance (e-governance, will expression, etc.), e-economy (marketing, finance etc.), electronic document circulation, e-service, electronic social networks and communities, e-learning, etc. The object of the research is the selection of enterprises / institutions / organizations of various forms of subordination and ownership, in which certain types of electronic communications are used.

The study of the problem in the article is carried out in the following logical sequence: introduction (statement of the problem in general terms and its connection with important scientific or practical tasks); an analysis of recent researches and publications, in which the beginning of the solution of this problem and the authors rely on; presentation of the main research material with the justification of the received scientific results; conclusions from this study.

The results of the research can be useful for specialists in the field of management, communications, documentary and information activities, and all those interested in the issues of innovative forms of communication in modern society.

Index Terms: electronic communications, enterprise, information society, institution, management, organization.

I. INTRODUCTION

The existence of a society is impossible without communication between its members. Communication has different kinds and permeates all spheres of being of society.

The phenomenon of modern information exchange is the electronic communication that arose as a result of the achievements of science and technology of the second half of the twentieth century. Thanks to satellite communications, telecommunication, computer and network technologies, the development of software protocols (in particular, the work process) caused a new reality in the field of communication. Modern electronic communications are increasingly affecting socio-economic, socio-political and cultural relations in society. Being the product of the latest technology, they are programmed by the community to further refine and use them. It should be noted that electronic communications is the synthesis of verbal and non-verbal communication based on the use of computer and telecommunication equipment. Electronic communications today are e-mail, forums, chats, electronic media, social networks, etc. The means of communication that provide the functioning of these popular types of electronic communications are mobile phone, computer, Internet. Thanks to the latest information technology, the transfer of information has become cheaper and faster, went beyond the localized places of its generation, has become a global phenomenon. The feature of modern electronic communication is virtuality, interactivity, hypertext, globality, creativity, anonymity, mosaicism. A special channel for electronic communication as an information transmission is the Internet, which is used as an infrastructure for the circulation of open-access information. The Internet is a global system of local and global, private and public, business and government networks interconnected with a variety of optical wired/wireless technologies. Today, the Internet is the physical basis for the placement of information resources and services (hypertext or multimedia documents, e-mail, other electronic communications). The essence of electronic communications is not fully understood. According to the Russian researcher of the theory of communications A. Sokolov, "the potential of electronic communication was not only not fully realized, but even not understood by public opinion (except for science fiction writers)" [42].

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From the philosophical and ideological point of view, the phenomenon of electronic communications was considered by M. McLuhan (media theorist and communications) and A. Toffler (author of the concept of post-industrial society). In particular, M. McLuhan in 1962 focused on the study of the phenomenon of electronic communications and the formation of an "electronic society", considering telecommunications as a new social reality. The scholar argued that society would be automatically monitored through electronic communications, as is the case in economic processes. A. Toffler in 1980 introduced the notion of information space – electronic communications, through which the individual and collective messages and needs of people will be effectively implemented. A. Toffler argued that the socio-technical and informational link would help adapt economic production to the personal needs of individuals (for example, today some multinational companies such as Amazon (founded in 1994, Amazon.com was one of the first companies to start using the Internet to sell goods. In the 20 years (from 1997 to 2017), the value of the company's shares increased 56 times (from $ 18 to $ 1,000) and today it is the most expensive in the world with the capitalization of nearly $ 800 billion) have become powerful thanks to the implementation of this very principle of electronic communications).

The scientific definition of the meaning of electronic communications tried to give different researchers. So, A. Sokolov considers electronic communication as a separate type of semantic social communication, based on telecommunication and optical-magnetic means of preservation and transmission of information [41], [42]. Domestic researcher V. Bebik encompasses telecommunication technologies (fixed and mobile telephony, telefax, radio and television, cinema and multimedia), as well as network technologies (Internet and e-mail) [4]. According to N. Moseyeva, electronic communication – "this is a consequence of the development of information technology and, first of all, automated technologies for the generation, processing, storage, transmission and dissemination of documented information" [22]. The researcher N. Paraffinik believes that electronic communication, built on space radio and computer technology, uses an electronic medium instead of paper for a document without changing its essence as a source of information [26]. G. Shvetsova-Vodka, under the electronic communication, understands the use of computer and telecommunication equipment in the process of transmitting information, which transforms an informational message into a computer-readable form. The scientist argues that through a computer, as a technical device for recording, storing and searching information, an indirect communication between the communicant and the recipient is communicated with the transmission of the necessary information [39]. Y. Ostapchuk, a social communications researcher, believes that electronic communication is associated with the emergence and development of new information and communication technologies, which lead to an increase in the flow of information, which formed the basis of the formation of the concept of the information society. In her view, electronic communications provide access to information and knowledge almost instantaneously from anywhere in the world, covering most areas of human activity and becoming a powerful tool for contemporary society [25]. Consequently, the researchers of this phenomenon agree that electronic communication was the result of the development and dissemination of information technology and is part of modern social or document communication.

II. LITERATURE REVIEW

Separate elements of electronic communication used in management, is devoted to a number of scientific works: I. Baklan, Y. Selin [2]; O. Holobuts′kyy [13]; V. Hurkovs′kyy [14]; M. Demkova [8]; I. Koliushko [18]; O. Arkhyps′ka, O. Baranov, T. Dzyuba [11]; D. Dubov, S. Dubova [10]; N. Zadorozhna [50]; D. Kyrylyuk [19]; P. Klimushyn [16]; I. Klymenko, K. Lyn′ov [17]; L. Lytvynova [21]; I. Lopushyns′kyy [20]; O. Nakonechna, S. Petruk [23]; O. Orlov, V. Polischuk [24]; V. Pysarenko [31]; D. Chernikov [6]; M. Poberezhna [28]; O. Sichova [40]; S. Radchenko [33]; I. Shul′zhenko [38]; G. Yankovs′ka [49] and others.

III. RESEARCH RESULTS

In Ukrainian legal opinion there are different definitions of electronic communications: in Art. 1 of the Law of Ukraine "On Communications" dated 16 May 1995, electronic communications are defined as synonymous with the term for electrical communication, which is understood as the transmission, emission or reception of signs, signals, written text, images and sounds, or messages of any kind. by radio, wire, optical or other electromagnetic systems [53]. In the current Law of Ukraine "On Telecommunications", the same definition applies to the term telecommunications. "Telecommunications (telecommunication) – transmission, emission and/or acceptance of signs, signals, written text, images and sounds or messages of any kind on radio, wire, optical or other electromagnetic systems" [52]. The draft Law of Ukraine "On Electronic Communications", created in 2015, has called into question lawyers and the public [3] in terms of electronic communications, in particular, the project states that electronic communications are understood as "transmission, emission and/or acceptance, routing, switching and saving of signs, signals, written text, images and sounds, or messages of any kind on radio, wire, optical or other electromagnetic systems" [30]. From the point of view of the sociological approach, electronic communications are the process of information exchange, carried out using electronic means of information transmission. In a technological approach, electronic communications are understood as a complex of hardware and software for the accumulation, processing and transmission of information electronically. According to a functional approach, electronic communications include e-policy (e-governance, will-expression, etc.), e-economy (marketing, finance, etc.), electronic document circulation, electronic service, electronic social networks and community, e-education, etc. The purpose of our study is to clarify the impact of electronic communications on the management process in modern enterprises/institutions/organizations in terms of functional approach.K. Shaposhnikov, based on the opinion of the research managers of innovation management J.

Hans, A. Pavlutsky, R. Patyurel, V. Tarasova, O. Redkin, argues that "the Internet provides unprecedented opportunities for increasing productivity, selling goods and services in new markets, which are rapidly expanding, and also realize the inexpensive way of global communications, both within the enterprise and in the external environment" [36]. The scientist notes that the introduction of new information technologies in the enterprise should be accompanied by a change in its structure and used management methods [36]. As modern multinational companies increasingly use the Internet as a means of business and communication tools, the network is rapidly becoming the standard way for business/government enterprises/institutions/organizations to interact with one another. In addition, in the information society, the information needs of the population are increasing and complicated, which causes the emergence and rapid development of information services and the production of electronic communications. So, according to Forbes, the top three companies in 2015 (which at the same time have the most expensive brands) were the top three companies (see Table 1) of the most targeted companies – companies that focused on the IT sector – Apple, Microsoft, Google. And the top 10 also included IBM, Samsung and Facebook. In 2016, Apple, Alphabet, Microsoft, with market value of $ 586,500 and $ 407 billion respectively, became leaders [34]. In 2017, the five largest companies that produced information products, services and products – Apple, Alphabet, Microsoft, Amazon, Facebook had a total of nearly 3 trillion. $ of market capitalization with a net profit of 46, 19, 17, 2 and 10 billion dollars respectively [5]. In 2018, the top three leaders remained unchanged. The most expensive companies in the world in 2019 are again organizations that deal with electronic communications. In the first place, the retail company Amazon with a market capitalization of $ 800 billion, the second – the software developer Microsoft with $ 789.25 billion, in the third – the Internet company Alphabet with 737.37 billion dollars [46]. The top 10 also included the leader in the field of information technology Apple ($ 720.12 billion), the Internet social network Facebook ($ 413.25 billion), Internet company Tencent ($ 400.90 billion), the company of e-commerce and auctions of Alibaba ($ 392, $ 25 billion). Only 3 out of 10 most expensive companies do not work in the field of electronic communications or related. Obviously, e-commerce and communications networks are becoming attractive spheres of investment. Comparing the figures from 2017, it should be noted that in 2019, the first four companies operating in the IT sphere had a total capitalization of over $ 3 trillion.

Table 1. The three leaders of the most expensive companies in the world according to Forbes in 2015-2019:

Rating	2015	2016	2017	2018	2019
1	Apple	Apple	Apple	Apple	Amazon
2	Microsoft	Alphabet/ Google	Alphabet	Alphabet	Microsoft
3	Google	Microsoft	Microsoft	Microsoft	Alphabet

As part of communication processes, the question arises of communication. In modern conditions, large companies use both public access networks (Internet) and corporate networks (intranets and extranets) in managing large companies. Intranet is a corporate network that uses Internet technology to transfer information with minimal cost of money, effort and time [36]. K. Shaposhnikov emphasizes that the huge advantage of the intranet is its ability to provide interoperability throughout the organization, because employees have direct and easy access to corporate information [36]. The intranet allows enterprise personnel to efficiently, stably, timely collect, process and send information needed to manage. Joining an accessible only within the corporate intranet system of other business entities has led to the appearance of extranets. Extranet is a network that can be part of the Internet or Intranet. Extranets are networks that unite the company with counterpart companies and consumers. In the extranet, electronic protocols are exchanged by special protocols, which are carried out between the partners or units of the enterprise/institution/organization. This virtual private network reduces the distance between the manufacturer and the end user, increases the efficiency of business connections of the company, allows you to abandon the numerous intermediaries during the manufacture and sale of products. Currently, this phenomenon covers all areas of business. The introduction of the extranet involves the conversion of paper documents to electronic, which allows you to quickly transfer data from one company to another.

However, low political and regulatory support for the development of information and communication technologies in Ukraine is hampered by the effective use of networks. By this indicator, Ukraine occupied 113th place in 2016 from 139. Although in general in 2016, Ukraine ranked 64th in the ranking of the Network Readiness Index, but had rather low performance in the field of information and communication technologies in business (63th place), in individual use (76th place) and in state use (114th place) [44]. A year ago, Ukraine had 71 position among 143 countries in the ranking in terms of the level of information and communication technology development and had even lower indicators in the field of information and communication technologies in business (78th place), in individual use (78th place) and in the state use (124th place) [43]. Thus, only a year ago the position of Ukraine slightly improved in this area. Overall, in 2016, Ukraine had rather low rates among its neighbors, not far ahead of only Romania (with its 66th place) and Moldova (with its 71th place), but significantly inferior to Russia (41st place), Poland (42th place), Slovakia (47th place), Hungary (50th place). In general, as of 2018, Ukraine ranked 77th out of 140 countries with an index of 51.0 (out of 100) on the use of information and communication technologies [12].

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Another aspect of the use of electronic communication in the management of organizations is that some of them (commercial/state) create virtual offices that do not require premises and workplaces.

In them, the main means of production are compact communication means: network and telephone communications, computers, faxes and other office equipment. This allows you to carry out the necessary work or control its execution in any conditions, without being tied to office space, which significantly contributes to this process of using modern electronic document management systems. As a result, it is possible to carry out professional duties remotely, with the support of communication through computer and telecommunication facilities. Benefits include the absence of distracting moments, the reduction of financial and time costs, increased productivity, the lack of workplace requirements, the ability to engage employees living in remote locations, etc. Such a mechanism of use in the management of computer facilities and telecommunications was called "electronic office". Since its inception (80 years of the twentieth century), this phenomenon is increasingly applied in the practice of management in developed countries.

Information technologies and their derivatives from electronic communications become an important factor in enterprise/institution/organization management [27]. New trends in the construction of organizational structures of marketing management at enterprises are manifested in particular in the reorganization of structural units of enterprises engaged in marketing. They create special departments or specialists involved in the promotion of products to the market by means of the network – the units of Internet marketing and e-commerce. In the new market realities, the Internet is becoming a cheap and fast way to sell goods and services. As predicted by E. Tofler, more and more enterprises are entering the Internet market in order to provide individual customers with services or to offer individual goods. Many companies that produce computer equipment provide customized product ordering services, ie customized marketing. Under massive individual services (mass customization) understand the use of opportunities for mass production for the manufacture of goods under individual orders [49]. Customization increases the consumer value of goods and services of the company.

With the advent of network technologies, communication mechanisms of the manufacturer-consumer line have changed. Advertising and PR events are becoming more personalized and personalized. The Internet network is a new communication environment, where multi-channel and multisubjective communication takes place, which is conditioned by interactivity and global communication. These characteristic features of the network allow not only to increase the effectiveness of interaction of communication participants, but also to carry out commercial and marketing activities. Possibility of feedback and application of mechanisms of tracking the actions of users of the network can effectively manipulate consumer preferences. An example of the effective use of "Big data" technology to personalize advertising was the election of US President D. Trump in 2016.

Own Internet sites and Internet portals allow companies and organizations to enhance their company's competitiveness and positive image, speed up service delivery and prompt response to consumer requests.

The Internet as a global network affects all spheres of human activity, including banking business. Banks were pioneers in using Internet networks for practical management purposes. Management of any enterprise requires diverse management information. It is such a network that provides financial institutions with clients about the state of the markets, and also allows banks to do a variety of work – from interaction with the client to the exchange of information with other banks. Electronic communications tools help financial institutions to provide real-time banking services, carry out electronic money transfers and other transactions within the country and the world, receive urgent information on currency and stock quotes, and use corporate databases. Operation of a unified global network and facilities of global telecommunication systems allow conducting international cooperation in the banking sphere. So, the appearance in 1973 of SWIFT (Society for Worldwide Interbank Financial Telecommunications) has become a revolutionary phenomenon in the banking world. Transnationalization of the world economy, in the first place, touched upon the banking sector. The world's leading bank brands have a large number of affiliates around the world, including Ukraine, whose management is greatly facilitated by the use of electronic communications and the application of electronic document management systems in banks.

In the field of electronic politics, new information technologies fundamentally change the system of management of society. Currently, a change in the management paradigm is being made, that is, the rejection of the traditional vertical state control system in favor of a decentralized horizontal system, which, thanks to network and telecommunication technologies, is able to respond effectively and actively to social challenges and public needs. At the present stage of social development, new forms of communication – e-democracy and e-government – have come to replace the direct and indirect forms of communication interaction. The introduction of e-governance, the creation of an e-government and the emergence of e-democracy envisage and require new forms of organization and interaction of state bodies with citizens and organizations. However, in Ukraine, the processes of implementing e-governance have not yet achieved significant results. Thus, as of 2018, Ukraine ranked 82 out of 193 with an index of 0.6165 and an e-participation index of 75 out of 193 with an index of 0.6854 [47], according to the e-government development index. This is not a very good position in the world and is not the worst in the region. Even worse cases are with the index of online services (0.5694) and the index of telecommunication infrastructure (0.4364). However, it should be noted that the index of online services in Ukraine in 2014 amounted to 0,2677 [48] and was lower than the average world index (0,3919), that is, over 4 years the index of this index increased more than 2 times. In general, according to the index of development of e-government, Ukraine in 2014 was on 87 positions, that is, in 4 years, despite some improvement of the indicators lost 5 positions. This points to the fact that there are countries that are much more likely to improve their e-governance.

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The main areas of e-government are: to ensure the efficiency of the state apparatus and provide better quality services to the population; establishing connections between the state and society; provision of real mechanisms of public participation and control over the activities of the authorities; involvement of the population in the management of public affairs; ensuring transparency of state activity; growth of the real level of democratization of society. In this sense, an interesting phenomenon is the electronic petition of the population to different levels of government, through which real communication to the government structures of public needs and problems is carried out. However, it should be noted that the uncontrolled development of electronic communication led to the creation of an anarchistic Internet community, which even proclaimed the creation of a nationwide network of its own state and constitution. An important role in electronic communication is played by modern electronic document management systems. They provide an opportunity for rapid exchange of information between units of one enterprise/institution/organization and between different organizations or enterprises, effective control over execution of orders, collective work with documents, saving of time and money, etc. The main regulatory document on electronic document management is the Law of Ukraine "On Electronic Documents and Electronic Document Management" dated May 23, 2003 [51], which regulates relations that arise in the process of creating, sending, transmitting, receiving, storing, processing, use and destruction of electronic documents, and establishes the basic organizational and legal framework for electronic document circulation and the use of electronic documents. The law declares that the Cabinet of Ministers of Ukraine and other bodies of executive power, within the limits of the powers specified by the Law, implement the state policy of electronic document circulation. The rapid growth of the amount of information used in the management of the institution, its structural complexity and rapid updating makes it necessary to use integrated systems of electronic document management. Effective implementation of e-government technologies is impossible without the deployment of electronic document management systems with the use of electronic digital signature technologies. Electronic document circulation is one of the most important technical elements of the e-government system, because it provides the circulation of electronic documents, which are the basis of a new form of interaction between the state and society. Chief Specialist of the Department of Civil Law and Entrepreneurship of the Ministry of Justice, Yu. Chyrs′kyy, argues that e-governance is "an effective means of ensuring information and access to information by individuals and legal entities, and thus contributes to the transparency and efficiency of government activities" [7]. The widespread introduction of electronic document management requires changes in the main paradigm of managerial workflow. Previously, management document management was considered as one of the main office functions for ensuring the processes of working with documents in an organization, but now it is a managed documentary communication, which is carried out with the use of modern information technologies, within the organization and in interaction with the environment [15]. Although it should be noted that the process of introducing electronic document circulation in the authorities is moving rather slowly. Thus, the general rules for documenting in government bodies in electronic form and execution of actions with electronic documents from the moment they were created or received before being sent or transferred to the archive was established by the Resolution of the Cabinet of Ministers of Ukraine No. 1453 "On Approval of the Model Procedure for the Implementation of Electronic Document Work in the Executive Bodies authorities "of October 28, 2004 [29], and the formats of electronic documents were adopted only in 2010. The transition itself of the central executive body – the Cabinet of Ministers of Ukraine for electronic document held only in August 2016 In addition, some central government agencies to date has not implemented full electronic document management systems, not to mention the interdepartmental electronic circulation of documents. T.V. Dzhyha in the analytical note "Current state, problems and prospects for the development of electronic administrative services in Ukraine", referring to the National Center for Electronic Governance, which conducted an evaluation of Ukraine's e-readiness in 2013, argued that despite the availability of automated systems for document management in executive bodies (in 100% of central executive bodies and in 80% of regional state administrations), they use only one third of employees (34% of employees of central executive bodies and 36% of oblast s administrations) [11]. "Typical instruction for the documentation of management information in electronic form and organization of work with electronic documents in office work, electronic interagency exchange", approved by the decision of the Cabinet of Ministers of Ukraine No. 55 of January 17, 2018 [45], contains provisions that comprehensively regulate the entire spectrum actions with electronic documents: interdepartmental exchange of electronic documents (acceptance and sending of incoming electronic documents, journal of electronic documents exchange, features of electronic interaction without application Reference system interaction), the organization of electronic document management, document management information in electronic form, the procedure for preparing cases for electronic transmission for archival storage projects signing electronic documents, resolutions imposing more. The Instruction states that the exchange of electronic documents through the system of interaction is carried out solely with the observance of the requirements for the established formats of data for electronic document circulation in institutions/enterprises/organizations, and the organization of the document circulation is carried out using an electronic document flow system that integrates with the system of interaction. Documentation of management information in institutions is carried out electronically with the use of electronic digital signature, electronic seal and electronic timestamp, except for cases where there are reasonable grounds for document management information in paper form. The accelerated development of the electronic communications sector in Ukraine is hampered by the existing common problems related to weaknesses in the work of state authorities, state administration, inconsistencies in the development of departmental information systems, systems of exchange and electronic interaction, neglect of a systematic approach to planning of actions,

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the design of an integrated IT-architecture, development and implementation of automated information systems, their weak coordination [37]. Some researchers rightly argue that the informatization of all processes occurring in the day-to-day activities of public authorities is a prerequisite for the transition to e-government, which is of particular importance for the construction of an information society [9].

IV. CONCLUSION

It is worth noting that there are objectively certain features of the proposed solutions for electronic document management systems for public authorities and management, private/state enterprises/institutions/organizations:

- for public administration – systems for handling appeals of individuals and legal entities, as well as internal administrative regulations;
- in the banking sector – demanded archives of credit histories and other customer data;
- private/state enterprises need, above all, automation of internal document circulation, etc.

Summing up, it should be noted that modern electronic communications are increasingly affecting socio-economic, socio-political and cultural relations in society. Most e-communications researchers agree that this kind of communication has become the result of the development and dissemination of information technology and is an element of modern social or document communication. By functional approach, electronic communications in management include such elements as electronic politics, electronic economy, electronic document circulation, each of which has its own specific features and features of manifestation in social reality. The main element of today's electronic communications is the use of network technologies and computer programs and protocols that allow for the efficient exchange of information (business, financial, managerial, and political). Thus, it can be said that electronic communications, although they constitute a phenomenon that is in the stage of formation and synergistic transformation, is now a global factor in changing the paradigm of governance in private and governmental organizations in the economic and political spheres of modern society.

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