

The global information society, coupled with modern innovative capabilities, contributes to the digital transformation of countries, industries, and individual companies. Due to digitization, economic growth is achieved, and the competitiveness of goods and services increases. Given the significant scale and pace of digital transformations that take place today, the speed of responding to their main trends is a significant competitive advantage. In common practice, one of the most successful tools of information and communication technologies determines digitalization [1]. The development of the information society, the smart economy, and globalization processes make it necessary to digitize the marketing activity because consumers prefer those brands and companies that quickly master the use of digital channels. However, [2] emphasize that the uniform approach to this process must be refused because of the specifics of national socio-cultural profiles of consumers. At the same time, the number of business processes is increasing under current conditions, which requires new methods and approaches to the transformation of views on managing the marketing activity of an enterprise. The experiences of many foreign and domestic companies indicate the significant impact of digitalization on sales activities as an essential element of the enterprise's marketing system. Digital methods of processing and using information are a major source of efficiency and effectiveness of such activities [3]. Modern globalization challenges contribute to the rapid implementation of the latest innovative capabilities of the digital world and the activity of railway transport as the leading industry in the road transport industry of the country. JSC "Ukrzaliznytsia" [4] which was one of the first companies that actively digitized its work, was selected to test the proposed methodology. In particular, it refers to the digitalization of the sale of electronic tickets. Competition in the market of transport services requires enterprises to introduce new approaches to the provision of quality online ticket sales services. The JSC "Ukrzaliznytsia," which is directly involved in the sale of electronic travel documents, is interested not only in their confirmation and sales, but also in promoting them among various modern social platforms and networks, tracking demand for specific areas, determining the need for additional wagons or trains, and identifying problems which online buyers may face. The paper investigates the impact of digitalization on sales activity (as one of the key components of marketing) in the service industry. The main advantages of digitalizing the sale of electronic travel documents are the following: the facilitation of communication between the person and the information system; the ability for passengers to use devices to obtain real-time data on the availability and number of available seats in a particular car and train; the ability to receive information about the number of passengers traveling on a particular train in real-time; the ability to plan and organize the required number of trains on different routes according to customers' requests; and openness and accessibility of services to consumers, regardless of their location and time of day. Although there are the works of scientists, practitioners, and managers that are devoted to the study of this problem, the impact of digital technologies on marketing activities in general, and in particular, on sales in service sectors, such as the implementation of travel documents of enterprises providing railway transport, has not been sufficiently investigated from a practical point of view. That is why our goal was to present the impact of digitalization on the effectiveness of marketing activities of the enterprise. The term "digitalization" has come into use since the middle of the last century. The Oxford English Dictionary [5] interprets it as accepting or extending the use of the digital or computer technology of organizations, industries, countries, etc. Castells [6] understands that the new economy, society, and culture under the digitalization considers this concept as one of the characteristics of the modern era. Other authors, such as Brennen and Kreiss [7], point out that digitalization has been referred to as structuring many different areas of social life around digital communications and media infrastructure. According to Parida et al. [8], the necessary condition for maintaining its competitive position or its conquest in our time is not only the use of computer technologies, but also the transition to modern innovative business models. The digitalization is a necessary process for the development of modern organizations. Its main task was to simplify and accelerate the work with large data sets, automate the activity of the enterprise, and establish communications with the external environment. However, there are several major obstacles to implementing the digital business model of an organization based on digitalization. These include the lack of a digitalization strategy, a low level of staff competence in this area [9], fear of change, lack of funding, low level of thinking, and the

needs of Internet customers. Modern organizations are not yet able to simultaneously use all the directions and possibilities of digitalization. Most often, they use only individual technologies, and as a result, such a situation negatively affects the development of the enterprise and reduces its competitive advantages. Consumers increasingly value their time, meaning they need instant feedback, as well as well-designed information resources, online chats, and an individual approach. The expectations of customers regarding the speed and quality of service provision are growing rapidly. To meet the high needs of clients, companies shall accelerate the digitization of their business processes, that is, to digitalize the work of the organization. According to Honore [10], the concept of “digitalization” is the optimization of a business with software and IT solutions that will make it simpler, more cost-effective, and better in the context of customer service delivery and satisfaction. Based on this definition and a review of the literature on the problem, the definition of digitalization of electronic ticketing services as a transformation and improvement of use of digital technologies was developed to improve and expand the channels of business processes related to the sale, as well as the accounting of electronic travel documents through various online services and media channels. Problems of digitalization and the digitization of marketing activity are covered in many works. They focus on different aspects and analyze the topic from different points of view. In particular, the influence of digitalization on the activity of the enterprise is raised by Chudaeva et al. [11]; Trasca et al. [12]; Lerch and Gotsch [13]; Brennen and Kreiss [14]; Verhoef et al. [15]; and Singh and Hess [16]. In turn, Majerova [17]; Rachinger et al. [18]; and Verhoef and Bijmolt [19] investigate its innovative and digital business models. Works of other scholars were related to the major trends in the digital transformation across different scenarios [20], models of marketing diversification [21], expediency of using electronic communication technologies [22,23], the influence of the trend of marketing digitalization on consumers [24], and digital transformation technologies for large companies [25,26]. Furthermore, other researchers concentrate on the application of digitalization, such as in terms of the network of Portuguese companies [27], banking [28], the problem of digitalization in the retail trade [29,30], and the change of marketing approaches to the consumer through the lens of digitalization of marketing activity [31,32]. Finally, there are works that propose an original event management architecture based on the holonic principles to improve the monitoring and diagnostic processes of a fleet of mobile systems in order to design an effective event management system for trains [33], and explore the statistical distribution models of high-speed railway train delays [34]. However, some aspects of research on railway transport deserve special attention, for example, research on the study of social factors as important components of the digitalization of the business model of railway transport enterprises [35], as well as major opportunities, challenges, and prospects for the digitalization of the rail industry [36,37,38,39]. The research methodology included tools that made it possible to evaluate and determine the impact of digitalization on the enterprise’s marketing activities, as follows: methods of systematization—to summarize the theoretical achievements of scientists for the development of the concepts of “digitalization of services for the sale of electronic tickets”; benchmarking—to conduct a structural and dynamic study of the implementation of electronic travel documents through various sales channels through online services, in particular, to determine the growth rate of the number of purchased railway tickets; linear regression analysis—for the construction of predictive models of specific weights of electronic travel documents in their total number for 2019–2020 (based on the results of the retrospective analysis for the years 2011–2018); methodology of a system analysis for the choice of methodological apparatus of research in the comparative system of assessing the impact of digitalization on the marketing activities of JSC “Ukrzaliznytsia”; SWOT analysis—to identify the main features and threats of digitalization of services for the sale and accounting of electronic travel documents; using the expert method surveyed to identify passengers’ awareness of online ticketing services; determining the preferences of the passengers of the Ukrainian railways in choosing the methods of buying an electronic ticket; and evaluation of the organization of services for the registration and payment of a ticket. This study used data from 11,116 respondents who were the users of rail passenger services. Among other basic parameters of the questionnaire, the following was identified: the form of the study—an individual questioning, the frequency—one-time, and the type of expert assessment—

questioning-opinion. The questionnaire consisted of 10 questions and forms for filling in the personal data of the respondent. The questions were of open and closed formats. The authors used the statistical methods to process the data obtained from a survey among consumers of Ukrainian railways services. Recommendations for the development of the digitalization of electronic ticketing services and their accounting for the enterprises engaged in railway passenger transportation are proposed. The main components of digitalization are the following: cost structure, consumer segments, sources of income, channels of sale of goods and services, the structure of relations with consumers, key partnerships, types of resources, types of activities, types of business processes, etc. Business process digitalization involves defining and analyzing the main goals and objectives, identification of the main benefits of digitalization of business processes, selection and implementation of digital technologies, checking and analyzing the effectiveness of the digital solution, and making adjustments as needed. The realized research made it possible to identify and systematize the main factors of the impact of digitalization on business processes, including the sales activity of the company: increasing the competitiveness of the company, goods, and services in the domestic and foreign markets; increase in sales of goods and services; acceleration of all business processes; promotion of efficient production, economic, financial, logistic, information, and marketing activities; more rational use of available resources; coverage and processing of large data sets in a short time; improving economic security; raising customer awareness of the company, products, and services; and the opportunity for consumers to purchase goods and services online through various online platforms, mobile applications, and social networks. Each of the main objectives of the research of the influence of digitalization on sales activity includes a set of subcontracting tasks (sub-goals), which were considered in the context of the developed "tree of goals" to solve the main problem.

The goals of levels 1–8 were transformed into functions of the system as a whole, of subsystems, and of elements. Furthermore, the sub-goals of the lower levels (parameters), which were the means of achieving the higher-level goals, transformed into tools by which the functions were realized and the reverse process of the composition network of tasks was carried out; this involved the achievement of the main goal, namely to determine the parameters of the influence of digitalization on sales activity.

The achievement of the general goal was influenced by various conditions and restrictions of an economic and informational nature.

After formulating the problem and defining the system and factors of the environment, as well as the main goals and objectives of the research for determining the parameters of the influence of digitalization on sales activity (components of the goal of level 0), the transition to the goals of the first and second levels of the specified "tree of goals" was realized, namely the choice of methodological apparatus for research and systematic analysis of the influence of digitalization on sales activity.

To analyze the retrospective period and identify the main trends in its development, as well as the correlation of indicators that characterize these trends, the development of information support to solve the problem of determining the influence of digitalization on sales activity was a necessary stage of this research.

The preparation of information support involved the collection and processing of output data for the formation of a database, which would later serve to generate equations, model solutions, and analyze the data obtained.

The implementation of the goals of the various levels was carried out using scientific methods, integrated into the tools of system analysis. Informal, graphical, quantitative, and simulation methods may be the principal ways of implementing the developed comparative system of the influence of digitalization on the sales activity under the above conditions and restrictions.

The presented level of systematic assessment of the influence of digitalization on the sales activity of the enterprise was proposed to be applied to JSC Ukrzaliznytsia. In particular, at the first level, the choice of methodological apparatus of the research was made: methodology of systematic and comparative analysis, and methods of mathematical modeling and prediction. At the next level, an information base was formed, methods of influence of digitalization were analyzed and selected, and so on.

The third level included the analysis and synthesis of the sales system of JSC Ukrzaliznytsia and its external environment, including the sales history, distribution methods, and channels, as well as the marketing technologies.

In late 2008, the JSC «Ukrzaliznytsia» launched its first stage on the way to digitalization, where tickets were introduced through the official website of the JSC «Ukrzaliznytsia» [40] a network of agents was created, through which electronic tickets could be issued through online services. These include PrivatBank [41], Oschadbank [42], ticket sales sites [43,44,45,46,47], and other online resources. Extending the functionality of digitalization, the online ticket sales service for mobile apps allows storing them in the AppleWallet app and adding travel information to Google Calendar.

Within the period from 2011 through to 2018, the JSC «Ukrzaliznytsia» sold a total of about 435 million travel documents, while the share of purchased electronic tickets was 18.31% or about 79 million electronic travel documents.