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ASSESMENT METHODOLOGY FOR ELECTRONIC COMMERCE OF SMALL BUSINESS

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Abstract. *The rapid advancement of digital technologies has transformed the landscape of small business operations, with electronic commerce (e-commerce) emerging as a vital tool for growth, competitiveness, and sustainability. However, accurately assessing the effectiveness and impact of e-commerce in small businesses remains a methodological challenge. This paper presents a comprehensive assessment methodology tailored specifically to the needs and characteristics of small enterprises engaged in e-commerce. The proposed framework integrates qualitative and quantitative indicators to evaluate key dimensions such as digital infrastructure, online customer engagement, transaction efficiency, cybersecurity readiness, and return on investment. Emphasis is placed on adaptability, scalability, and affordability of assessment tools to suit resource-constrained small businesses. Through a systematic review of existing models and empirical insights, the paper identifies gaps in current evaluation practices and proposes an improved methodology that offers both diagnostic and strategic value. Case studies are used to demonstrate the practical application of the framework across diverse sectors, illustrating how tailored e-commerce assessment can inform decision-making, optimize digital strategies, and enhance long-term business performance. The findings contribute to the development of more effective support mechanisms and policy interventions for small business digitalization.*

Keywords: *assesment methodology, C2C, B2B, B2C, G2C, G2G, effectiveness, electronic kiosk, e-business.*

1.Introduction

Electronic commerce (e-commerce) has revolutionized how businesses operate, interact with customers, and deliver value. For small businesses, e-commerce offers avenues for market expansion, operational efficiency, and competitive positioning. However, assessing the actual impact of e-commerce initiatives remains a complex task, particularly in the case of small enterprises with limited resources and analytical capabilities. The objective of this study is to

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develop a methodological approach tailored for evaluating e-commerce performance and effectiveness specifically in small business settings.

The government acts as a guarantor, ensuring through the development of an appropriate legal framework the legality of transactions in the electronic commerce system.

The second group of elements of the e-commerce system that characterize the variety of organizational forms that can be used include: electronic store; electronic department store; electronic kiosk; electronic auction; electronic storefront; electronic store of settlements; electronic market of third countries; virtual community (<community); consulting firm; brokerage information office or a separate broker; research service providers.[1]

2.Literature review

An electronic store is a kind of shop window providing a user-friendly interface, a web server offering goods or services for sale. The main criterion for the effectiveness or successful functioning of such a store is the real volume of satisfied demand for goods or services.

Issues of e-commerce performance indicators, e-business and e-commerce management were studied by Nazarova I. B., Dianova T. V [4], Manyika J. M., Roberts R. P., Sprague K.L. [5], Vershinina S.V. [6], Zueva O.N., Donskova L.A.[7], Schneider G. [8], Pankina T.V. G[9], illies L.E. [10], Tassabehji R. [11], Zappala S., Gray C.[12], Chaffey D.[13], Stolbov M. [14], Brynjolfsson E. [16], Kuznetsov A. [15;17] Luzin D.A. [18].

The evaluation of e-commerce has traditionally focused on large corporations, utilizing advanced analytics and integrated digital infrastructures. Studies by Laudon & Traver [19], and Turban et al. [20] highlight frameworks involving traffic analysis, conversion rates, customer lifetime value, and customer satisfaction indices. However, small businesses often lack access to such tools, and their e-commerce strategies tend to be more adaptive and resource-constrained. Recent research suggests the need for simplified yet robust methodologies that reflect the real-world conditions of small enterprises.

3.Analysis and results

An electronic department store functions similarly to a traditional department store, where multiple businesses offer a variety of products. The primary indicator of its effectiveness is often the strength and recognition of the product brand or its overall image.

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An electronic kiosk, also known as an interactive kiosk, refers to an internet-connected hardware-software system that grants users interactive access to various services and information. Typically, such kiosks include a computer with a hard drive, keyboard, CD-ROM, and a monitor equipped with audio and video cards. Users can interact with the system through multiple input methods—keyboards, microphones, cameras, or magnetic card readers—either individually or in combination. These kiosks enable full Internet functionality, including browsing websites, using search engines and databases, sending and receiving emails, and completing online forms.

According to a study by Frost & Sullivan, electronic kiosk revenue reached $369.7 million in 1996 and was projected to grow to $2.94 billion by 2003.

An electronic auction is the digital counterpart of a traditional auction, leveraging internet technologies. This format predominantly aligns with the Customer-to-Customer (C2C) e-commerce model, although Business-to-Business (B2B) versions also exist. Examples include commodity exchanges and energy auctions, especially prevalent in the United States and Western Europe. These platforms often create online communities of users with shared interests—such as collectors of rare books or niche products. Transaction values at Western e-auctions typically range from $35 to $80. In the Russian-speaking digital space, platforms like Molotok.ru enable users to buy and sell a wide range of products. However, such auctions face legal limitations, including the absence of electronic signature legislation in Russia and limited usage of bank cards for secure identification of participants—unlike Western auctions, where card verification is mandatory.

Electronic auctions rely heavily on multimedia interfaces and internet access, as visual presentation of goods is essential. Auctions function as competitive marketplaces, with sellers aiming for the highest price and buyers seeking the lowest. These can be categorized based on bid direction—ascending from a minimum to a winning maximum, or descending from a set maximum to a minimum bid.

Products best suited for auction-based sales include computers, high-tech goods, discounted or surplus inventory, previous bestsellers, and collectibles. A key motivation for the growth of electronic auctions is their ability to reflect true market prices.

Compared to traditional formats, electronic auctions offer several advantages: broader product and buyer availability, real-time interaction between participants, diverse auction formats, 24/7 accessibility, global reach, detailed product descriptions and images, and improved customer service.

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An electronic storefront is a specialized software solution designed to create and manage web pages showcasing goods and services.

An electronic billing shop is software that integrates an e-storefront with a specific payment processing system.

The electronic marketplace of third-party countries consists of service providers offering tools for building and managing online stores, technical support, and hosting services—typically facilitated by intermediaries who manage server space and ensure integration with payment gateways.

A virtual community refers to networks of specialized e-commerce platforms (such as Geocities, Amazon, or Ozon), where users are grouped based on shared interests. The effectiveness of such communities lies in audience segmentation, which often leads to reduced marketing expenses. These communities frequently evolve from pre-existing social groups like fan clubs or associations.

Consulting firms specialize in offering guidance on setting up and managing online stores, conducting market research, and assisting with staffing needs.

A brokerage information office, or individual brokers, serve to provide detailed and necessary market information to prospective buyers.

Research service providers are entities that perform various forms of internet and e-commerce-related studies and data analysis.

The interconnectedness of the basic models of organizing an e-commerce system can be illustrated using Fig. 1.

The Business-To-Business (B2B) model is a sector focused on organizing practical work between companies in the process of manufacturing goods or services. This sector of electronic commerce, in addition to the sale by corporate customers of raw materials, semi-finished products, components for the production of goods or the provision of services, is also involved in the development and operation of special systems for the electronic collection and transmission of information that ensure the necessary integration of commerce partners.

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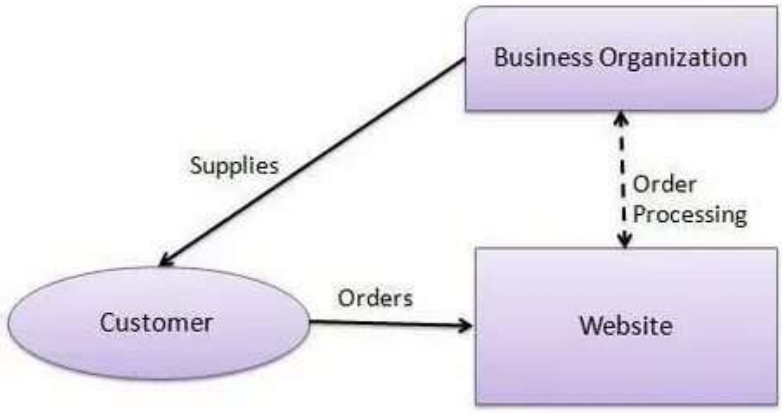

Fig. 1.The basic models of organizing an e-commerce system

In models such as business-to-business, a scheme of fully automated interaction of business processes of two firms (companies) that use the Network to order suppliers, receive bills and pay is implemented. With the help of gateways, an automatic connection of business processes with the Internet system (external environment) is provided.

Models of the type business-to-business have the following distinctive features:

1. The presence of a gateway that provides automatic access to the Internet from a business system.

2. Direct integration of data input / output into the business process and from the business process of the firm (company).

3. The use of a single standard for transmitted messages -

EDI (Electronic Data Inter Exchange).

4. The equal nature of those participating in the electronic system

commerce firms (there is no hierarchy like distributor-dealer, manufacturer-supplier).

The Business-To-Consumer (B2C) model characterizes a sector focused on companies working with individual consumers of goods or services. The difference between this model of commerce and traditional trade in catalogs with delivery is that the client can make purchases or receive services without leaving his home or office, using only a computer and electronic credit card. The implementation of this model opens up new opportunities for potential buyers. One of these features is customization. This is such an opportunity provided to the buyer, the essence of which is to independently design A of the future item of purchase. In particular, on the territory of the NIKEiD online store [http://vAvw.nike.com], customers are able to design the shoe option that suits them: choose the sole from a certain material, the color of the finish,

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and place any inscription up to 8 characters long. Moreover, the option created by the buyer can be immediately seen on the computer screen. [3]

Managers can communicate with the first company using some interface (for example, a browser). Managers can receive (for example, by e-mail or through a browser) the necessary information from the first company, and then enter data into their management system and carry out their business process. Managers of the second company act as consumers of the first company. The features of the second model of e-commerce organization - business consumer - are as follows.

1. The seller (firm 1) does not trade using an automated trading system integrated with the Internet interface, but "manually" through his managers.

2. There is no full integration between the business process of the trading company and the external interface of the online store.

Through the Internet, you can successfully sell any goods or provide certain types of services. It has been established that the business-to-business market does not depend on the name and range of goods and services sold through the Internet. Meanwhile, for the business consumer market, there are such types of goods and services that do not bring sufficient economic benefits.

The third type of e-commerce model - business administration - includes all types of transactions between firms and government organizations. For example, in the United States, information regarding government planned purchases is published on the Internet. All companies can send their offers electronically. In addition to procurement announcements, administrative authorities may also offer the possibility of electronic exchange in operations such as, for example, a refund of value added tax. This model of organizing an e-commerce system is at the initial stage of development.

The fourth model for organizing the functioning of the e-commerce system - consumer-administration - is currently under development. Its implementation will expand electronic interaction in areas such as, for example, social security.

An additional model - Consumer-To-Consumer (C2C) - is a sector in which consumers communicate with each other, united by visiting one web site. It is believed that any electronic store can be attributed to this area of electronic commerce. A certain web site forms a certain community of people united by the same interests. An example of a more or less stable community is electronic auctions. They become an excellent advertising platform on which the quantitative and qualitative composition of the audience is known in advance. Moreover, all

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visitors are usually divided into fairly clear subgroups of "interests": someone more often attends car auctions, someone book. According to experts in the field of e-commerce, the effectiveness of advertising on sites that have united around themselves a certain and constant community of potential buyers is relatively higher.

The participation of the State (Government) in the process of electronicization of commercial activity led to the emergence of new types of models: Business-To-Government (B2G), Govemment-To-Citizens (G2C) and Govemment-To-Govemment (G2G). Thanks to the implementation of the B2G model, costs are reduced and taxpayers save on the maintenance and financing of the state apparatus. Thus, the Decree of December 17, 1999, adopted by the US Federal Government, states: “Heads of departments should promote the use of e-commerce, where possible, for faster, cheaper provision of federal services with necessary goods and materials, which will lead to lower costs taxpayers. " The US government spends more than $ 225 billion annually on the purchase of necessary goods. Improving the openness and transparency of governing bodies, ensuring free access for citizens to all necessary state information in the United States is associated with the introduction of an e-commerce model of type C2C.

Several types of electronic commerce are distinguished in the economic literature, the main criterion of which is the target group of consumers [1]. An important factor in the organization of any trading activity, in particular electronic commerce, is the assessment of the effectiveness of decisions made and of the whole process. All electronic transactions take the form of long-known types of commerce, such as trade, insurance, leasing. Accordingly, the methods of their assessment are studied in detail and applied in practice. It is necessary to determine the scope of the assessment, the objective function, identify the necessary indicators and formulate criteria that will indicate the degree of effectiveness. In electronic commerce, you can use the same system of business analysis, i.e. to collect and organize data, and on their basis to calculate performance indicators. If in the methodology for evaluating the effectiveness of electronic commerce does not have clear differences from conventional types of commerce, then in the formation of cost items there are a number of features.

The methodology under consideration refers to the largest trading floors, where the second interaction scheme is used - from producer to consumer. The analysis of economic efficiency is based on the calculation of the main cost items and cost reduction through the use of e-commerce systems. For analytical purposes, several main cost items should be distinguished:

1) depreciation;

2) rent for communication channels;

3) contributions for the domain name;

4) payment to the Internet service provider for the provision of space on its own server;

5) staff salaries;

6) additional costs in case third-party companies are involved in the development of the server, its design, and its functions;

7) the costs of ongoing advertising campaigns, etc. [2]

It can be concluded that through the use of electronic communications, the cost of printed products is reduced, as well as the cost of renting shops and labor of managers in the sales area, the need for using classical distribution channels and consumer interaction disappears. Through the use of electronic technology, savings and minimization of costs occur. The practice of electronic commerce has shown that in the vast majority of cases, the high efficiency of electronic commerce is ensured by minimizing distribution costs. Nevertheless, the problem of assessing effectiveness is quite wide and may include technical, economic, organizational and other aspects. Setting goals, analyzing indicators and developing measures to increase consumer confidence are important criteria for conducting any commercial process, including electronic.

4.Conclusions

Thus, the system of indicators developed by the authors allows us to evaluate the effectiveness of electronic commerce, to predict and evaluate the effects of various measures to improve the mechanism of electronic commerce at various levels of the economy, and, therefore, to identify and implement the most effective economic instruments for the development of this sphere.

Policymakers should support small businesses by offering digital literacy programs, subsidized access to analytical tools, and standardized e-commerce KPIs tailored for SMEs. For business owners, the proposed methodology can serve as a decision-making aid for evaluating investments in platforms such as Shopify, WooCommerce, or regional marketplaces.

Evaluating e-commerce effectiveness in small business settings requires a context-specific, scalable approach. The framework proposed in this paper integrates critical digital performance dimensions while accommodating the resource limitations of small enterprises.

Future research may extend this model to cross-border e-commerce or integrate AI-driven predictive tools for better forecasting.

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