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ORGANIZACYJNE ASPEKTY WDROŻENIA E-COMMERCE W PRZEDSIĘBIORSTWACH ROLNYCH

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Adnotacja. Internet zapewnił lepszą widoczność w globalnym łańcuchu dostaw, ponieważ nabywcy i sprzedawcy są znacznie bliżsi i łatwiej się kontaktują. Obecnie większość podróży nabywców na zakupy produktów w tych segmentach rozpoczyna się w Internecie za pomocą wyszukiwarek, rekomendacji w mediach społecznościowych, recenzji w Internecie lub reklam cyfrowych. Sektor rolny jest jednym z niewielu sektorów, w których handel elektroniczny musi jeszcze zostać wprowadzony. Powodów tego jest kilka: łańcuch dostaw rolnych jest często kontrolowany przez dobrze ustalonych pośredników (pośredników); problem logistyczny obchodzenia się z łatwo psującymi się produktami jest złożony. Pomyślnie wdrożenie handlu elektronicznego dla produktów rolnych pomoże poprawić kondycję finansową producentów i wzrost gospodarczy kraju. Technologiczne podstawy handlu elektronicznego pomagają poszerzyć kanały rynkowe produktów rolnych, zdając sobie sprawę z zakresu i zakresu organizacyjnego obrotu produktami rolnymi, zmniejszając pośredników w dystrybucji i zmniejszając koszty transakcji. Gwałtowny wzrost wykorzystania Internetu w ciągu ostatnich pięciu lat był okazją do opanowania nowej technologii i korzystania z usług w chmurze. Istniejące internetowe portale handlowe nie są w stanie osiągnąć celów e-commerce w rolnictwie

Słowa kluczowe: przedsiębiorstwa rolne, handel elektroniczny, Internet, sprzedaż dynamiczna, wsparcie organizacyjne, platforma cyfrowa.

ORGANIZATIONAL ASPECTS OF E-COMMERCE INTRODUCTION AT AGRICULTURAL ENTERPRISES

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Abstract. The Internet has provided greater visibility in the global supply chain, as buyers and sellers are much closer and easier to connect. Today, most customers' travel to purchase products in these segments begins on the Internet through search engines, social media recommendations, online reviews or digital advertising. The agricultural sector is one of the few sectors where e-commerce has yet to be introduced. There are several reasons for this: the agricultural supply chain is often controlled by well-established intermediaries (intermediaries); the logistical problem of handling perishable products is complex. Successful implementation of e-commerce for agricultural products will help improve the financial condition of producers and economic growth of the country. The technological foundations of e-commerce help to expand the market channels of agricultural products, realizing the scale and organizational scope of agricultural products, reducing intermediaries in distribution and reducing transaction costs. The rapid growth of Internet use over the past five years has provided an opportunity to master new technology and experience cloud services. Existing online trading portals are unable to achieve the goals of agricultural e-commerce

Key words: agricultural enterprises, e-commerce, Internet, dynamic sales, organizational support, digital platform.

ОРГАНІЗАЦІЙНІ АСПЕКТИ ЗАПРОВАДЖЕННЯ ЕЛЕКТРОННОЇ КОМЕРЦІЇ НА АГРАРНИХ ПІДПРИЄМСТВАХ

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Анотація. Інтернет забезпечив більшу видимість у глобальному ланцюжку поставок, оскільки покупці та продавці набагато ближче та легше контактують. Нині більшість подорожей покупців із придбання продуктів у цих сегментах починається в Інтернеті за допомогою пошукових систем, рекомендацій у соціальних мережах, оглядів сторінок Інтернету або цифрової реклами. Аграрний сектор є одним із небагатьох секторів, де електронна комерція ще має бути запровадженою. Причинами цього становища є те, що ланцюжок агропостачання часто контролюється добре закріпленими посередниками, і логістична проблема поводження зі швидкопсувною продукцією є складною. Успішне втілення електронної комерції для сільськогосподарської продукції допоможе покращити фінансовий стан виробників та економічне зростання країни. Технологічні основи електронної комерції допомагають розширити ринкові канали сільськогосподарської продукції, скорочуючи посередників у розподілі і транзакційні витрати. Стрімке зростання використання Інтернету за останні п'ять років дозволило засвоїти нову технологію та випробувати хмарні послуги. Торгові портали, що діють онлайн, нездатні досягти цілей сільськогосподарської електронної комерції.

Ключові слова: аграрні підприємства, електронна комерція, інтернет, динамічні продажі, організаційне забезпечення, цифрова платформа.

Statement of the problem. The Internet has provided greater visibility in the global supply chain, as buyers and sellers are much closer and easier to connect. Today, most consumers surf the Internet with search engines, social media recommendations, online reviews, or digital advertising. The agricultural sector is one of the few sectors where e-commerce has to be introduced. There are several reasons for this, i.e., the agricultural supply chain is often controlled by well-established intermediaries; the logistical problem of handling perishable products is complex; and most consumers still prefer to buy products themselves rather than online having no possibility to touch fresh fruits and vegetables. However, it is changing rapidly because e-commerce solutions are aimed to overcome customer preferences and logistics barriers driving online shopping around the world. On developed markets online orders for fresh products are common among businesses such as hotels and restaurants. On the consumer market ordering products online is also beginning to gain popularity. For example, in the US, online grocery store sales doubled between 2014 and 2018, and now account for about 7% of the total grocery market (Dolgui, 2010: 115; Anusha, 2017: 7; Chunlin, 2008: 345).

The Internet has led to great changes in society all over the world. The Internet has changed communication, marketing, education, healthcare etc. The use of the Internet in the agricultural sector could revolutionize the economy and improve farmer livelihoods. Agricultural e-commerce facilitates new types of business models developing by providing the farmer to the consumer, the consumer to the farmer, the farmer to business and the business to consumer service. It is expected that the introduction of e-commerce will become more profitable, transparent and competitive. The goals of e-commerce include eliminating intermediaries that benefit both producers and consumers, cross-border sales, easy delivery and price transparency. E-commerce in agriculture benefits producers presenting their yields to a wider market, regardless physical distance. Successful implementation of e-commerce for agricultural products will improve the financial condition for producers and economic growth of the country.

Analysis of recent research and publications. Both Ukrainian and foreign scholars (Broiaka, 2018; Khaietska, 2018; Sakhno, 2018; Tomashuk, 2019; Kysliuk, 2016; Piril, 2017; Chung, 2010) researched the problems of e-commerce tools introduction in the business model of agricultural enterprises and finding ways and best practices of organizational support of this process.

Goals of the article. Considering significant achievements of the researchers whose publications have been analysed, the best world experience of e-commerce introduction at agricultural enterprises remained unresolved. This publication is aimed to analyse and identify areas of the best world experience implementation in Ukrainian e-commerce.

Presentation of the main research material. In developing regions, the spread of agribusiness e-commerce is not fast. In these regions the problems with the introduction of agricultural e-commerce are more acute. For example, there are few opportunities to standardize agricultural products (in terms of quality, size or age), and logistical problems are more significant. In these regions farmers often live in rural areas with a low level of infrastructure (roads, warehouses, transport, etc.), limited access to the full range of digital technologies. Middlemen maintain the status quo there. Digital platforms have had a positive impact on many areas of the agricultural sector in developing regions. For example, mobile technologies are used to provide valuable agricultural and market information to farmers and allow early warning systems to reduce the risk of loss due to extreme weather or disease. There is growing potential for these platforms, they could disrupt the value chain of agricultural supply in these regions, as investors rely on growing end-user and farmer decisions for mobile Internet and digital payments to develop new agricultural market entry models. It can have a significant impact on the agricultural sector in developing regions. More than 97% of people employed in agriculture live in developing regions, and this sector has a significant share of the economy: 16.2% of GDP in sub-Saharan Africa, 15.9% in South Asia, 8.2% in Southeast Asia, and 4.8% in Latin America (Rupal, 2017: 118; Gen-dao, 2010: 196; Nithin, 2016; Takeshi, 2009: 372).

Creating an e-commerce portal for agricultural trade is a difficult task, but working with the system prosperity is more difficult.

Let's consider examples of organizational support for the introduction of e-commerce at agricultural enterprises in countries with economies in transition.

In recent years, a number of e-commerce agribusiness services have been launched in developing countries. These services provide farmers with new ways to sell their products and reach new customers. There is a limited

amount of research on the share of sales in agriculture through these online services on traditional distribution channels. However, an analysis of the performance of these services, including the number of buyers and sellers, the cost and volume of transactions, indicates significant growth and the potential for scaling up services in the future.

Let's consider the existing most effective examples of e-commerce services in agribusiness. For example:

Tanzania – Ninayo connects farmers with big buyers. In mid-2018, Ninayo announced that it plans to double revenue for the third year in a row, breaking the mark of \$ 100,000.

Kenya – Twiga Foods was launched in 2014 with five delivery routes. By early 2019, it had expanded to 90 delivery routes, processing about 2,500 daily orders through a network of 17,000 farmers.

Pakistan and Thailand – Ricult connects farmers to buyers in large factories in two markets. In November 2018, the company completed its e-commerce experiment in agriculture, with 10,000 farmers on its platform. On March 2019, the number of services has increased to approximately 35,000 farmers in Thailand and Pakistan. It aims to use the e-commerce service of agro-commerce by the end of 2019 for more than 100,000 farmers.

China – Since 2015, James Tyler, an agribusiness service that delivers fresh seafood, dairy, meat and summer fruit from Australia directly to consumers in China, has fulfilled more than 140,000 orders.

Indonesia – Eragano launched its e-commerce service in agriculture in 2015, selling a range of products including coconuts, chili peppers and potatoes. Now it has 7,000 active farmers and 25 large industrial buyers on its platform, served by 25 full-time staff and 50 agents. It plans to extend its services outside of Java to other regions of Indonesia that are in line with its expansion plans.

Colombia – Frubana is an online platform that allows farmers to sell directly at restaurants in Bogotá. It was launched in 2018 and served restaurants for the first three months, providing more than 1 million dishes with ingredients.

Gambia – FarmFresh was launched in 2014 and gained 50 customers in the first few months. By 2018, e-commerce served about 300 customers and had 20 farmers registered on the platform.

Nigeria – In April 2019, the Nigerian agro-technological startup Farmcrowdy launched a market for agricultural products. It is based on an online platform created in 2016, connects individual investors with farmers through sponsorship packages that fund higher yields. Farmcrowdy has empowered more than 12,000 farmers in 14 states (Liang, 2008: 202; Nithin, 2016: 27; Piril, 2017: 31; Rupal, 2014: 119; Takeshi, 2009: 373).

There are currently 951 websites in Ukraine dedicated to e-commerce in the agricultural sector. Figure 1 shows the most common sections of the site trading system AGROTORG.net.

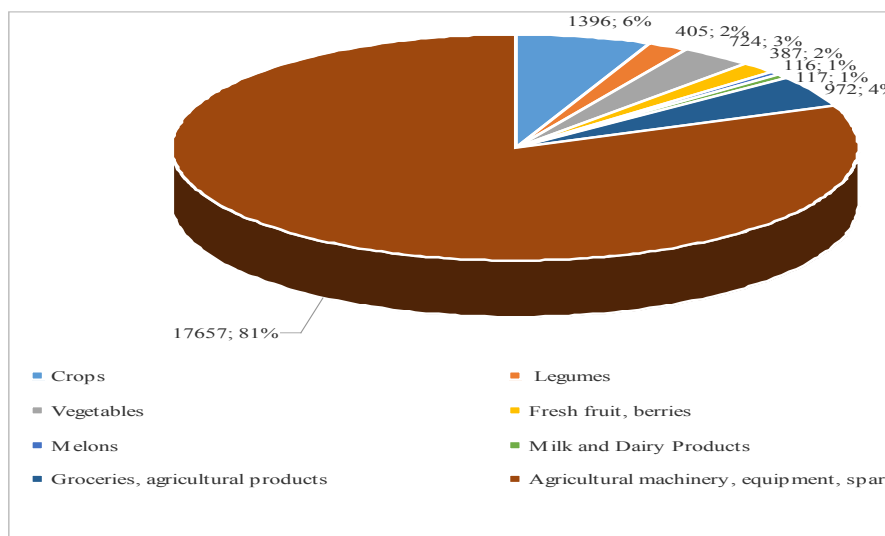


Fig. 1. The number of ads in the most popular sections of the trading system AGROTORG.net

Source: (Kysliuk, 2016).

The government takes several initiatives to promote e-commerce in agricultural products. Several private organizations are also working to simplify online transactions. Many e-commerce portals operate and sell a variety of products, but vegetables sales have not succeeded yet. Stakeholders are not eager to use this online system to sell and buy agricultural products. Very few people use this new marketing system. The pricing mechanism on the existing e-commerce portal neither increases revenue nor minimizes losses for the manufacturer. Consumers are not interested in shopping online, because they do not receive any advantage in the price of the product. E-commerce of agricultural products is not profitable for both buyers and sellers. Due to the relatively new form of e-commerce in the agricultural market, many functions of traditional e-commerce have not been deployed yet. Successful system implementation requires improved pricing. The mechanism of dynamic pricing is important for the adaptation of supply, demand and freshness of the product in real time (Topu, 2010: 115; Xing, 2016: 2; Xu, 2015: 3356).

Some problems are caused by the failure of e-commerce of agricultural products. In general, the following issues affect the purpose of e-commerce in the field of agricultural products, i.e.:

(I) Pricing: At the marketplace the seller meets with other sellers and sets the price of the product based on supply, demand, competitors' prices, quality and freshness of products. In e-marketing sellers do not know about the overall supply, competitors' prices and cannot assess the demand for the product, the seller has difficulty determining the selling price. The e-commerce portal must determine the sale price on behalf of the seller, taking into account the above factors.

(II) Failures caused by unsold products: The consumer postpones the purchase decision if the sale price exceeds the reference price the products become black in the next period. Agricultural products will not be in good condition and after some time it will be spent in vain. The seller will suffer losses from unsold goods due to the huge offer. Demand and pricing are interrelated. Demand for the product may increase due to lower sales prices of less fresh product. Current e-commerce websites do not provide a return on investment in situations when supply exceeds demand.

(III) Profit for the seller: At the normal market, the seller enjoys the advantage when the supply of goods is lower than the demand for goods. He tries to maximize his income by setting a higher price for the product, which can compensate for its losses due to unsold and decomposition. In the electronic environment, sellers cannot adjust the price of goods depending on supply and demand in real time. Existing websites use a static pricing mechanism and do not bring maximum revenue to the seller.

(IV) Reasonable price for the consumer: E-commerce reduces the cost of the transaction by eliminating middlemen between the farmer and the consumer, and the benefits are passed on to the producer and the buyer. E-commerce is expected to lower the price of goods for the buyer. However, the price of the product does not attract consumers. Consumers need to increase their interest in online purchases of agricultural products so that e-commerce is fully functional. The price of existing e-commerce portals does not attract consumers.

The main purpose of agricultural products e-commerce introduction is to provide a better price for both producers and consumers by eliminating middlemen. Better pricing means that the selling price is high enough to generate revenue for the producer and low enough to attract the consumer. The current pricing mechanisms do not suit consumers causing the failure of e-commerce in agriculture. The consequences of the existing pricing mechanism are as follows:

(I) Unsuccessful auction mechanism: E-NAM uses the auction mechanism to set the price of the goods based on real-time supply and demand. An online auction is a logical space where sellers and buyers meet and make transactions. Millions of auctions are held online every day for divers' products (from antiques to collectibles). However, the existing auction strategy used by e-NAM is not suitable for perishable goods, as bidders submit their bids for the same product throughout the period, and the result is announced after the time period. The quality of the product can be constant over this period of time. The quality of several positions may decrease, and the value of the offer may not increase, even decrease. Therefore, the auction mechanism with time options will be useful for marketing agricultural products. Current mechanisms cannot function in the worst situation. There is no clear strategy for what the seller should do with the balances of the resources they have left when the willingness of buyers to pay does not match the seller's price.

(II) Uncertainty in cost recovery: The static pricing mechanism sets a static lifelong selling price of the product in the virtual market until the seller himself changes the price. The selling price can be high enough to attract the consumer, and the static mechanism does not allow changes in price and demand. The perishable product has lost its freshness over time, it should affect the price of the product to maintain demand. Because of the huge supply, it is often necessary to lower the price below the base rate to increase sales and return on investment. Static pricing exposes the seller to a greater risk of loss due to unsold products or their decomposition.

(III) Low income: At a normal market, the seller charges a higher fee for the product when he realizes that the supply of the product is relatively low. Thus, they bring in income because sometimes they are forced to sell their goods at a lower price or cannot sell all their goods because of the huge supply. Sellers do not know about the supply and demand in the online system, so they cannot set the price accordingly. The pricing mechanism does not provide maximum income in the case of low supply and high demand.

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(IV) Lack of customer involvement: Removing middlemen benefits both manufacturers and customers, but the price of the current system does not indicate this. The price must be set by both the seller and the customer during the transaction. In the mechanism of static pricing, the seller sets the price of the goods, not taking into account the customer's willingness to pay. The consumer does not receive a price advantage from this online system. Thus, customers do not promote the evolution of e-commerce in agriculture (Xu, 2015: 510; Narahari, 2006: 99).

Setting the optimal price for goods considering parameters affecting the price is crucial for the successful e-commerce implementation. A dynamic pricing system will help solve the above-mentioned problems.

E-commerce technologies can play an increasingly important role in empowering traditional industries such as agriculture. The technological foundations of e-commerce help to expand the market channels of agricultural products, recognizing the scale and organizational scope of agricultural products, reducing middlemen in distribution and reducing transaction costs. Recent research has shown that e-commerce helps companies increase the flow

of information from agricultural products, reduce asymmetric information about agricultural products, and help create a traceability information system for agricultural chains. E-commerce has become a critical mechanism for improving agricultural efficiency and supporting rural prosperity. Authoritative statistics show that nationwide rural retail operations in China (context of this study) amounted to \$ 113.30 billion in the first half of 2019, while agricultural retail sales reached \$ 27.32 billion. However, e-commerce faces lots of challenges penetrating the agricultural sector. A recent report on the development of e-commerce in agriculture in China shows that only 1% of agricultural firms are profitable in e-commerce initiatives. Agribusiness faces problems such as a limited budget for e-commerce initiatives, a lack of technology culture and limited knowledge of information technology (IT). Therefore, there is an urgent need to investigate this difficult situation regarding the prosperity of agricultural firms.

Knowledge on e-commerce initiatives application to transform businesses is important for the development and survival of these organizations because agricultural firms lack basic income models. However, there is a lack of understanding of how e-commerce initiatives can support agribusiness in terms of developing their agility for business transformation. Studies of previous information systems (IS) on the value of IT for business have not paid enough attention to the role of IT in agribusiness.

Conclusions. The rapid growth of Internet application over the past five years has provided an opportunity to master new technology and experience as cloud services. E-commerce in agriculture can improve the financial situation by reducing the costs of middlemen in the supply chain and can build strong relationships between farmers and consumers. Existing online trading portals are unable to achieve the goals of agricultural e-commerce. Participants are afraid of losses that may result from unsold products or decomposition. The introduction of dynamic pricing is mandatory because the price of the product varies depending on supply, demand and freshness of the product. Lots of researches have been conducted on the dynamic pricing model. However, they have not been important for vegetable marketing.

Having analysed available researches, we saw that there is a gap between the dynamic pricing model for agricultural trade and other perishable products via the Internet. Much of the existing scientific publications did not take into account all the factors influencing price, such as supply, demand, shelf life, and so on. The further researches on the pricing model for agricultural products in a dynamic environment are possible.

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