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DEVELOPMENT OF COMMUNICATION STRATEGIES FOR SMALL AGRICULTURAL ENTERPRISES: ONLINE PLATFORM CREATION

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Introduction

In many foreign countries, agriculture is considered one of the most profitable areas of human activity. Agriculture typically employs more than fifty percent of the labor force, and industry and commerce depend on it as a source of raw materials for the manufactured goods market. Therefore, experts claim that the development of agriculture and the marketing system that affects it is the core of the process of economic growth of any state. It is also worth noting that the sale of goods can take place in different formats – online, offline, a combination of both. The choice depends on the specifics and capabilities of the enterprise and the industry itself.

Technology continues to be a major catalyst for change in the world, as the technological process gives businesses, governments and institutions of all kinds more opportunities to increase their productivity, create new research, propose new hypotheses and rethink existing ones. And while it remains difficult to predict how technological trends will develop, even farming professionals can shape innovative strategies by tracking the development of new technologies, anticipating how companies might use them, and understanding the factors that influence the adoption of these solutions. Accordingly, we face the task of focusing on optimizing communication with customers and sales of family farming products.

Review of Sources Related to the Subject Area

The study of agriculture as a profitable activity was done by scientists Shane Francis Conway, John McDonagh and Maura Farrell in "Abandon agriculture forever? Underestimation of the value of symbolic capital" [10]. The main themes emerging from the empirical data are farmers' concerns about the potential loss of identity, status and control after transferring management and ownership of the family farm after retirement. Many older farmers seem to prefer building and maintaining their personal capital rather than ceasing farming. The paper concludes by suggesting that future policies and programs that encourage the transfer of family farms should consider the prevalence of capital support and work within this framework to develop effective strategies to address the emotional well-being of older farmers.

Polakovich P., Shilerova E., Slovakova I., Henneyova, K. wrote about the importance of implementing the functional potential of business process management in the agricultural sector "Business process management in connection with enterprise information technologies in agricultural sector companies" [16]. The article is devoted to information and communication technologies (ICT) for the proper and effective functioning of process management in agricultural companies. The article presents a generalization of theoretical knowledge and practical recommendations regarding the creation and maintenance of a process management system at enterprises

with the support of information and communication technologies.

Leonard Dharmavan, Puji Mulyono, Dvi Retno Hapsari in their materials "Development of digital information in agriculture in the conditions of a new normal era during the Covid-19 pandemic" studied the possibilities of implementing innovative solutions in conditions of state instability [11]. One of the aspects that emerged from the research is the types of digital information with messages and platforms that farmers need to help advance agriculture in the new normal era. The result brought positive conclusions that the consultants are ready for the digital era and equipped to train farmers in the new normal era.

Georgios Kountios investigated one of the problem areas of the agricultural direction regarding the practical value of the skills of specialists in the article "The role of agricultural consultants and precision agriculture in the implementation of good agricultural practices and sustainable water resources management" [12]. According to the study, good agricultural practices (CGAPs) mainly meet the needs of protecting biodiversity, genetic resources and landscape, soil and water resources, as well as the provision of public goods by farmers. Preservation of biodiversity is inextricably linked with agricultural activities. With a variety of landscapes with specific microclimatic and topographical characteristics, a variety of soils and geological substrates, as well as a variety of vegetation, forests and agriculture, Cyprus contributes to the creation of a remarkable diversity of habitats that meet the requirements of numerous species of wildlife.

Hrabin Bachev analyzed the state of the system of agricultural educational support in the article "Diagnostics of the system of agricultural information, training and consultations in Bulgaria" [9]. According to the analysis, attention is drawn to the fact that years after the country's accession to the EU, the number of private farm owners who have received full agricultural training increases, but despite this, almost 93% of them still have practical experience and do not have any agricultural training. The rural participation rate remains weak and is constantly decreasing, and Bulgaria is one of the last in the EU in terms of hours of formal and non-formal education and training. Over the years of membership in the EU, the number of consultations provided has doubled, and in recent years 17% of all registered agricultural producers and every tenth farmer of the country have been consulted, and the subject of consultations is expanding.

Some scientists studied models that optimize the work of administrators when creating corporate pages in social networks. Since the capabilities of modern social networks contribute to the development of business without additional financial investments. Informational support of the admin using developed measures and algorithms. Components that influence the formation of brand components are considered, including: customer service, company name, strong impression (logo, repetition), product benefits, price and value proposition. Data with statistical information about the activity of active pages in the social network Instagram is also added [27].

Research Methodology

The following general scientific methods were used for the research: analysis, observation, scientific modeling.

The analysis method was used to get acquainted with the subject area – the family farm, studying the organizational structure, features of management and interaction between objects. In this way, the purpose of the work was substantiated. The research of domestic and foreign scientists was analyzed.

The observation method was used to study the specifics of the work organization of the farm enterprise. In particular, its potential customers and their interaction with each other, social networks, articles, etc. It helped to understand the current state of communication between the farming industry and the target audience.

The method of scientific modeling was used to better understand the processes of saving customer data when purchasing goods through the site, meeting their needs, etc.

Generalized analysis of the farm's activities

The subject of the study is the family farm (FF). A family farm is a business created for the purpose of farming and owning agricultural land. The majority of ownership shares in the organization should belong to persons of three degrees of kinship – for example, grandparents, parents, children, brothers and sisters, nieces and nephews. At least one of these persons must reside on the farm or actively manage the farm, and one of the persons must own the agricultural land for at least five years prior to the transfer of the land to the business entity. An authorized farmer organization must meet even stricter requirements. An authorized agricultural organization can have only one class of ownership and up to five owners, although married couples are considered one owner. Among the available farm services:

1. sale of blueberries;
2. sale of seedlings;
3. delivery of products within Lviv region.

When a farmer creates a business entity, he transfers the assets of the farm from his name to the name of the business entity. In exchange for this contribution, the farmer receives ownership interests in the business entity, such as shares of stock, membership interests, or partnership interests.

One of the main advantages of using a formalized organization is protection from the liability of individual owners of the company. The company is a separate legal entity. Generally speaking, the debts, obligations and liabilities arising from the operation of the farm belong to the company, not its owners.

Business entities are also an effective way to transfer a farming business from generation to generation. Instead of dividing the farmland among family members, the owner can gift a share of ownership in the organization to all children during his lifetime or after his death. The advantage of this arrangement is that the agricultural land is kept together, while the "non-agricultural children" still receive some benefit in the form of future profit sharing. To the extent that the farmer needs income in retirement, the farmer may sell some of his ownership interest in the business to children or other family members. You can familiarize yourself with the typical organizational structure of a family farm in fig. 1.

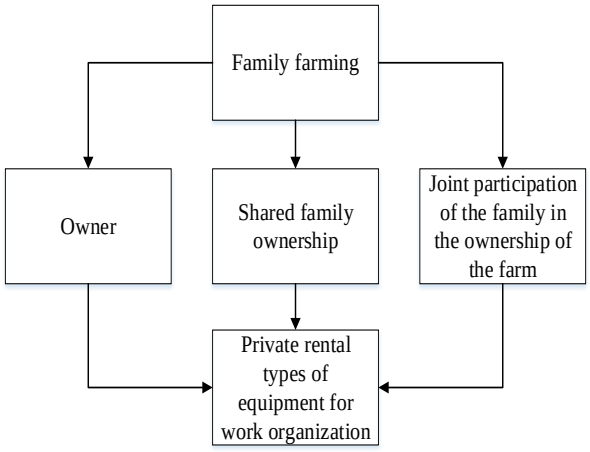

Fig. 1. Typical organizational structure of FF

It is worth noting that the family farm actively conducts its activities in popular social networks. Social networks reflect connections between people, including flows of resources, information, and practical knowledge. They can contribute to understanding resilience by providing information on how social networks facilitate collective action, enable knowledge sharing and foster social support for SFGs and communities to cope with multiple impacts.

Frequently FF have pages on the following social networks: Facebook and Instagram, for example – official Facebook page of FF "Yagidny Kray" (https://www.facebook.com/groups/569531327745135). The number of users following updates on Facebook is 587 participants (as of September 2023). The activity of the page is most observed in the summer season – up to a hundred reactions to one publication. Additional services of FF include the sale of blueberry seedlings in cooperation with wholesalers of greenhouse plants.

Also, this FF has a page on Instagram, the activity of which is the same as in the previously analyzed community. The number of users who follow is 236 (as of September 2023).

The presence of public pages helps SFG to be remembered by customers, easily find and spread information about their products.

Decomposition of the Documentation and Information Solution of the Problem

Accordingly, this section projects the following types of formal models: entity relationship diagram (ERD) and data flow diagram (DFD).

The created ERD of the subject area represents the connections between the objects important for the organization of the work of the family farm. Each object has the following attributes.

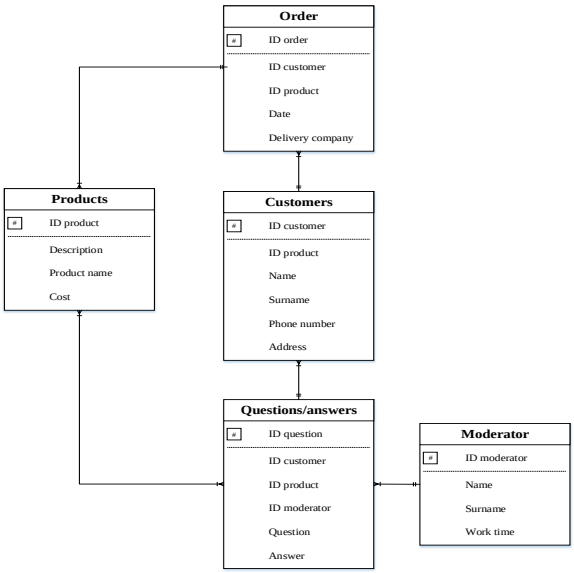

Fig. 2. Entity-Relationship diagram of FF

1. "Order" has attributes: #ID order, ID customer, ID product, Date, Delivery company.

2. "Customers" has attributes: #ID client, Name, Surname, Phone number, Address.

3. "Products" has attributes: #ID product, Description, Product name, Price.

4. "Questions / answers" has attributes: #ID question, ID product, ID moderator, Question / answer.

5. "Moderators" has attributes: #ID moderator, Name, Surname, Working time.

The ER diagram will help the farm to document information, eliminate technical problems or identify malfunctions. It will help in improving the processes of the family farm even when restructuring organizational processes. ERDs can also be used to create and visualize new databases and in the work of managers for early detection of errors.

In order to understand information flows, DFD is designed – a graphic structural analysis methodology that describes data sources and destinations external to the system, logical functions, data flows, and data stores that are accessed.

Accordingly, the following external entities – "Moderator" and "Customers" – have been defined for the subject area "Organization of farming activities" (fig. 3).

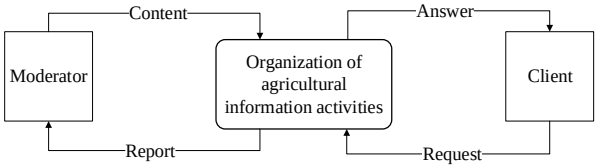

Fig. 3. DFD0 "Organization of information activities"

Defined data flows for the "Moderator" are work with the filling of the site, help with the creation of the most common questions. In turn, he will be able to receive reporting information on completed orders, monitor work efficiency, and form new strategies for the development of organizational activities. For the next essence, information flows are sending a request for receiving information about certain issues and qualitative satisfaction of his needs through receiving an answer.

The following type of diagram details the process of "Organizing Farming Activities" presented above. Analyzing the created model, we see that when the "Content" created by the moderator enters the system, the process of "Analysis of received information" goes through. This information may refer to the following processes: "Entering information about goods", "Formation of answers", "Formation of report criteria". As a result of the initial information, the moderator receives reporting information about the operation of the system. It is also important to note that all information from the completed processes is stored in the database (tables "Orders", "Products", "Questions / answers").

The input data for the client is the process of "Processing the request" by the system according to its type: "Processing the order", "Processing the client's question", "Processing product reviews". Accordingly, as a result, the client will receive an answer to his question.

Practical Implementation

Among the various options for creating websites, using a CMS is one of the best ways to meet the needs of different types of organizations. They are an excellent alternative to the implementation of modern information technologies, in particular web design. Accordingly, the following actions were taken to create the website of the family farm (fig. 4).

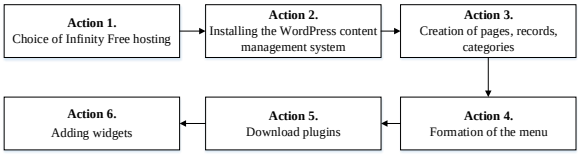

Fig. 4. Stages of website development for a family farm

The following figure shows the first step of creating a website – authorization on the hosting.

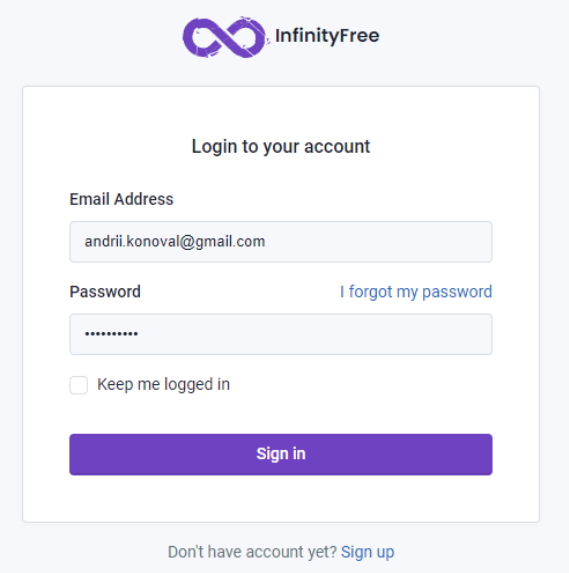

Fig. 5. Authorization window on web hosting

The website will be a tool for improving communication with customers of the family farm by increasing the number of visitors to the site. First of all, it is important to provide consumers with information about the type of activity, vision, and purpose of the family farm. On the page "About our farm" there is information about the history of the establishment of the farm with the addition of photos of the founding family (fig. 6).

Fig. 6. Website page "About our farm"

Plugins were added to supplement the site with wider functionality. In the admin panel on the left is the option with settings, three options are available: installed plugins, add new ones and plugin editor. The following plugins were used to create the Yagidny Krai website: Elementor, Everest Forms, WooCommerce.

The following Elementor designer tools were used: title, text, accordion (option to expand the hidden part of the text), link to the interview video.

For constant communication and established feedback, a form was created using the Everest Forms plugin.

The created menu of the site is convenient in its navigation, so it will help visitors easily navigate through the pages. In order not to overload the created menu with various types of sections, a submenu is used (fig. 7).

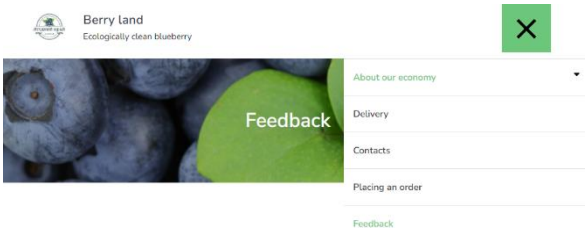

Fig. 7. View of the created menu

Links to pages, categories, topics, and blog posts have been added to the menu. Since the WP Clean theme is selected for work, the following sections are available on

the site: the main menu, which is displayed at the top, and the secondary menu, the footer menu.

Conclusion

Analyzing the activity of the family farm – entrepreneurial activity based on kinship between family members. The study of the state of the subject area – the family farm "Yagidny Krai" was studied. The peculiarities of the organization of its activities, available services and a typical organizational structure are determined.

The purpose of their activities is the effective management of land and resources for financial gain. An analysis of domestic and international scientific research was carried out, which relate to various mechanisms of organizing the work of private organizations. Internet resources, platforms and quality standards provided additional knowledge about trends in the development of the farming sector.

The presented ERD models reflected the importance of correctly constructed relationships between objects of farming activity. The used data flow diagrams detailed the execution of product information update processes and communication with customers. It was substantiated that in order to improve communication with the customers of the family farm, it is worth using the potential of the WordPress content management system. Illustrations from the created information-filled pages ("About our farm"), navigation sections, plugins (Elementor, WooCommerce, Everest Forms), widgets are confirmation of the performance of specified actions. On the basis of the work carried out, the successive steps of the implementation of the site creation are presented, the study of possible dangers that can be encountered in the process and ways to eliminate them is carried out.

Accordingly, the site created will make the following opportunities available for family farm owners: development of customer trust, interaction with buyers at a higher level, going beyond the scope of the real world, attracting new customers and development in the field of farming.

References

1. On state registration of legal entities, individual entrepreneurs and public organizations. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/755-15.

2. About advertising. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/270/96-%D0%B2%D1%80.

3. About farming. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/973-15.

4. About information. (n.d.). Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/2657-12.

5. About state support of agriculture of Ukraine. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/1877-15.

6. About the protection of information in information and communication systems. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/80/94-%D0%B2%D1%80.

7. About the protection of personal data. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/2297-17.

8. About wholesale markets of agricultural products. Official website of the Parliament of Ukraine. URL: from https://zakon.rada.gov.ua/go/1561-17.

9. Bachev H. Diagnosis of the Agricultural Information, Training and Advice System in Bulgaria (SSRN Scholarly Paper 3578564). DOI: 10.2139/ssrn.3578564.

10. Conway S. F. et al. Cease agricultural activity forever? Underestimating the importance of symbolic capital. *Journal of Rural Studies*. 2016. Vol. 44. P. 164–176. DOI: 10.1016/j.jrurstud.2016.01.016.

11. Dharmawan L. et al. Digital Information Development in Agriculture Extension in Facing New Normal Era During Covid-19 Pandemics. *Journal of Hunan University Natural Sciences*. 2020. Vol. 47(12). P. 64–73.

12. Kountios G. The role of agricultural consultants and precision agriculture in the adoption of good agricultural practices and sustainable water management. *International Journal of Sustainable Agricultural Management and Informatics*. 2022. Vol. 8(2). P. 144–155. DOI: 10.1504/IJSAMI.2022.124577.

13. On access to public information. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/2939-17.

14. On making changes to some legislative acts of Ukraine regarding the stimulation of the activities of farms. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/1788-20.

15. On making changes to the Tax Code of Ukraine and some laws of Ukraine on stimulating the formation and operation of family farms. Official website of the Parliament of Ukraine. URL: https://zakon.rada.gov.ua/go/2497-19.

16. Polakovič P. et al. Business Process Management in Linking Enterprise Information Technology in Companies of Agricultural Sector. *AGRIS on-line Papers in Economics and Informatics*. 2018. Vol. 10(3). P. 119–126 DOI: 10.22004/AG.ECON.281650.

17. Tytova N., Pozniak S., Gurevskyi V. Agricultural lands: the rights of citizens of Ukraine / ed. by N. Tytova. Lviv : PAIS, 2005. 368 p.

18. Turn emails into revenue. Mailchimp. URL: https://mailchimp.com/.

19. Global mobile traffic. Statista. URL: https://www.statista.com/statistics/277125/share-of-website-traffic-coming-from-mobile-devices/.

20. Rao N. H. A framework for implementing information and communication technologies in agricultural development in India. *Technological Forecasting and Social Change*. 2007. Vol. 74(4). P. 491–518. DOI: 10.1016/j.techfore.2006.02.002.

21. Rosell J. R., Sanz R. A review of methods and applications of the geometric characterization of tree crops in agricultural activities. *Computers and Electronics in Agriculture*. 2012. Vol. 81. P. 124–141. DOI: 10.1016/j.compag.2011.09.007.

22. Small Farm Central. (2018, April 24). Sustainable Market Farming. URL: https://www.sustainablemarketfarming.com/tag/small-farm-central/.

23. Website Builder – Create a Website in Minutes. Squarespace. URL: https://www.squarespace.com.

24. Webflow: Create a custom website | Visual website builder. URL: https://webflow.com.

25. What Are The 7 Phases of Website Development? URL: https://www.linkedin.com/pulse/what-7-phases-website-development-atul-jain.

26. What is Food Security? There are Four Dimensions. [Text/HTML]. World Bank. URL: https://www.worldbank.org/en/topic/agriculture/brief/food-security-update/what-is-food-security.

27. Markovets O. et al. Model of informational support for social network administrators' content creation. *COAPSN 2020 Control, Optimisation and Analytical Processing of Social Networks* : proceedings, Lviv, Ukraine, May 21, 2020 / 2020. P. 125–136.

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DEVELOPMENT OF COMMUNICATION STRATEGIES FOR SMALL AGRICULTURAL ENTERPRISES: ONLINE PLATFORM CREATION

An analysis of current trends shows that the development of information technology plays an important role in agriculture, helping to improve the efficiency and competitiveness of the industry. In this regard, there is a need to improve communication systems with consumers to ensure effective interaction and expand market opportunities for agricultural enterprises.

The article discusses the role of an online platform in the development of small-scale agriculture, in particular through the creation of a website based on a content management

system. It emphasizes the potential of this tool to increase consumer confidence, improve communication with them, and attract new customers. The advantages of using a CMS are considered in the context of ease of use, flexibility in customization and the ability to quickly update information about products and services.

Based on the analysis of a family farm, the authors demonstrate how to effectively implement these technologies to ensure successful customer interaction. In addition, the authors highlight the process of building a website, taking into account the needs and expectations of the target audience. This approach allows not only to improve communication with consumers but also to create a solid foundation for the development of agriculture in the online environment.

***Key words**: content management system (CMS); WordPress; family farm (FF); Entity Relationship Diagram (ERD); Data Flow Diagram (DFD).*

Вовк Н.С., Паздерська Р.С., Коновал А.А.

РОЗВИТОК КОМУНІКАЦІЙНИХ СТРАТЕГІЙ МАЛОГО СІЛЬСЬКОГО ГОСПОДАРСТВА: РОЗРОБКА ОНЛАЙН-ПЛАТФОРМИ

Аналіз сучасних тенденцій показує, що розвиток інформаційних технологій відіграє важливу роль у сільському господарстві, сприяючи підвищення ефективності та конкурентоспроможності галузі. У зв'язку з цим виникає потреба вдосконалення систем комунікації зі споживачами для забезпечення ефективної взаємодії та розширення ринкових можливостей сільськогосподарських підприємств.

У статті розглядається роль онлайн-платформи у розвитку малого сільського господарства, зокрема через створення веб-сайту на основі системи управління контентом. Він підкреслює потенціал цього інструменту для підвищення довіри споживачів, покращення спілкування з ними та залучення нових клієнтів. Переваги використання CMS розглядаються в контексті простоти використання, гнучкості в налаштуванні та можливості швидкого оновлення інформації про продукти та послуги.

На основі аналізу сімейного господарства автори демонструють, як ефективно впровадити ці технології для забезпечення успішної взаємодії з клієнтами. Крім того, автори висвітлюють процес побудови веб-сайту з урахуванням потреб та очікувань цільової аудиторії. Такий підхід дозволяє не лише покращити комунікацію зі споживачами, а й створити міцну основу для розвитку сільського господарства в онлайн-середовищі.

***Ключові слова**: система управління контентом (CMS); WordPress; сімейне фермерське господарство (FF); діаграма взаємозв'язків сутностей (ERD); діаграма потоку даних (DFD).*