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Prerequisites for the development of mobile marketing in agricultural enterprises

Scientific problem. There appeared a new term in agriculture and agribusiness in recent years called E-agriculture or "Electronic agriculture". This term was first introduced at the World Summit of the Information Society WSIS (2003-2005) and used in the research by FAO in 2006. In this research respondents identified E-agriculture as "an improvement of communication and engagement processes, distribution, access and information exchange in rural development" [14]. Thus E-agriculture is associated with the new subject area that focuses on strengthening of rural development through improved information and communication processes and implies the conceptualization, design, development, evaluation and application of innovative methods of information and communication technologies (ICT) usage in agriculture [14].

One of the elements of E-agriculture is a so-called "mobile agriculture" or mAgri [16], which uses commercial mobile services and mobile applications. In developing markets with a big layer of the agriculture labor force, mAgri is used to deliver information and ser-

vices to small farmers and traders, and that increases their productivity and income. In developed markets with automated processes and smaller layer of workforce mAgri is implemented at higher levels of the value chain, i.e. at the stage of communication with consumers or distributors [2, 3].

Mobile technologies are considered to be an engine that can radically change the situation for small farmers, especially in consulting (extension) and agricultural development. Internet and mobile networks have the potential to provide farmers with agricultural-informational services, which are available, appropriate (timely and customized) and up-to-date. Mobile technologies offer the benefits of electronic access to the client; ensure privacy and the opportunity to provide contactless services at any time / any place [20].

Agricultural producers and farmers in Ukraine should learn from foreign colleagues how to use mobile technologies for agriculture, including mobile marketing, since the introduction of advanced technology facilitates the continued development and improvement of production, which leads to increased efficiency and productivity.

Analysis of recent researches and publications. Unlike foreign scientific literature, which

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has been analyzing the benefits of mobile Internet marketing in agriculture for a long time, in Ukraine this issue is paid unfortunately very little attention and there is not enough domestic publications on this subject. Some scientists consider the use of electronic media in marketing activities (Baikov V.D., Vysotska V.A. Illyashenko S.M., Pankovetsky O., Popov Y., Shipulina J.S.), general principles of mobile marketing (Bugayev L., Ezhov A, Polyakov A., etc.) [5] and perspective ways to develop the mobile industry (Babkov V.J., Polyntsev P.V., Ustyuzhanin V.I., Bazarov R., Orlov V.N., etc.) [1]. Also various foreign and some domestic Internet resources are well represented in this area; they follow the recent changes in the field, conduct researches and surveys. So mobile marketing in the agricultural sector of Ukraine requires in-depth study, because the industry of mobile technology develops rapidly.

The objective of the article is to summarize preconditions for the development of mobile Internet marketing in the agricultural sector of Ukraine, to emphasize advantages of mobile technology in agriculture and to identify the main areas of its application.

Statement of the main results of the study. Mobile technologies is a "whole range of technologies used for mobile communication and cell phones"; it's a technology "which is portable and refers to any device that you can carry with you and use for a wide range of tasks" [5]. They allow to use attraction of consumers through the game, maintaining interest and creating a positive image of the company and loyalty [8].

Farmers often use mobile technology to check the weather, receive letters or market information on their products. Although lately they have started to use precision farming tools, tools for recording media, obtaining agricultural news and technical information. Also new technologies such as e-books, podcasts, RSS and agrarian blogs became popular. It allows to store all the information in one place, eliminating the need to accumulate excessive amounts of paper books, to be always aware of latest news, changes or updates and to give immediate feedback, to communicate with other farmers, etc. [19].

The capabilities of smartphone/tablet and the fact that these devices can be used in the field as a data logger and controller for a number of processes instead of specialized devices, as well as the ability to distribute reports/data among farmer's employees quickly contribute significant savings of costs, which are mandatory in agriculture.

Organization called PrecisionAg, which is a part of the CropLife Media Group (USA), conducted a survey recently, asking farmers and agricultural entrepreneurs about their use of mobile Internet technology. 11,000 respondents-subscribers of PrecisionAg eNews were interviewed. 48% of them used mobile devices for less than computer or laptop, while 31% used them with the same regularity. The majority of respondents rated the speed and quality of Internet as high. 83% of respondents used the mobile Internet "in the fields", 49% - in the office, 51% - at home, 62% - in the cab. Respondents allocated the purpose of mobile technologies usage as follows: 1) to display geographical maps, 2) exploration/investigation of the territory, 3) soil sampling. The mostly used mobile apps according to respondents are: Connected Farm - 31%, JD Link - 28%, FieldView - 24%, Mobile Farm Manager - 16%, AgStudio MAP - 10%, PrecisionEarth - 10%. The general attitude towards agricultural mobile applications was highly positive. 72% of respondents felt that such applications improved the quality of their work, 65% noted the importance of videos and webinars to provide relevant information [18].

Thus, mobile technologies in the agriculture are characterized by the following potential benefits:

- Provision of small farmers the access to local, regional and global markets;
- Improving the quality of services and management for the rural population;
- Helping farmers in risk management;
- Agricultural markets are becoming more efficient and transparent;
- Promotion and involvement of small farmers in agricultural innovations, enabling joining to so-called "high farming";
- Improved management of land and natural resources and environmental issues;
- Saving time, flexibility and the ease of use;

- Supporting diversification of the rural economy and farmers' individual decisions on a combination of production activities [12].

Scientists agree that mobile technologies play mostly positive catalytic role in the development of small-scale farming, although there are some critical aspects: for example, mobile technology is called an autonomous independent external force that causes change in every area of life and enhances the existing dependences, thus it is necessary to examine the issues of management, cost, selection and use of mobile technologies. The costs of setting mobile technologies and applications are possible to occur; moreover, it may be difficult enough to encourage older people to use mobile technologies. However, these issues are more global and require social and psychological solutions. In general mobile technologies in agriculture are combined with relevant political programs, carefully coordinated and integrated into other development strategies of ICT [12].

Mobile technologies are widely used in agriculture of developing countries like India, Africa, the Philippines, Malaysia, Bangladesh, China, etc., not to mention the developed European countries and the USA.

For example, in India there are special projects (mProjects) for dissemination of agricultural information. Mobile operators develop a variety of applications and services with friendly user interface that can be used by touching just a few keys. Moreover, operators are selling mobile devices that have a built-in set of additional services, which greatly promotes customized applications and services [20].

E-Dairy application in Sri Lanka helps farmers to earn up to 262 dollars more a year for each of their calves through the provision of veterinary and extension services, which are sent by mobile phones. These applications also strengthen market linkages, because they are used to improve sales and the control of products traffic. Manufacturers of tea in Kenya declared the average revenue growth of 9% - about \$ 300 a year - by using industrial measuring, recording and tracking functions of the mobile application called Virtual City. In addition, the corresponding applications have expanded their access to financial and insurance products in rural areas. Programs such as M-

PESA in Kenya, Smart Money and G-Cash in the Philippines have been recognized as safe and easy for payments and money storage. Mobile applications also have a significant qualitative impact.

The rapid introduction of mobile technologies in agriculture contributes to the development of mobile marketing and its use on farms.

Mobile Marketing - a set of marketing activities aimed at the promotion of products or services through mobile devices. Mobile marketing allows you to deliver advertising messages to the specific client and to make this message the most customized, scilicet the wishes of the consumer and his tastes are taken into account according to the information gathered about him before. Finland is considered to be the most developed country in terms of the use of mobile marketing and mobile technologies.

Mobile marketing encompasses three sub-categories: the actual mobile marketing (message with a call to action), mobile services (reporting about order delivery) and managing relationships with customers (a reminder of the planned visit to the doctor, etc.).

Another categorization distinguishes mobile marketing means, that use the Internet (website, application, context and media support), do not use the Internet (SMS, MMS and voice-call technology Wowcall) and phygital marketing (combining physical and virtual reality - QR codes, augmented reality, etc.) (Figure) [6].

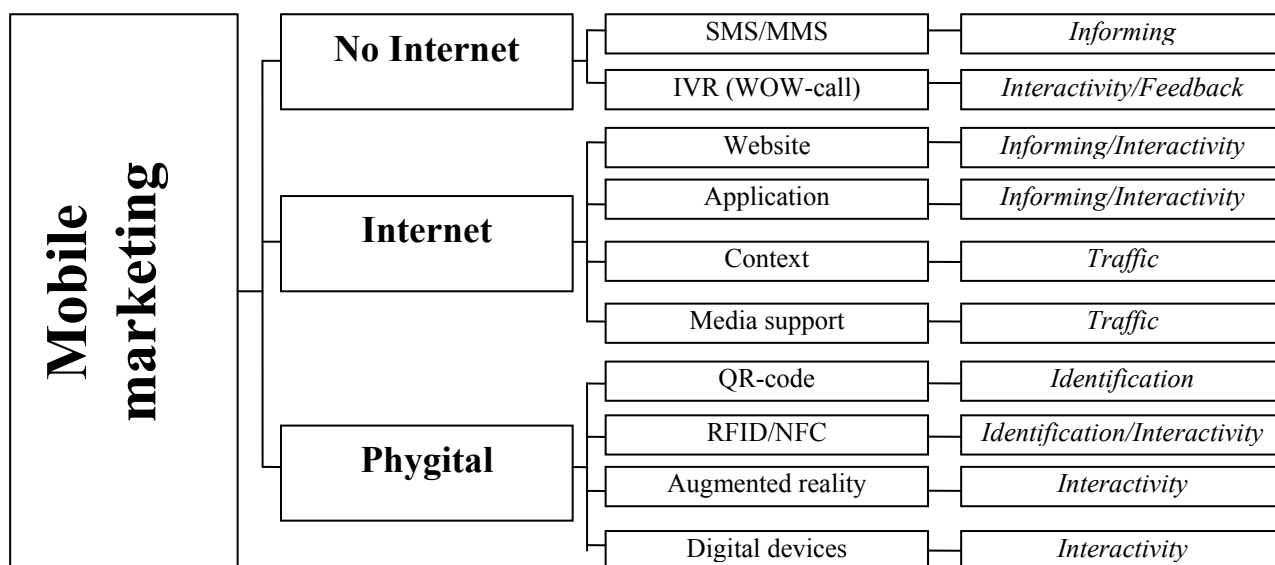
Let's consider some of the elements of mobile marketing:

1) SMS marketing - sending information on promotions, discounts, new offers to mobile phones, that means carrying out a complete advertising campaign that is spread through short text messages. The disadvantage of this method of informing customers is that sending SMS is often identified as spam (unwelcome messages), especially if the consumer was not signed to the company's alerts. Currently, this technology is considered to be obsolete already, although still is widely used [8]. According to Nazar Grynyk, "really, SMS - is 80-90% of the market of mobile marketing, and not only in Ukraine, it is very inherent in Eastern Europe. But while moving to the West, the share of SMS marketing is falling. Much more interesting business is not

just sending SMS, but to integrate it with other channels and services" [3].

2) MMS marketing - this technology is similar to SMS marketing, but it uses different tools - MMS (Multimedia Message Service), i.e. a

set of images, text, audio and video in any combination. Thus, the consumer can receive messages with a viral video from a particular brand or a motivating picture with a link to the specific website [15].



Advertising tools of mobile marketing

3) Push notification / message - a technology first used by Apple for the Iphone in 2007, and later by operating system Android, and needs Internet connection. It looks like messages that appear on top of the screen and allows users of mobile applications to interact in a more convenient way.

4) Marketing of mobile apps – at present well developed and highly competitive industry that focuses on the development and promotion of a wide variety of applications, chargeable or free for users. They may include direct advertising, viral information, that is able to strongly influence the user.

5) Mobile Game Marketing - different types of interactive mobile games, that place messages from brands (explicit or implicit advertising) or indicate information about sponsoring brands to encourage users to get acquainted with the products / services of the company or to create a favorable image [17].

6) Mobile web marketing - placing information about the company, product catalogs, advertising, presentations, etc. on websites with the most user-friendly interface designed specifically for mobile devices.

7) QR codes - a technology that allows a user to visit a web page by scanning through the camera of the mobile device website's ad-

dress, which is encoded in the 2D image. Currently, this technology develops rapidly, getting new impressive features. For instance, while pointing your phone camera at the QR code, you can see an interesting animation or 3D image of corresponding picture (that is called augmented reality) [3,15].

Google is actively implementing a variety of products in the field of mobile marketing. These include the following:

1. Mobile search advertising;
2. Links on the mobile site (make the transition to the site's page of interest faster);
3. Click-to-Call Mobile Ad Extension – there is a call button placed near the advertising, that enables the implementation of an automatic phone call to the number attached (i.e. to call the seller), when you click on it;
4. Google offers - this extension allows you to put a discount or free coupon under the advertising;
5. Click-to-Download Ad Extension – works as Click-to-Call Mobile Ad Extension, but instead calling to the number moves the user to the download page of mobile application [17].

Also, Google AdWords integrated new options that enable implementing of mobile advertising campaign (Enhanced Campaigns),

which allows users to manage a single campaign for an ordinary computer and mobile devices, instead of two separate campaigns [17].

In Ukraine there are currently more than 60 million of active mobile devices [6]. However, unfortunately, in terms of using mobile technologies for agriculture Ukraine still can not be compared even to developing countries. Modern market of mobile services in Ukraine needs to improve the quality and enhance the universality of mobile services through the introduction of organizational, technical and socio-economic measures [1].

To make an agricultural entrepreneur always keeping in touch with clients and to enable sending the necessary documentation, communicating with customers, mobile Internet should be fast and reliable [1].

Europe and the United States are getting prepared to the introduction of 5G and launching mobile internet speeds up to 10 Gb/s [2]. Instead, Ukraine is still at the stage of 2G, the speed of which is compared with the old dial-up in the late 90's. In fact, Ukraine is the only European country that has not yet implemented communication standards of 3rd and 4th generations. The technological backwardness of Ukraine can be compared with the Kazakh steppes, Africa and the Asian part of Russia according to the interactive map of global mobile Internet usage Opensignal.com.

However, this inhibition of modern technologies of the mobile Internet in Ukraine is artificial, and there were only private business interests and the reluctance of the authorities and extension services to use ICT achievements, which in turn hampered the development of business, economics, social projects, technology companies.

A huge step forward to the emerging technologies was signing of a decree "On ensuring the conditions for implementation of modern telecommunication technologies in Ukraine," in which the President P. Poroshenko instructed the Cabinet of Ministers of Ukraine (CMU) to ensure the conversion of radio frequency resources to launch 3G-connection, and CMU in turn adopted a resolution №993, which determines the number of licenses for third genera-

tion connection and terms of auction [9,10]. The quickest and easiest way to introduce 3G in Ukraine would be applying the principle of "technological neutrality", i.e. the ability to use the radio frequency resource of range 900 and 1800 MHz for any radio technology, as in other European and world countries [2].

But we shouldn't expect the rapid emergence of 3G in Ukraine, because the result of resolution adoption was not published, and competition for licensing has not yet been announced [11]. In addition to the political, in Ukraine there are other deterrent factors - organizational, technical, social, including lack of awareness and banal conservatism. In addition, the problem is the poor quality of services provided by the companies and the lack of private sector interest in developing programs in ICT for rural areas [13].

Accordingly, the situation on the mobile applications market for agriculture in Ukraine is critical. Mobile applications focused on Ukrainian market practically do not exist. Most companies developing such applications work with customers from USA, Canada, Israel [4,7]. The future of mobile technologies in Ukraine, including agriculture, depends on the ability of mobile operators to obtain timely and complete access to the necessary frequency resources, the availability of clear and current regulatory environment and licensing, adequate competition, taxation and intellectual property and on the reorganization and consolidation of the industry [1].

Conclusions. New mobile informational technologies offer significant opportunities for agriculture in increasing efficiency, gathering information and interaction with people needed to farm businesses. Active implementation of mobile technology in agriculture abroad led to the development of mobile marketing and its use on farms.

However, the use of mobile marketing by agricultural enterprises in Ukraine is only at an early stage, meaning that to enhance their competitiveness in a globalizing conditions it is necessary to intensify the implementation of new communication technologies for using the opportunities and benefits of mobile marketing.

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