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A new „agricultural electronic marketplace”, the way forward for the procurement of inputs

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1. Abstract

The present study aims to formulate a concept for an electronic marketplace which offers efficient support primarily to small and medium-sized businesses operating as agricultural producers and service providers in order to facilitate their purchase and efficient use of production inputs, product development, the improvement of production, the establishment of business contacts and the sales of produced goods. The concept of the electronic agricultural purchasing marketplace embodies a novel approach to today's agriculture based on modern technologies offering an opportunity to both agricultural producers and suppliers providing production input materials to maintain communication, perform administrative tasks and trade with each other electronically within a single system that has several unique functions.

Keywords: cooperation, information, market, production system, competition

2. Introduction

Today's globalizing economy is undergoing a continuous change. The process of globalization has restructured the business environment of enterprises and altered the sources of their competitive advantage. The rise of the so-called electronic economy which is frequently referred to as New Economy has a dominant role in the changes taking place. With the advance of information technologies, the access to information as well as information management, processing and storing has become simple and inexpensive virtually everywhere leading to profound changes in the prevailing structures of economic activities. The use of web-based information systems for business purposes presents a unique opportunity to boost enterprises. It is a competition factor that is vital to the survival of any company. The World Wide Web offers an increasing number of services that can be used from remote locations, even from the home (e.g. electronic marketplaces).

The electronic market is a system of actual and potential buyers and sellers and their exchanges in which both parties use some form of information and communications technology to establish and maintain trade and where supply, demand, price and income continue to be the most important factors. E-marketplaces have numerous advantages including speed, the search option for new partners, advertisements, time saving, cost reduction and global trade regardless of time, etc.

3. Method

The Institute of Agricultural Engineering of the National Agricultural Research and Innovation Centre has elaborated a model that pays particular attention to the complexity of agricultural production. These considerations include amongst others the characteristics of biological processes, the necessary collaboration among various different fields, the dynamic nature of the food market and last but not least the use value of inputs that is considerably different in each field where they are applied (for example the use value of a machine given by the manufacturer is different from the value measured in a laboratory due to the fact that its use value is closely related not only to the technical specifications of the machine but to other factors as well influencing production such as the quality of land, soil, labour, etc.) This marketplace model is built on the „market-conscious technology development” system (Birovľjev et al., 2013; Fenyvesi and Erdein  K sm rki-Gally, 2012; Kok et al., 2003; Phillips, 2001; Zheng Zhou et al., 2005) the aim of which is to enhance competitive production by concentrating on improving the success of „agricultural” products.

In the course of research-development process, the model emphasizes the product or service itself as opposed to the role of specialized activities. The organizations that carry out applied research in the production process perform their activities and solve research problems with the primary aim of boosting success in the market. In addition to the institutions conducting fundamental research to confirm the formulated hypotheses, manufacturing companies taking part in the experimental implementation of research findings have also play an important role in the process.

4. Results

Biological products, chemical materials, technical systems and human and material factors constitute the key inputs applied in agriculture. These input factors serve as the starting point for production and business. Highly dynamic development and renewal activities are seen today in the field of inputs leading to the dominance of supply. The relationship of producers and input providers is largely defined by geographical location. Consequently, input users are tightly controlled by the network of agents maintained by manufacturers and traders and the relationship between them is determined by the traders' drive to maximize profit. In line with that, there is relatively little scope for producers to select the most favourable option (minimum purchase price, highest quality etc.) available by comparing the full supply portfolio of as many traders as possible. It should also be noted that certain part of the necessary funding is provided either by the European Union or the Member States, therefore the economic efficiency of the resources utilized is an important issue. It is then imperative to improve the position of farmers in input trade and to fully exploit the opportunities appearing in the sales of outputs.

By investigating today's European marketplaces, we can conclude that even general, non-specialized marketplaces may maintain an extensive agricultural section already operating in a way that partially support trading processes. Furthermore, there are marketplaces that serve as an export-oriented „catalogue” of agricultural products of individual countries offering a wide range of products and producers, though actual trading takes place outside the framework of the marketplace. Nevertheless, at present in Europe there is no functioning electronic agricultural purchasing market in the true sense of the word.

This niche could be filled by a system which maintains close contact with producers, solves the problem of efficient representation of interest and improves innovation activities. The spread of agricultural innovation has its specific conditions and depends on the cooperation of key actors (Daberkow and McBride, 2003; Takács and Baranyai 2010; Takács-György, K., 2012). Innovation brings about competitive advantages resulting in favourable market position in the long term. According to Mogyrosi et al. (2009), producers need to consider the following issues: extensive connections, sufficient level of knowledge, R&D activities, production of products/services of high added value, swift responsiveness and a sense of initiative.

In accordance with the above, the objective of our marketplace concept is to offer cost-effective support to the sub-processes in the production chain between the producers and the manufacturers of production input materials. To achieve that aim, we need to make the „route” between the supplier / seller and user / buyer as short as possible. In addition, the most important features of the system include transparency, comparability and traceability. It also aims to establish competition between input providers, expand supplies and make existing trading structures less rigid to create more favourable conditions for purchase. These

goals may be realized via a system that enables producers to submit joint requests for offer thus increasing the quantity of demands within a single transaction which in turn leads to a more favourable bidding position through the competition of suppliers. In the past few years information technologies have been gaining more and more of a hold over markets and marketplaces by facilitating the more efficient and cost-effective performance of above tasks.

The relevant research in Hungary is being carried out under the title the creation of an „Electronic Hungarian Agricultural Marketplace” (GOP-1.1.1-11- 2012-0471) which is modelled on B2B network platforms containing all their elements aiming at satisfying market demands to the extent feasible.

The focal element of the system we have developed is a database that forms the basis of the Internet-based marketplace. The marketplace collects information for the users (producers) and offers assistance in preparing purchasing and sales tenders, i.e. in the competition of suppliers and buyers. This way producers are able to achieve better positions with regard to the price level, quality and other features of the input products they intend to buy (Figure 1.).

The target groups include producers, input producers (manufacturers and distributors of machinery, producers of pesticides, crop-enhancing products and propagation materials, etc.) and partner organizations (strategic partners: research institutes, universities, professional associations, publishing houses and operative partners: banks, etc.). Producers may represent different sectors.

Regardless of their size and geographic location, users of the system may present their demands for input materials by contacting each other. The information system inspires users to cooperate. Agricultural production for the most part is performed by small and medium-sized enterprises and farmers who are hardly able to reach the level of concentration necessary to derive market benefits.(Vágány et al. 2013). Their cooperation via the system may include the coordination of the joint use of agricultural equipment and realizing a more efficient access to cash. By involving more producers, the coordination of the intensity of production may be realized at a higher, more comprehensive level. Furthermore, the harmonization of funding systems and the optimal level of their different incentive effects may become more precise and professionally well-grounded. The system, encompassing the full circle of users, ensures the condition of a smooth and effective flow of information at the same time providing a joint platform for the use of innovation systems. Thus, the coordination of R&D&I management tasks may be jointly performed covering a larger production structure.

In spite of the fact that the stakeholders of the supply and demand market will be competing against each other, they may also enjoy benefits as a result of a more transparent and foreseeable supply-demand market of input products in addition to the easy identification of actors in the market which contributes to the increased efficiency of their trading activities. Moreover, the circle of suppliers may also expand as the system encourages the entry of new users, thus boosting competition, increasing the number of products as well as improving the quality of goods. In addition, the amount and size of expenses and sales may also be monitored in the case of producers and traders involved in the system.

The system draws on production models, generates research and development and optimizes both vertical and horizontal research (through the competition of participants in R&D activities). It is important to implement the results of the system in practice as soon as

possible and by ensuring that producers submit information that is specific to their individual situation (e.g. size of land, location of farm, conditions, etc.). This way they in turn receive information that is relevant to their specific needs. Thus, horizontal development directions are established in a „spontaneous” way since several sub-elements and their management may be identical in the course of development along product path and activities.

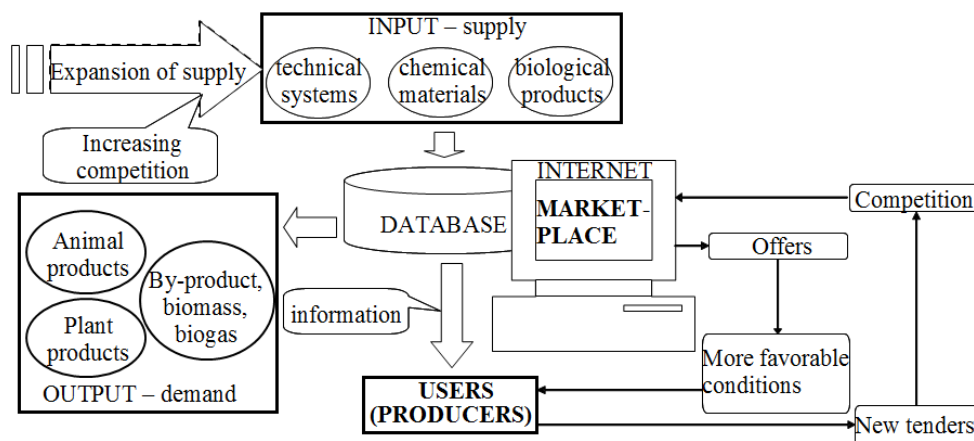


Figure 1. Systems encompassing marketplace actors

Source: Erdeiné Késmárki-Gally (2014)

With a view to establishing the possibly most user-friendly electronic system which builds on the national GIS structures (e.g. land and animal registry systems) and also on traditional ways of information exchange (e.g. fairs, trainings, etc.), we need to precisely outline the tasks of the organization which is responsible for external information provision. The production management system recording the above information is suitable to be connected to other types of integrated management structures (e.g. those used in logistics and sales).

5. Discussion

In summary we can conclude that there are various functioning marketplaces that offer agricultural products either in the form of B2B trading or on a profit-oriented B2C sales platform but up to now there has been no modern solution that could manage the issues of purchase, innovation, communication and trade at the same time meeting the requirements of transparency, comparability and traceability on the national or international scene.

Both by national and international comparison, the electronic agricultural marketplace offers a great deal of novelties. In the course of its implementation, a complex ecosystem may be constructed in the agricultural market that provides an up-to-date approach in agricultural production, communication and commerce, an approach built on integrated technologies and on the idea of the marketplace.

The introduction of the system boosts the competition between input distributors through the comparability of prices and a straightforward ordering process. As a result of a shorter trading chain, producers' participation increases and a more cost-effective support of individual sub-processes may be realized. With the option of joint purchase given, small farmers may obtain greater power when bargaining with input producers. Additionally, the

system may also bring about improved quality and reduced risks of fraud since the business record, sales statistics of and feedback on individual actors become traceable.

This type of integrated interface offers the possibility to monitor general trends and market information. Thus, it would help enterprises in the sector strengthen their market roles by improving their economic efficiency. At the same time, it functions as an integrated marketplace whose extranet portal based on state of the art IT technologies offers wide-ranging support to each user of the marketplace including access to customized information through the use of portal modules and partner search options.

6. References

Birovljev, J., Četković, B., and Vukmirović, G. (2013). Prospects of Competitiveness of Serbian Agriculture in Re(indu) Strialization Process. *Ekonomika*. Serbian Association of Economics. 364-372.

Daberkow, S. and McBride, W. (2003). Farm and operator characteristics affecting the awareness and adoption of precision farming agriculture technologies in the US. *Precision Agriculture* (4): 2.

Erdeiné Késmárki-Gally, Sz. (2014). Market-oriented production system as a part of agricultural innovation. *Annals of the Polish Association of Agricultural and Agribusiness Economists* 16 (6).

Fenyvesi, L. and Erdeiné Késmárki-Gally, Sz. (2012). Boosting the competitiveness of agricultural production in Hungary trough an innovation system. *Studies in Agricultural Economics* 114 (2): 106-110.

Kok, R., Hillebrand, B., and Biemans, GW. (2003). What Makes Product Development Market Oriented? *International Journal of Innovation Management* 7(2):137-162.

Mogyorosi, P., Bucsay, K. and Tyetyák Zs. (2009). *Innováció lépésről lépésre*. Ipargazdasági Kutató és Tanácsadó Kft., Budapest.

Phillips, F.Y. (ed.) (2001). *Market-Oriented Technology Management: Innovation for Profit in Entrepreneurial Times*. Springer-Verlag, Heidelberg.

Takács, I. and Baranyai, Zs. (2010). Role of trust in cooperation of farmers from the aspect of new institutional economics. *Annals of the Polish Association of Agricultural and Agribusiness Economists* 12 (6).

Takács-György, K. (2012). Economic Aspects of an Agricultural Innovation – Precision Crop Production. *APSTRACT. Applied Studies in Agribusiness and Commerce*, 6(1-2): 51-57.

Zheng Zhou, K., Kin Yim, C., K. and Tse D. (2005): The effects of strategic orientations on technology and market-based breakthrough innovations, *Journal of Marketing* 69 (2): 42-60.

Vágány J., Kárpáti Daróczi J., Juhász Ábry I. (2013): *A minőség megbízhatósága vagy a megbízhatóság minősége?* In Lukovics M., Savanya P. (eds.), *Új hangsúlyok a területi fejlődésben*. Szeged: JATEPress, 186-205.