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Application of a modern marketplace in the European agribusiness

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ABSTRACT

The objective of this research is to develop a concept for an innovative online marketplace which unites agricultural producers and suppliers within a single system that works as an innovative organisational solution offering a shorter route for actors to find each other thus ultimately reducing the costs of the exchange of 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.

Key words: agribusiness, marketplace, competitiveness, inputs

INTRODUCTION

The main agricultural inputs are biological products, chemical substances, technological systems as well as human and material factors. Inputs are the basic of production and business. The input market is characterized by extremely dynamic development and renewal activities that have led to the dominance of supply. The relationship of input suppliers and traders is considerably determined by space, i.e. input users are controlled by the agents of manufacturers and traders with their relationship being defined by traders aiming to maximize profits. Within this relationship the farmers have limited possibilities to compare the full supply portfolio and to realize the most

favourable offer from among the options (e.g. minimal purchase price, etc.).

The strengthening of the bargaining power of farmers should bring long-term benefits for each stakeholder of the sector. There is little sense in having strong input distributors if the farmers are unable to sustain farming activities at a level that leads to sufficient economic outcome. The same is true for the sales market.

Consequently, the improvement of the positions of farmers is very important. States and their intervention through economic policy tools also play a role in this process, for example by implementing various financial support schemes.

MATERIAL AND METHODS

The Hungarian Institute of Agricultural Engineering of the National Agricultural Research and Innovation Centre has developed a model that takes into consideration the complex nature of agricultural production including the differences in the use value of inputs, the specific characteristics of biological processes, the necessity of cooperation between several – sometimes quite different – specialized fields and the dynamism of the food market. The aim of the so-called “market-conscious technology development” system developed by Fenyvesi and Erdeiné Késmárki-Gally (2012) is to facilitate competitive production by focusing on increasing the success of an “agricultural” product. The essence of the method is to underline the product or service instead of concentrating on specialized activities in the course of research and development.

Building on the fundamental elements of the market-conscious technology development system, the objective is to develop a concept for an innovative online marketplace.

RESULTS AND DISCUSSION

New dimensions of innovation

In today’s rapidly changing social and economic world new dimensions have opened up for the process of innovation as well. Innovation requires an extensive interaction between various actors and feedback between science, technological development, product development, manufacturing and marketing. The analyses of these novel types of innovation processes have revealed a transformation process primarily typical of developed countries whereby previously separate entities have started to develop a closer cooperation

also by partly undertaking each other’s roles.

In the past few years growth-oriented companies have started to understand the advantages of the network economy. In regional sciences the idea of applying methods that support the economic benefits arising from networks has been adopted while the scope of innovation chains, cooperation and networks have become complete (Nábrádi, 2010; Maciejczak, 2012; Bigliardi and Galati, 2013). Those interested in sectorial collaboration have been successful in developing their network management methodology and shaping a relevant management structure (Csizmadia, 2009).

The conditions of the spread of agricultural innovation have their own special characteristics with a stronger focus on awareness and knowledge that are highly influenced by the cooperation between actors, integrators and counsellors (Daberkow and McBride, 2003; Lencsés and Béres, 2010; Kutter et al., 2011). Within the European Union clusters represent a special form of network cooperation. The objective of clusters is to catalyse collaboration between small and medium-sized enterprises, multinational companies and academic and higher education research institutes and to realize a market-oriented innovation. The benefits offered by innovation clusters may be particularly useful for SMEs by accumulating their resources, reducing risks, involving them in R&D projects and transmitting or licensing necessary technologies (see Figure 1). The primary actors within innovation clusters are knowledge-bases, innovation providers and smaller businesses (Tóth and Strén 2012).

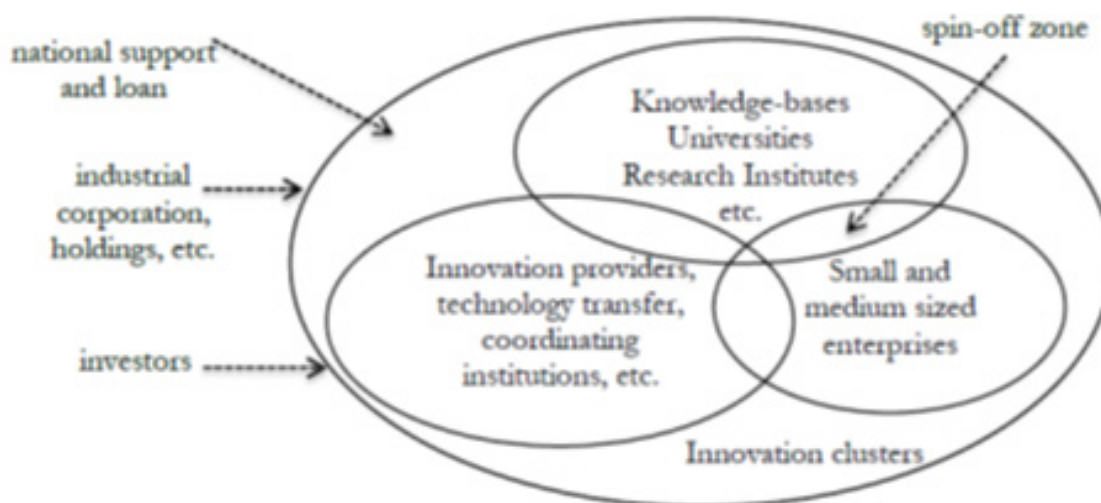


Figure 1. Primary actors in innovation clusters

Source: Tóth (2007)

Spin-off companies that are founded on the findings of higher education and public research institutes are the key representatives of the economic utilization of knowledge produced within academic institutions. With innovation becoming the most important factor in economic competition, the role of universities and state research institutes has radically been transformed in the past few decades all over the world. In addition to their traditional function of providing education and performing research activities, both governments and the wider society expect them to put their academic findings to efficient use.

The conceptual framework of the national innovation system, a major concept of evolutionary economics was born as a result of a long thinking and empirical research process. One of the pioneers of this line of thinking was Christopher Freeman (Godin, 2010). Based on the most commonly used definitions that partly overlap each other “An innovation system includes those institutions

which produce, distribute and use knowledge and which separately and jointly contribute to the development and spread of new technologies. The innovative productivity of a nation and that of the companies of a region is determined by the capacities of individual institutions and the relationship between them. These institutions provide the framework within which governments develop and implement policies aiming at driving the innovation process. The system of mutual cooperation between the institutions enhances the production, preservation and transmission of new knowledge, new abilities and new products that define new technologies” (Inzelt and Bajmóczy, 2013).

Researchers in various fields of social sciences have since then contributed to the development of distinct innovation systems along different dimensions thus evolving the categories of global, national, regional, sectorial and technological innovation systems. These are in turn completed by more novel concepts

thinking in terms of international regions (EU) or models concentrating for example on the triple-helix system (Martin, 2012). Based on the latter one that perceives national innovation systems as being constructed of three spirals, successful innovation may be realized through the harmonious cooperation of public institutions, knowledge-bases and corporations regardless of the specific product being produced or the specific rural development task being solved. In case it is not possible to establish this type of collaboration in a certain field, the research findings cannot be utilized, thus (community or national) support fails to achieve its aim.

Since the end of the 20th century national innovation systems have been again forced to face major challenges offering the conclusion that successful economies of our day build on knowledge and new technologies.

The state of small and medium-sized enterprises has a considerable impact on the whole European economy. However, it is important to stress the commonly entertained idea that suggests that the key to the strengthening of the actors of the SME sector is constant renewal and the capacity for innovation since innovation leads to competitive advantage which in turn ensures an appropriate market position in the long term (Neszmélyi, 2014a,b). Nevertheless, according to the classical Schumpeterian model, only few companies are able to innovate products and services due to high capital requirements as well as the lack of managerial abilities needed to oversee and complete the process. In his comprehensive study Kolodko (2009) – without diminishing the importance of major scientific-technological results and the innovation processes related to them – draws attention to the fact that in the past centuries

development has primarily been brought about as a result of successful imitation. The success of innovation and imitation has also been studied by Glass (1997) who concentrated on corporate behaviour and the process of invention, innovation and diffusion.

According to the research of Nagy (2013, 2015) the companies should pay much attention to business planning. According to Takácsné (2014) and Takács-György et al. (2014), companies should pay much more attention to the monitoring, adoption and adaptation of best practices developed in their specific field, i.e. they should focus on imitation. Instead of innovation, it is imitation that might become the key to growth in the case of SMEs. By copying innovators and through imitation actors may achieve a more significant result by minimizing their costs and reducing (technological and market) risks. The essence of imitation is that first the idea worth being copied shall be found and in time and then production and market distribution shall immediately start. Virtually, this type of corporate behaviour corresponds to those cases where companies enter the diffusion process of an innovation at an early stage. Naturally, the room for manoeuvre regarding corporate development and renewal is also influenced by industry-specific features and regional differences related to differing levels of economic development. On the other hand, entrepreneurs have insufficient knowledge of the innovation process and they also need to accept the need for a change in mind set and approaches.

Advanced IT solutions

In the 21st century agricultural producers have to invest more time performing tasks that are not directly related to production

due to accelerated economic processes, novel consumer demands and more rigorous environmental regulations. As a result of the plethora of options, it is increasingly difficult to make the best possible decision relating to issues such as which seed, pesticide or fertilizer should be used for production, when and to who products shall be sold, what type of agrotechnological interventions are suitable for the input materials applied, etc.

In addition, a considerable amount of time is needed to meet certain administrative requirements (e.g. application for subsidies, updating records, submission of statements and tax returns to government authorities, etc.), let alone the novel consumer demand for the full and effective traceability of food (Charvát et al., 2009). These tasks are too wide-ranging and divergent to be tackled using paper-based records, therefore information technology solutions shall be applied in agriculture as well to enable producers to meet new challenges and successfully face the tight competition.

Today an increasing number of farmers buy and use computers and other IT tools. The opportunities offered by the Internet are starting to play an increasingly dominant role in each segment of the economy. More and more companies are offering their trading, customer relation and other services on the World Wide Web that a few years ago was used almost exclusively for collecting information and correspondence.

According to one of the commonly used definitions, electronic commerce (e-commerce) includes all forms of business transactions whereby parties tend to maintain electronic contact instead of direct physical encounters. E-commerce has two basic formats: business-to-business (B2B) and business-to-consumer (B2C) trading. As a result of this trading system,

the process of inter-enterprise transactions has undergone a profound change leading to a much more transparent market both for the sellers and the buyers (Fónai, 2006).

However, agriculture has not yet been able to fully utilize the opportunities provided by the Internet. The main obstacles hindering the spread of innovative solutions include the high cost of technologies in comparison with the return on the investment, the extent of capitalization and the specific legal provisions farmers shall comply with.

Stimulating purchase and sales competition that supports producers

Based on the considerations outlined above, there is a need for a system within which producers are able to maintain close contact which offers room for efficient representation of interest and boosts innovation activities. In the past few years information technologies have been gaining ground in the operation of markets and marketplaces by promoting the performance of the above tasks in a more efficient and cost-effective way. By the expansion of electronic marketplaces, previous traditional processes have been transformed in several other areas as well resulting in greater economic efficiency. Thus, my objective is to create a competition situation for input providers, extend the supply side and to make rigid trading structures more flexible in order to establish more favourable conditions for purchase. To this end we need a system which ensures the opportunity for producers to jointly request quotations and which might lead to a more favourable position for quotation requests by increasing the amount of demands within one transaction and by the competitive tendering of suppliers. The system I have

developed is suitable to function as an open interface for innovation due to the fact that it provides a possibility for proper information exchange and trust-based partnership between participants. The core element of the system we have developed is a database that serves as the basis of the web-based marketplace. The marketplace collects bids for producers and assists drafting the tenders for sales and

purchases, ultimately promoting competition between suppliers and buyers. With the help of this system, producers are able to reach more advantageous positions regarding the purchase price, quality and other product-related features of the goods they intend to buy (see Figure 2).

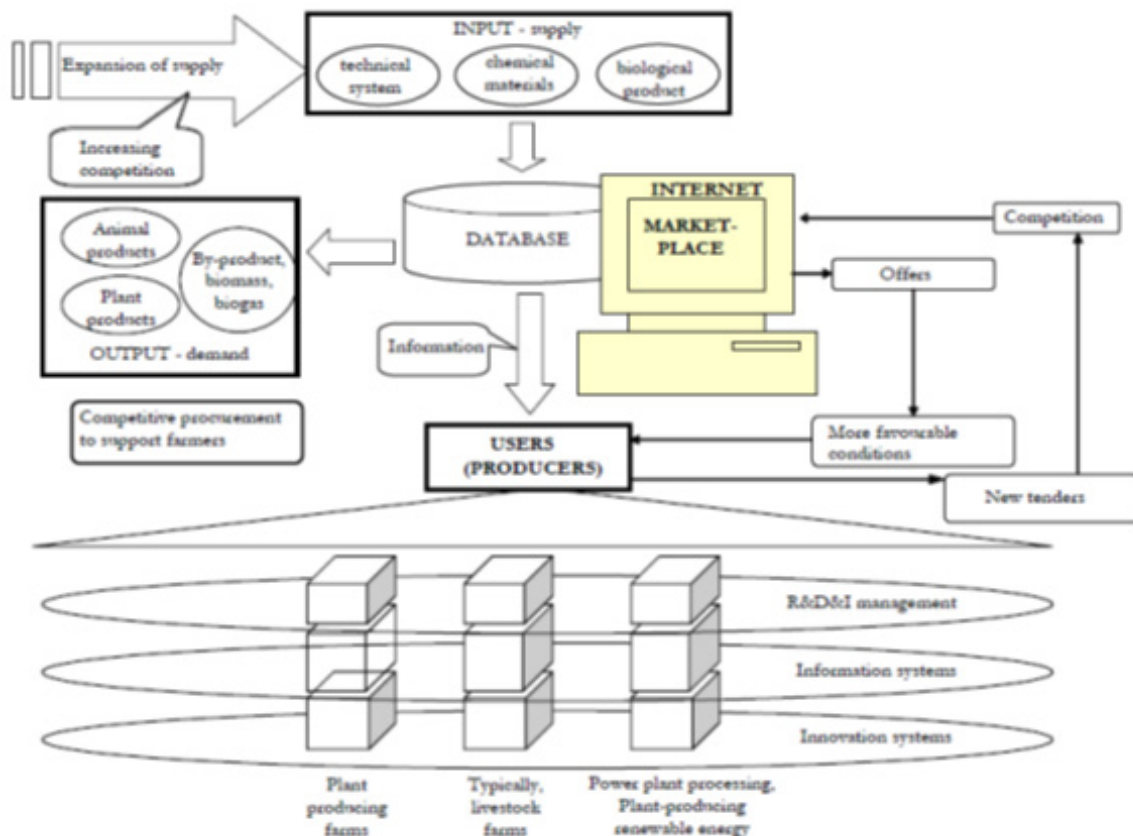


Figure 2. Systems encompassing marketplace actors
Source: Erdeiné (2014)

As far as user structure is concerned, users may belong to different sectors. By means of the system, they may submit a joint request for inputs regardless of their size and location. The information system to be built inspires producers for cooperation which may include the harmonization of the joint use of technical devices as well as ensuring a more efficient access to cash. Since agricultural production for the most part is performed by small and medium-sized enterprises and farmers who have difficulties achieving the level of concentration sufficient to obtain market benefits, the application of our concept could result in the more intensive and comprehensive coordination of production at a higher level involving more producers. Furthermore, the harmonization of support schemes, the optimization of their divergent incentives would thus become more precise and professionally well-founded. It would also establish appropriate conditions for the efficient flow of information reaching every user. Further benefits include a common basis for the application of innovation systems and the possibility to jointly coordinate R&D&I management tasks, covering a bigger production structure.

Despite the fact that the actors of the demand and supply markets would be competing against each other, both sides could derive benefits since the supply-demand market of their input products will become more transparent and predictable which enables the easy identification of market players which in turn enhances trading efficiency. The number of actors and persons on the supply side may be increased at any time since the system is open to new entrants who not only boosts competition but also increases the quality and number of products offered. Moreover, the volume of expenses and sales may also be traced in the case of producers and traders that have entered

the system.

It is important to realize rapid practical introduction of the results of the system. It is also essential to ensure that each piece of information entered into the system by the farmers is based on their specific features (e.g. land size, location, conditions, etc.), meaning that then the producers receive production information that is relevant for him/her. By this method horizontal development directions are established "spontaneously" since in the course of development taking place along product paths and activities several elements may be identical which then may be treated in the same way.

Furthermore, the exact tasks of the organization providing information shall be carefully described since the aim is to build the most user-friendly electronic system possible which would be based both on GIS structures (e.g. land and animal registry systems) covering the whole country and on the traditional forms of information exchange (e.g. forums, trainings).

The further maintenance of the system would not entail additional costs since the performance of research activities and the support of agricultural SMEs are largely the responsibility of the state. On the other hand, the money that has been spent on these tasks before could be more efficiently used due to the fact that the operation of the system is easily traceable and its results can be easily measured and monitored. This information-based production management system may be easily connected to other integrated management systems (e.g. logistic and sales organizations).

CONCLUSIONS

The basic concept of our work focuses on establishing an innovative online marketplace that unites agricultural producers and suppliers in a single system. In addition to the above, this solution offers a number of important innovations.

Through its capacity to stimulate competition, the marketplace may contribute to the continuous expansion of the supply of production means available for producers (buyers); it may allow of a more efficient representation of producer interest enabling farmers to keep up with their competition in other countries and finally, as a result of a higher concentration of demand, producers may acquire the products they need at a more favourable price which greatly improves and rationalizes their economic efficiency. Suppliers may also derive numerous benefits using the system due to the concentrated presence of demand, the permanently updated profiles of groups their marketing activities target at and the fact that their operation thus becomes predictable. At the moment the concept is developed only in the realm of the theoretical, its implementation in practice requires state support.

In addition, the system does not only constitute an interface of supply and demand but it is also a knowledge-base which is jointly being built by each participant through their comments on specific products, various online activities and most importantly through their purchases. As a result, the system is able to reveal permanent monitoring relationships mapping and tracking regional differences always indicating the current situation.

The use of the electronic marketplace primarily offers benefits for the users

(producers) since their production activities become more transparent and predictable. As a result of a fast exchange of information they are able to reduce costs while the use and sale of quality products are ensured through quality assurance and standardization.

Via the introduction of the system producers are stimulated to cooperate. Cooperative solutions in turn facilitate the application of state of the art solutions and the results of innovative developments.

This also means the potential establishment of a territorial information system which offers precise data on the use of inputs and their features related to time, quality and quantity. In addition to producers and distributors, the system also offers benefits for state and government authorities, experts and other actors of the R&D&I market through providing datasets for support and market forecasting systems thus contributing to the optimization of European Union and national subsidies.

The resulting agricultural marketplace with its planned content and services forms a basically new approach (which does not have any international precedence).

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Primjena modernog tržišta u europskom agrobiznisu

SAŽETAK

Cilj ovoga istraživanja je razvoj koncepta inovativnog online tržišta koje ujedinjuje poljoprivredne proizvođače i dobavljače u okviru jednostavnog sustava. On, naime, funkcionira kao jedno inovativno organizacijsko rješenje, a nudi kraći put pronalaženja sudionika u procesu, odnosno rezultira smanjenjem troškova razmjene robe. Koncept elektronskog poljoprivrednog tržišta obuhvaća nov pristup suvremenoj poljoprivredi, a temelji se na modernim tehnologijama. Osigurava kako poljoprivrednim proizvođačima, tako i dobavljačima input za proizvodnju, održavanje komunikacije, izvršavanje administrativnih obveza i međusobno trgovanje elektronički, u okviru jednostavnog sustava s nekoliko jedinstvenih funkcija.

Ključne riječi: agrobiznis, tržište, konkuretnost, inputi