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ICT PLATFORM AS A MARKETING TOOL OF A SCIENTIFIC UNIT FROM THE FOOD-AGRICULTURAL BRANCH

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Introduction

In the age of dynamically developing market economy, research and development units are treated as companies, which offer results of scientific research projects they have conducted. Currently, the potential of marketing is very strong and offers many useful tools. Among the most popular are: publications, advertising materials, sponsored articles, participation in branch fairs and exhibitions, as well as holding conferences. Due to the rapid development of IT technologies, the significance of reaching potential clients through application of appropriate ICT tools (e.g. website, electronic databases, video-conferences, e-learning, etc.) is growing. This has special importance in scientific units from the food and agricultural branch, which due to the characteristics of their research are located in a marketing niche. Promotion is one of instruments of the marketing mix, which should be visible in the practical activities of scientific units. However, economic reality draws the attention of managers of R&D entities to other areas. This is shown by, among others, the results of research published in the work titled *Promocja nauki. Poradnik dobrych praktyk (2007)*¹ (Promotion of science. Guidebook of good practice), which lead to the following conclusions:

- Polish scientific institutions fail to inform the environment about their works and do not sufficiently promote their achievements,
- there is no uniform and synchronized system that could allow gathering knowledge concerning research conducted at R&D units,
- there are no nationwide databases and information sources about projects and research.

According to Hłowiecka-Tańska (2007) in the group of efficient means of promoting science and research there are:

- Internet as one of the most important media for the promotion of science in the world,
- the institution's own materials including reports, publications, posters, bulletins, gadgets,
- creating a department for the promotion of the activities of a scientific unit.

1 I. Hłowiecka-Tańska, 2007, *Promocja nauki. Poradnik dobrych praktyk*, MNiSW, Warszawa 2007, p. 28-29.

In the recent years the Internet has become an important element of communication in the struggle to reach the consumer and attract his attention². With regard to the costs of marketing activities³, the internet is regarded as a relatively cheap tool. Radomski et al (2009)⁴ think that for research and development units (research institutes) the most advantageous tool for the dissemination of research results are websites. Information about the results of research placed in a visible location, abstracts of books and brochures published, as well as lectures given create an image of a rapidly developing scientific institution.

Science 2.0, a term used by Cisek (2008)⁵ which means the processes, tendencies and phenomena associated with using new technologies and information-communication environments in science, also or primarily refers to the consequences of using these technologies at least in the scope of:

- scientific communication in the broad sense, also for the dissemination of research results, facilitating an exchange of ideas and development of cooperation between scientists, overcoming barriers between disciplines, etc.,
- development of scientific knowledge and understanding of science in general, for example, in the context of reviewing (peer review, that is, the classic type of reviewing vs. social verification),
- recognizing publications as scientific, influence on the development of particular areas of knowledge, organizational and social aspects of science, establishment of virtual communities of scholars, emergence of experts.

Among the most common channels of marketing communication in research and scientific institutions there are:

- Channels which make it possible to establish direct connection with the recipient:
 - personal contacts, that is, word-of-mouth marketing,
 - lectures,
 - workshops,
 - fairs and especially „fairs+“, e.g. fairs + conference,
 - scientific networks,
 - consultations and counselling.
- Internet channels:
 - Internet websites/portals of research projects,
 - thematic, branch Internet websites/portals
 - publications available to the public (eg. free book files on the Internet),
 - e-publications.

2 J. Widziszewska, *Transfer technologii - pojęcia podstawowe. Organizacja Transferu Technologii w sieciach instytucji otoczenia Biznesu*, wyd. Małopolska Szkoła Administracji Publicznej Akademii Ekonomicznej w Krakowie, Kraków, 2006.

3 B. Małeki, *Marketing i reklama w Internecie*, Polska Agencja Rozwoju Przedsiębiorczości, Warszawa, 2008.

4 P. Radomski, P. Moskała, P. M. Mikosz, *Promocja nauki w jednostkach Badawczo-Rozwojowych na przykładzie Instytutu Zootechniki-Państwowego Instytutu Badawczego, Pamiętnik Puławski, zeszyt 151, 2009, p. 597-607.*

5 E. Cisek, *Nauka 2.0: nowe narzędzia komunikacji Naukowej, Konf. Informacja w świecie cyfrowym, Wyższa Szkoła Biznesu w Dąbrowie Górniczej, 3 marca 2008.*

- Traditional paper channels:
 - publications in periodicals,
 - non-serial publications,
 - press releases,
 - training materials,
 - informational-promotional materials,
 - information in official documents.

Due to easy access to data and the lack of any geographical limitations, as well as unlimited information resources that can be found online, we can expect that both the popularity and the utilization of this tool in information and promotion will continue to grow. In communication, the Internet can be used as:

- Internet websites,
- direct communication through e-mail,
- monitoring the Internet,
- promotion and information tool, that is, the possibility to directly reach target groups⁶.

As Pluta-Olearnik (2010)⁷ remarks, an important element for scientific units is to work out a system of communication with the community which will be a *transmission belt* for informing about and propagating scientific achievements and research conducted, as well as establishing cooperation with business. As a result, such actions should efficiently support the transfer of knowledge and commercialization of the results of research conducted in scientific units.

Research in the area of agriculture, development of the countryside and agricultural markets are now conducted in 12 research institutes which are supervised by the Minister of Agriculture and Rural Development, at universities, supervised by the Ministry of Science and Higher Education, in 9 scientific units supervised by the Polish Academy of Sciences and in some units supervised by other authorities. In these institutions in 2005 over 17,900 people were employed, including 1,500 professors, over 800 habilitated doctors and over 4,000 employees with a PhD title. Thus, this constitutes major scientific potential which should effectively support the agricultural policy of the state⁸.

With regard to the food and agriculture sector the term of *bio-economy based on knowledge* is used. The term covers all sectors of the economy and industry associated with agriculture, food, fishing, veterinary medicine, forestry etc. generating or in any way using biological resources⁹. Its development requires the combination of actions of science, industry and other interested entities (in national and international networks) in order to use the research opportunities for the implementation of new solutions

6 S. Jarosławska-Sobór, *Rola Strategii informacyjnej w programie promocji jednostki Naukowej. Zmiana formuły funkcjonowania PR – doświadczenia praktyczne Głównego Instytutu Górniczego*, *Prace Instytutu Lotnictwa* nr 208, 2010, p. 61-74.

7 M. Pluta-Olearnik, *Zmiany strategii marketingowych w dobie społeczeństwa informacyjnego*, *Prace Instytutu Lotnictwa* nr 208, 2010, p. 11-29.

8 E. K. Chylek, *Ekonomiczne uwarunkowania działalności wspomagającej badania w jednostkach badawczo-rozwojowych Ministra Rolnictwa i Rozwoju Wsi. Stowarzyszenie Ekonomistów Rolnictwa i Agrobiznesu*, *Rocz. Nauk.*, tom VII, zeszyt 4, wyd. SGGW, Warszawa 2005, p. 56-62.

9 E. K. Chylek, M. Rzepecka, *Biogospodarka – konkurencyjność i zrównoważone wykorzystanie zasobów*, *Polish Journal of Agronomy*, 7, 3-13. Puławy, 2011.

and challenges of a social or economic nature, from the area of quality and safety of food, sustainable development etc.¹⁰ According to¹¹ this will make it possible to raise the competitiveness of the Polish food and agricultural sector in the long term. The effects of the participation of Polish science in these processes achieved to this point are not satisfactory. Innovation systems (national and regional) are inefficient and the coordination of particular units from the R&D sector (universities, research and development units, institutes of the Polish Academy of Sciences) is not adequate. For this reason, the utilization of their scientific-research potential is not sufficient. Companies are signalling weak demand for innovations (in all sectors of the economy, also in the complex food economy) and at the same time display little knowledge of the existing potential of new solutions. In Poland the ties between science and the economy are not well developed and the system of relations between the R&D sector and companies is highly inefficient.

Positive examples of cooperation for the benefit of innovations are very rare^{12,13}. According to Żołnierski (2008)¹⁴, the results of research on this issue reveal an image of Polish science generally detached from the economy or insufficiently financed by commercial entities. Polish science doesn't have a sufficiently attractive offer of technology and is not prepared to react actively to the challenges of the economy and commercialization of the results of research and development work. Polish science is characterized by dramatically low spending on R&D compared to highly developed countries, an inappropriate proportion of spending on basic research to spending on applied research, disadvantageous proportion of public vs. corporate spending on R&D, as well as low mobility of scientific staff and inefficient administrative structure. In a modern system the transfer of high tech knowledge from science to industry has to take place via intermediaries. The most appropriate tools for this process are centres of excellence and above all technology parks, where knowledge and research results in the form of patents, publications and specimens can be offered and transformed into new market products characterized by innovative and competitive qualities. In order to develop practical transfer of knowledge to the economy, there has to be a modern educational system, also within universities, where there are appropriate proinnovative relations that allow students to take advantage of scientific and research achievements of the scientific environment. The role and essence of agricultural sciences has to be viewed from the broad context of their impact on the whole food economy and rural regions^{15,16,17}. This comes from the characteristics of agricultural sciences which are interdisciplinary in nature and are based on the principles of knowledge

10 T. Trziszka, Cz. Nowak, E. K. Chyłek, *Bariery wprowadzania do praktyki w sektorze rolno-spożywczym nowoczesnych technik i technologii. I Kongres Nauk Rolniczych Nauka-Praktyce*. Puławy, 14–15 maja 2009. <http://www.kongres.cdr.gov.pl>.

11 I. Łącka, *Nauka a sektor rolno-spożywczy wobec wyzwań gospodarki opartej na wiedzy*. Szkoła Główna Gospodarstwa Wiejskiego w Warszawie, *Zeszyty Naukowe nr 79*, 2009, p. 49-63.

12 T. Trziszka, Cz. Nowak, E. K. Chyłek, 2009, *op. cit.*

13 J. Woroniecki, *Wykreowanie polskiego systemu innowacji a budowa gospodarki opartej na wiedzy*, [in:] E. Okoń-Horodyńska (ed.), *Rola polskiej nauki we wzroście innowacyjności gospodarki*, PTE, Warszawa 2004.

14 A. Żołnierski (red.), 2008, *Innowacyjność 2008, Stan innowacyjności, projekty badawcze*, www.nauka.gov.pl.

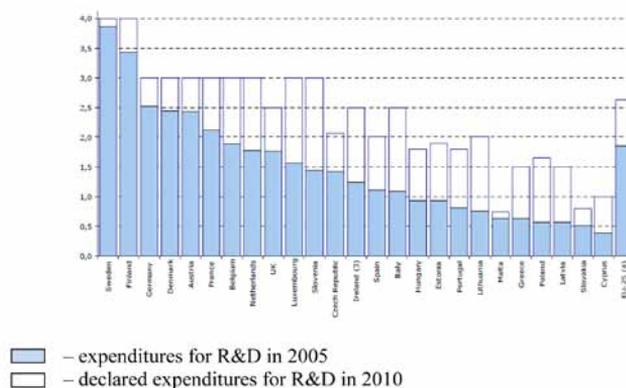
15 W. Dembek, *Kryteria bioróżnorodności i współczesne dylematy jej ochrony*, 2009. www.kongres.cdr.gov.pl, accessed in March 2011.

16 K. Jankowski, Skrzypczyńska J., *Ochrona bioróżnorodności w środowisku produkcji rolniczej*, 2009. www.kongres.cdr.gov.pl, accessed in March 2011.

17 L. Wolejko, *Przyrodnicze i organizacyjne uwarunkowania zachowania bioróżnorodności w krajobrazie rolniczym Polski*, 2009. www.kongres.cdr.gov.pl, accessed in March 2011.

from the area of biology, and technical, economic, social and natural, as well as political and legal sciences. The development of agricultural sciences should contribute to working out environmentally friendly and economically reasonable agricultural production technologies and improving the quality of life in rural areas. As the data presented below show (Picture 1) the scale of financing of research and development works in Poland in 2005 was among the lowest in the European Union and amounted to 0.57% of GDP. Data from the Central Statistical Office show that actions are not following declarations to raise the level of spending to the average level of the European Union. In 2006 the indicator dropped to 0.56% of GDP and in 2007 it returned to the 2005 level. In 2008 it increased to 0.61% of GDP. Data for 2009 suggest that the indicator of spending on R&D has dropped again.

Picture 1. Spending on research and development work (R&D) expressed as % of GDP in countries of the European Union in 2005 and the declared level in 2010.



Source: Eurostat, Member States [Commission... 2007].

The data show that the real level of financing of R&D in Poland hasn't grown to a level which could be regarded as satisfactory and compliant with declarations¹⁸.

Analysis of the financial, legal, organizational and mental barriers which scientific and research units have to overcome in the course of transferring knowledge to practice reveals an image of the science sector in Poland which can be represented by the following SWOT analysis.

Strong points:

- growing number of researchers in the total number of people employed in R&D sector,
- constantly growing number of students, doctoral students and employees with PhD titles in the R&D sector,

¹⁸ E. K. Chylek, *Pożądanie kierunki i perspektywy rozwoju nauk rolniczych w Polsce, Woda-Środowisko-Obszary Wiejskie t. 11 z 1 (33), published by ITP, Falenty, 2011, p. 31-59.*

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- growing number of scientific publications,
 - constant growth in experience of scientific units in the implementation of international projects, growing number of entrepreneurs cooperating with scientific units.

Weak points:

- low level of budget and non-budget spending on R&D,
- high level of wear of scientific equipment,
- lack of qualified personnel acting as an intermediary between the R&D sphere and companies,
- lack of skills of the scientific environment in the area of marketing of research results,
- weak cooperation of scientific units with companies,
- low level of innovative quality of companies,
- low degree of implementation of R&D results in the economy.

Chances:

- change in the system of organization and finance of scientific and development works,
- participation in international programmes including Framework Programmes of the European Union,
- international mobility of Polish scientists (scientists returning to Poland can take advantage of skills in the areas of R&D work management and commercialization of research results they acquired abroad),
- opportunities for the utilization of structural funds of the European Union,
- tax and financial incentives for investing in R&D, economic growth of the country.

Threats:

- lack of consistent implementation of the policy of raising spending on R&D resulting in continuously low level of assets allocated in the state budget to science and insufficient share of non-budget spending in total spending on R&D,
- domination of budgetary financing in the structure of total spending on R&D,
- risk of insufficient absorption of funds from the EU for R&D,
- insufficiently developed pro-innovation attitudes among entrepreneurs,
- low demand for results of R&D work in companies,
- the risk that a part of young scientific staff could emigrate.

To sum up, the SWOT analysis shows a beneficial and promising image of Polish science and opportunities for the transfer of knowledge to practice. Strong points such as the growing number of scientific publications, growth of employment in scientific units and consistently growing experience in the implementation of international projects can activate the dormant potential in scientific units. The presence of weak points is associated mainly with financial and psychological reasons. Lack of funds for promotional

activities, often associated with a lack of skills of the scientific environment in the marketing of research results, constitute the most common barrier for the propagation of scientific research. What could to a large extent improve the competitive capacity of the Polish agricultural sector and the associated branches of industry is providing an accessible and effective channel of communication between the National Research Institute of Animal Production and cooperating units. For this purpose the Institute is carrying out, within the framework of the Operational Programme Innovative Economy, a project titled Budowa teleinformatycznej platformy wymiany wiedzy o jakości i bezpieczeństwie produkcji zwierzęcej (ed. The establishment of an ICT platform for exchange of knowledge about quality and safety of animal production). The main goal of the project is to raise the competitiveness of the national sector of agricultural production through dissemination and implementation of the results of research and development works to practice and the integration of scientific circles working for the benefit of agriculture. From the point of view of the markets (internal and external) animal production plays a major role in Poland.

Functioning within a market economy means there is a need to compete with other countries, where the agricultural sector is better developed in terms of technology, organization and animal breeding. In order to make it more attractive, it is necessary to constantly and intensively modernize animal production in Poland. To achieve the above goals it is necessary to provide the most modern technologies and tools facilitating modern animal production. The National Research Institute of Animal Production is a scientific unit operating a series of databases closely tied to and used for the implementation of national breeding programs, as well as for animal production.

Moreover, the Institute has at its disposal the results of research for the benefit of Polish breeding and animal production which is based on the latest achievements of science. The existing situation was an incentive to create a platform enabling possibly broadest utilization of knowledge for the dynamic development of the sector of animal production. Allowing quick access to the results of assessment of breeding value of various species of farm animals can prevent making incorrect decisions concerning selection. This will facilitate speeding up the progress of breeding and as a result contribute to the growth of competitiveness of animal production in Poland. The platform is supposed to help prepare ever more modern models of assessment of animals, taking into consideration not just quantitative, but also qualitative characteristics. Here it is also important to take advantage of the results of work in the area of molecular genetics, which is becoming a common tool in the world, due to the growing expectations of breeders and animal producers. In this aspect it is also necessary to remember about consumers who expect animal products of very high quality. The platform gathers knowledge concerning the biodiversity of animals, which has a great economic, cultural, historical and scientific significance.

This issue is presented as one of the priorities of EU agricultural policy. The results of work and research concerning biodiversity collected and stored in special databases should be provided to interested entities. It is also necessary to create conditions for the protection of dying out breeds of farm animals. Lack of fast flow of information between units involved in the implementation of this task in Poland (associations of breeders, local departments of the Agency for Restructuring and Modernization of Agriculture,

Agricultural Consultation Centres) leads to the risk that EU money from the agriculture and environment program may not be fully used. The platform of exchange of knowledge is supposed to be a tool for fast contact with veterinarians for the purpose of protection of conservation flock in case of threat.

The collected information is used by units of public inspection and control, as well as by research units. Research work conducted at the National Research Institute of Animal Production and the owned databases concerning environmental threats for animal production have been used many times by the Ministry of Agriculture and Rural Development, the Ministry of Environment, as well as by agencies working for the benefit of international organizations. Creating within the platform an opportunity for fast exchange is a necessity arising from the duty to satisfy a series of restrictive norms in Poland.

In order to facilitate using issues concerning breeding and animal production and allow conducting multilateral monitoring it is undoubtedly necessary to collect available information within the platform, which will enable the exchange of knowledge about quality and safety. The utilization of the collected data concerning breeding and production practice will contribute to raising the competitiveness of the national sector of animal production. Creating a modern ICT infrastructure serving the purpose of sharing and publishing the results of works conducted at the National Research Institute for Animal Production will facilitate the access to innovative technologies serving the sector of agriculture and other branches of the industry.

The goal of the projects discussed will be achieved as soon as the following takes place:

- strengthening cooperation between the National Research Institute of Animal Production and other scientific units,
- facilitating access to the resources of the National Research Institute of Animal Production for interested bodies,
- strengthening the cooperation of the National Research Institute of Animal Production with organizations using the results of its research,
- improving the technique of transferring research information,
- adding new databases to the resources of the National Research Institute of Animal Production.

In the longer perspective, the achievements of the project will have an impact on the following areas:

Sector of science R&D

- improving the IT infrastructure of the National Research Institute of Animal Production,
- improvement of the quality of working conditions at IZ PIB,
- increase in work efficiency of IZ PIB employees,
- creating technical opportunities for carrying out duties allocated to IZ PIB, strengthening cooperation of IZ PIB with other scientific units.

Sector of agriculture and associated branches of the economy

- broader access to the results of research concerning farming,
- growth of the utilization of innovative solutions in practice,
- strengthening the cooperation of commercial entities with scientific institutions.

The recipients of the results of the project are entities originating from the circles of science, business and administration functioning in the sector of agriculture.

Conclusion

Science, including the research achievements and the activities of research and development units is regarded from the point of view of marketing categories. Commercialization has led to a situation in which it is necessary to provide information and promote your products. The situation forces scientific institutions and their employees to introduce permanent changes to their relations with recipients. The above changes refer to forms of informing about, advertising activities and achievements, as well as to the language of messages aimed at various groups of recipients. Contemporary media give many opportunities to reach the recipients interested in a particular issue. The system of communicating with them has been improved.

The National Research Institute of Animal Production is improving its website, which is an important source of information. This concerns both the current activity of the institute, including training, workshops, seminars etc. and scientific publications. However, the biggest task taken up by the Institute is the creation of an ICT platform for the exchange of knowledge about the quality and safety of animal production. Producers of farm animals, breeders, producers of fodder and scientific institutions cooperating with the National Research Institute of Animal Production are and in the future will be able to take advantage of the results of the project.

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