

A LOOK AT BIOTECHNOLOGY AT FORMATION OF INNOVATIVE STRATEGIES

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The purpose-The purpose of this paper consists in analyzing features of an agriculture in 21 century, to explain the analysis of the patent information and application of the received results of the analysis for management of planning in the organization.

Design/methodology/approach-Features of an innovation and an agriculture are researched. Application of biotechnology and a legal basis of intellectual property is considered. Bibliographic patent data and application of patent parameters in management of planning is analyzed.

Finding-The paper finds: Biotechnologization of agriculture is emerging as one of the primary manifestations of the globalized knowledge-based economy; Biotechnologization of agriculture represents the ongoing attempts to transform agriculture through the commercial deployment of biotechnological innovations. The system of intellectual property (IP) rights creates a mechanism to resolve the “appropriability” problem of knowledge. Patents are clearly linked to processes of knowledge generation and utilization, and can be considered “traces” of knowledge. The number of patents granted to a given firm or country may reflect its technological dynamism. Planning is the managerial function of establishing the basic directions and organizational objectives. Management of every organization needs to analyze its environment and organization’s resources.

Practical implications-The analysis of the patent information will allow the organization to estimate more precisely a condition of environment (to identify opportunities and threats) and an resources of the organization (to to identify strengths and weakness) and to form innovative strategy.

Keywords: Innovation, Agriculture policy, Biotechnology, Intellectual Property, Patent Information, Planning, Lithuania.

Paper type: General review, the analysis of the patent information.

Introduction

The Lithuanian Republic is involved in intensively occurring complex changes in the European market and in processes of integration in the global spaces. Growing industrialization and widening economic opportunities in the world stimulate the organizations to embark on the structural changes to innovate, compete, and maintain rising living standards by producing goods, services and processes with high knowledge and high technology content. It is stated, that in conditions of market competition, creation of the new products (goods and services) and processes should be organized as continuous process. One of the reasons of infringement of balance of economy is a break between intellectual (basic researches, applied researches, design development, technological development) and material (manufacture, distribution, trade, usage) parts of production process. Development of an agriculture for manufacture food production demands to introduce technological innovations.

Growth in most economies depends heavily on the rate at which production processes incorporate new ideas (Buccola, Xia, 2003). Long-run economic growth and development depend heavily on productivity, which in turn relies on new knowledge and on the innovations created by research and development (Xia,

2003). Within the new world economy, creativity and knowledge have become important factors of production, similar to capital, labor, land and natural resources (Lithuania. Aiming for a Knowledge Economy, 2003).

According Graft (Graft, 2002) are three basic R&D sectors of the agricultural economy enjoys particular comparative advantages in different parts of the innovation process, and that the three sectors work together in a dynamic process to carry new technologies from initial ideas to implemented products. The three sectors include (1) universities and public research institutions, (2) small entrepreneurial private innovators such as start-up biotech firms, small independent seed companies, cooperatives and growers associations, and individual inventors, and (3) established (incumbent) corporations, including agrochemical producers, pharmaceutical and food corporations, and the largest established seed companies (Graft, 2002). The interactions between the scientific infrastructure (universities, research institutes) and the technological production (firms, R&D departments) are a key feature of developed countries (Albuquerque, 2001).

The usual situation causes compulsion to solve the following problems of management: creation of innovations and protection of the intellectual property.

Agriculture policy in 21st century

The geography of the European Union (EU) is predominantly rural and shaped by human occupation and activity. Farmers' primary occupation is food production. To do this they employ time-honored traditions that have been married to modern science and technology for the purpose of offering great food at an affordable price. This involves using a combination of traditional skills and knowledge (e.g. science, breeding techniques, machinery), allied to technical know-how and marketing talent.

The selection of an industry partner is the key to success-how the industry partner prioritizes the development and commercialization of the innovation from its biotechnology collaborator is the main concern. The history of technology development, the reputation and credibility of technological achievements, and existing networks of universities, firms, service providers (e.g., legal firms) characterize these clusters. The lack of funds, a dearth of information pertaining to external partnering, and the lack of a technological infrastructure (e.g., knowledge of regulations) limit the innovatory activities of biotechnology firms in locations outside established clusters (Bagchi-Sen, 2004).

Biotechnology indicators

According Frascati Manual biotechnology is perceived as having the potential to the next pervasive technology of great significance for future economic development (Frascati Manual, 2002).

Agriculture now depends on upstream related industries and food producers are under increasing pressure from food transformers and distributors. In this situation, genetically modified organisms are introduced on the market. Both their advantages (e.g., extensile production, enlargement of the distribution areas of species, lowering the use of pesticides, synthesis of micronutrients and pharmaceutical essences, materials for interspecies transplant) and risks (e.g., settlement of farming, health and environment hazards) are stressed. In the health field biotechnol-

ogies are involved in the research for the improvement of fitness and lifetime primarily for those living in rich countries, in the increasing cost of public health care, in the situation of senior citizens. Biotechnologies are also at the basis of health problems (listeriose, diseases due to animal feeding diet). In the environmental field, challenges are the increasing shortage of water resources, pollution of different nature, and the global warming of the earth (Puytorac, 2000).

In the 2001s OECD Biotechnology Statistics Framework (in Arrundel, 2003) outlined next definitions of biotechnology: a single definition that covers all biotechnology activities and a list-based definition that asks about different types of biotechnologies. A single, broad definition of biotechnology is complicated by differences in the meaning of biotechnology by sector. In common usage, “biotechnology” in agriculture usually refers to genetic modification (GM) and associated technologies such as DNA markers (Arundel, 2003).

OECD definition of biotechnology (Frascati Manual, 2002): “The application of S&T to living organisms as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services”. Arundel’s article (Arundel, 2003) quotes Biotechnology Compendium indicators. The part from them includes following patent indicators: patents granted, patent applications, patent share of worldwide patents, patent growth rate (Arundel, 2003).

Patent indicators

A patent is a legal property right over an invention, which is granted by national patent offices. A patent document is a rich source of information, containing specific technical detail. A large volume of published patent documents is available throughout the world. This makes patents one of the largest information sources for tracking innovative activities, patents may be interpreted as indicators of invention.

Patent statistics are increasingly used in various ways by technology students as indicators of the output of invention activities. The examination of the technologies patented can give some hints on the directions of technological change (Oslo manual, 1994). Patent data have particular strengths and weaknesses as technology indicators. Problems naturally arise when information which patent offices collect for administrative reasons are used to investigate technological activity (Patent manual, 1994).

The scientific literature on the determinants and impact of innovative activity increasingly uses patent data at aggregate (national) or firm level, because of the widely recognized close relationship between patents and innovative output. Patent data are also used to identify changes in the structure and evolution of inventive activity in countries, industries, companies and technologies by mapping changes in technology dependency, diffusion and penetration (Frascati Manual, 2002).

Functions of management-planning

In the early part of 20 century, the French industrialist Henri Fayol wrote that all managers perform five management activities referred to as the “manage-

ment process". They plan, organize, command, coordinate and control (Robbins, 2004). In the mid-1950s Koontz, O'Donnell and Weinrich have started to use the terms planning, organizing, staffing, directing and controlling (Koontz, 1980). Gray, Smeltzer used next managerial functions: planning, organizing, influencing, controlling (Gray, Smeltzer, 1989). Now management processes is described by next four functions: planning, organizing, leading and controlling (Seilius, 1994, Stoner, 1999; Мескон, 2000; Робинс, 2002).

Planning provides direction, reduces the impact of change, minimize waste and redundancy, and set standards to facilitate control. Plans that apply to entire organization, that establish the organization's overall objectives, and that seek to position the organization in terms of its environment are strategic plans. (Robbins, 2004).

Strategic thinking is concerned with challenging, evaluating and shaping strategy in order to ensure that an organization is optimally positioned in terms of its markets, competitors and the other environmental factors. In order to develop their strategy, organizational members must first identify the organization's current mission, objectives, and strategies. Management of every organization needs to analyze its environment (to identify opportunities and threats) and organization's resources (to identify strengths and weakness). The analysis of the advanced scientific patent information will allow to form innovative strategy and to provide competitive ability.

Data and method

In this article the condition of biotechnological patents in Lithuania were examined. The granted patents for the period 1994-2005 were investigated (2005-6 months). The search were conducted using IPC classifiers (Seventh edition) and publication date of patents. Bibliographic data of patents have been chosen from ESPACE PRECES compact disks. Mimosa search and retrieval software was used. Thus the chosen total of all patents in Lithuania has made 2222 patents.

Search has revealed following results: All IPC subclasses of biotechnological patents has only under 1 patent in years when they were granted. All IPC subclasses of high biotechnological patents (C12N, C12P, C12Q subclasses) has from 1 up to 19 patents in years when they were granted. In both groups of patents the Lithuanian inventors makes accordingly 28,6 and 36,8 percent.

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ŽVILGSNIS Į BIOTECHNOLOGIJAS FORMUOJANT INOVACINES STRATEGIJAS

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Žemės ūkio plėtra reikalauja technologinių naujovių įdiegimo. Ekonominė pažanga priklauso nuo produktyvumo, kurį apsprendžia žinios ir naujovės. Technologijos ir naujovės apima eilę mokslinių, technologinių, organizacinių, finansinių ir komercinių veiklų. Reali situacija sukelia šias valdymo problemas: naujovių sukūrimą ir intelektinės nuosavybės apsaugos užtikrinimą.

Smulkaus vidutinio verslo organizacijų inovaciniai gebėjimai sukurti naujas prekes, procesus bei naujus produktus skiriasi priklausomai nuo ūkio sektoriaus, išteklių ir dalykinės aplinkos, kurioje vystosi verslas. Biotechnologijų naudojimas sukuria galimybes naujiems ekonominiams, socialiniams ir ekologiniams pokyčiams. Biotechnologijų naudojimas žemės ūkyje pasižymi greitais technologiniais pokyčiais, intelektinės nuosavybės centralizacija ir ryšių su pramone vystymusi.

Paprastų technologijų biotechnologijos Tarptautinių išradimų klasifikacijos poklasėse turi tik po 1 patentą patento paskelbimo metais. Aukštų technologijų biotechnologijos (poklasės C12N, C12P, C12Q) turi nuo 1 iki 19 patentų patento paskelbimo metais. Abiejose biotechnologijos patentų grupėse Lietuvos išradėjai turi 28,6 ir 36,8 procentų visų paskelbtų biotechnologijos patentų.

Raktiniai žodžiai: inovacija, biotechnologija, strategija.

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