

Commercialization of the science products and services: challenges and perspectives

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The transformations of the world economical surroundings and the environmental unbalances occurring in the planet make think about the necessity of marketing the products and services of agricultural science in sceneries where opportunities impose and where the private and state actors share the responsibility of their own development. The substantial changes of a country's economy and its capacity for keeping the products and services they offer influence on the commercialization. In the last three years, the value of the international commerce of services has shown an increasing rhythm, ruled by enterprises of developed countries like United States, Denmark and France, which generate more than 70 % of the added value, basically addressed to the technological innovation. The management of the Entities of Technological Science and Innovation (ECIT, according to its Spanish initials) and Cuban universities in correspondence with the research efforts with lines of economical and social development given priorities at different levels, so there may be correlation between the pure and applied research. Priority to the topics to be developed should be given so they really respond to the problems of the productive sector. Besides, a balance between the new results and technologies generated and their introduction or application on the social practice should be achieved. We have the challenge of generate knowledge and technologies to promote the sustainability, make us competitive, keep interaction with the production and prove them with a quality management process.

Introduction

The economical and managing frame of agricultural research has drastically changes in the last fifteen years, so, evidently, the traditional research models and structures, technology transfer and marketing have been "put out of balance". In the Latin American region, cooperation programs and strategic alliances are necessary in order to form commercial systems responding to the present and future conditions.

According to Kotler (1995), the commercialization process includes four main aspects: when, where, to whom and how. In the first, the author refers to the exact moment of conducting it; in the second, to the geographical strategy, in the third to the definition of the objective public and finally, he makes reference to the strategy for introducing the product to the market. In the so-called "economy of knowledge", Codorniu (2002) begins mentioning more eloquent indicators:

- Knowledge is the most determining resource for the competitiveness and economical development.
- The fraction of the world market, corresponding to that of high technology, has been duplicated in the last 20 years as going from 11 to 22 %
- The element "know-how" increases sensibly in the price structure of the new products
- More than 50 % of the non militar R+D are financed by private enterprises
- The number of enterprises whose main resource is knowledge is getting higher every day
- In a near future, the true competitive advantage of the enterprises, sectors, even nations will be the creative generation and utilization of knowledge

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led enterprises of developed countries. However, it is generally incipient and structuring in the undeveloped countries. The United States, Denmark and France generate more than 70 % of the added value, basically addressed to enterprises and technological innovation (San Gabino 2012). The empiric and quantitative analysis conducted by Buenstorf (2009), concludes that inventive activity of the researchers coincide with a better scientific yield in number of publications, and that the innovations marketing through licenses with enterprises correlates positively with higher productivity and impact in scientific articles. The enterprise world searches, essentially, for economical benefits and leaves any other aspect in a second position. At present, in our geographical area, there is a tendency to ask for immediateness in certain spheres so the technologies receptors assume the main science results. There is also a request for publication of articles in indexed journals and the collaboration with the industry, when signing contracts with confidentiality clauses that leave out the patents. These conditions force the researchers to function as directive, commercial manager and enterprise man, becoming an obstacle for his professional development. In the context of Latin America, since the middle 90's, the necessity of changing the traditional approaches of the researches in those institutions for the purpose is analyzed. It is a fact that the traditional vision of the research institutions is to address their development towards solution or alternatives to the production problems through their perception and few times share with producers the problem to be attended. This lecture will deal with the present situation of commercialization of products and services of science, with an approach to the present tendencies of our region, included Cuba.

Some considerations to achieve a favorable development of the activity are added, together with the challenges of today and the responsibility of assuming them by the different sectors of the society.

Development

Marketing is translated as the act of planning and organizing a group of necessary activities that allow putting in the proper place and at the exact time, a product or service for the persons to know it and consume it. Referring to a product, it is to find the presentation and susceptible conditioning so the possible buyers are interested, the most appropriated net of distribution and sales conditions to make the distributors more dynamic (García 2007).

The product is a group of attributes the consumer considers with a certain purpose to suit the needs or desires. It also represents the offering of an enterprise or organization to achieve the objectives in respect to utilities or benefits. As service, those identifying and lasting activities, resulting from human or mechanical efforts producing a fact, imply the client, and they are not possible to have physically or transport or store, they may be offered for rent or sale. The current tendency is that the service goes together with the product, as a way to enter better in the market and be highly competitive. For success, knowing the clients' needs is necessary in order to analyze their consumption motivation and be able to offer it. The products or services of the enterprise, whether by production or taking over, go to a market to be assigned to their future consumers. This activity, beginning in the productive process and gets to the consumer, is known as "commercialization system" or "marketing system" (Bueno *et al.* 1989).

Knowing about the market is an important aspect for creating this system. Good intensions and disposition is not enough for marketing. Previous requisites are needed to be considered to assure the basic elements to guarantee it. The substantial changes on the economy of a country, the environment and capacity to keep the products and services offered influence on the marketing of science. Therefore, the efficient management as main guarantee of incomes for the organizations including the quality of products and services is important.

The development and use of new technologies is conditioned by the environmental limitations. At present, the enterprises begin to consider the environment in the bussiness strategies. This is due not only to the legal and social pressures but also to the comprehension that an enterprise is an open system in continuous and reciprocal interchange with the environment (Ibur 2013). According to the criteria of Artaraz (2002), three criteria constitute the sustainable development: economic, ecologic, and social. Calvelo (2001) states that it is effective when there is a balance between them and includes some others like the cultural, energetic and scientific.

Knowing the customers' needs is vital to design

the product or service they desire. Marketing does not depend on the desire, will or need of the one offering it. It requires organization and idoneous and highly specialized personnel. Therefore, a continuous training of the persons in charge is needed. Satisfying demands at the correct moment and with a convenient price for customers and offerer is necessary. Research centers owning the products and technologies and institutions and organisms managing, executing and controlling the policy application related to the commercial activity are involved in the process as such. There is still lack of formation and information in those in charge of this activity. The legal proceeding is a basic aspect so the reach of the actions of each part and the interests are decided.

The Cuban experience. Cuba has high-technical level professionals that have increased their qualification and instruction for more than ten years and have contributed with the services exportation up to 7.000 millions of dollars in 2010. In that year, in August, the amount of one million of graduates from collage was surpassed, meritorious number for an economically blocked country (Carricarte 2012). Also, 5.1 % of the Gross Domestic Product (GDP) and 10.4 % of the National Budget is destined to the Higher Education (Alarcón 2013).

In respect to the scientific development, Cuba is within the most developed countries of the Third World. At about 1.7 % of its GDP is destined to scientific-technological activities. In particular, 0.9 % of the GDP is destined to the scientific activity and there are 222 entities entirely dedicated to the scientific-technological activities, grouping approximately 31 thousand of workers. The scientific centers gather more than 28 thousand of researchers, professors, technical engineers and other workers.

Cuba has world-known results in different fields, especially in Human Biotechnology, Neurosciences, Organic Agriculture and in several branches of Social Sciences. The Ministry of Science Technology and Environment (CITMA) in charge of managing the System of Technological Science and Innovation, comprising from the generation and accumulation of knowledge to the production of goods and services and includes the basic and applied researches, the technological development, innovation, legal protection of results, the studies of social character, the interface activities, the technology transfer and the application of marketing (Codorniú 2002). According to Salas (2009), the science and innovation in Cuba demands of the efficient introduction of the scientific results to the social practice towards the endogenous development of the municipalities and territories as sceneries transformers of the development.

The Cuban Technological Science and Innovation (ECIT) entities and the universities conduct market researches to find the necessary resources for their social function and, at the same time, increase the State

resources. The policy of science and technology in Cuba defines the necessity of an interactive model within the innovation process that presuppose in first place, the conception of the science pulled by the market. In agreement with this, making perfect the marketing system associated with the activity is necessary, using a marketing approach. As consequence, this approach in the managing of production and services of the universities means relating the research efforts with the lines of economical and social development prioritized in the national, branch and territorial economy. The managing of production and services of the ECIT and universities to correspondence the research efforts with the lines of economical and social development prioritized in the national, branch and territorial economy to establish a correlation between the pure and applied scientific research.

Challenges and perspectives. It is necessary to assume the challenge of generating knowledge and technologies that certainly promote the sustainability, to make us competitive and keep an interaction with the production and services in order to guarantee the development through research projects and innovation that include the assessment of the impact on society and proved by a quality process. We have to keep strengthening the alliances among the scientific institutions, organisms and associations from different countries to apply results in other regions of Latin America.

The personnel should be continuously trained, mainly those included in the adoption and technological adaptation to achieve the integrated work required and achieve impact results in the agricultural sphere, demanding higher organization, maximum use of the scientific and technical potentialities and analyze the successful and unsuccessful experiences.

The efficiency goes together with technology and this depends on the research, the transference and technological innovation and on the financial resources available for its correct application. The challenge consists of the approach and priority of the topics being investigated, so they really respond to the problem of the productive sector. Besides, it achieves a balance between the new results and technologies generated and its introduction or application level in the social practice. All that may be supported by material and financial resources that guarantee the rapidness and quality of the research, together with the results extension. With all these demands, the criteria of Pérez (2002) should be considered. They affirm that the successful strategies formulation demands assessing the conditions and capacity accumulated in the country, the region, enterprise or net as such, in order to take advantage of the next opportunity, when recognizing, adopting and adapting the potential and the characteristics of the paradigm.

The response time of the research centers and universities should be in accordance with the market

dynamics. It is suggested that the Offices of Technology Transfer have a trained personnel and computing systems that respond to the requests professionally. This demands that the research centers and universities develop a well-defined catalogue of products and services and an automatic sale system. The richness creation is only achieved when a client is able to pay for a product or a service. The knowledge transformation in a product or service produces an economical benefit. In order to reach it, promoting the interaction between the scientists and the rest of the social sectors is necessary mainly with those producing and marketing it. A commercial orientation with economical sense should be included from the beginning, as well as the possible clients and potential markets.

Conclusions

1) The researchers should assume the challenges of generating knowledge and technologies that certainly promote the sustainability, keep an interaction with the production and be approved by a quality management process.

2) The approach and priority of the topics may respond to the problem of the productive sector with a balance between the new results generated and its introduction level or application in the social practice.

3) Effective strategies are necessary for the marketing of science, increase the acceptance of the new technologies and keep competitiveness.

4) Knowing the needs of the clients to design the product or service they desire and use their criteria to improve it is vital.

5) The preparation and training of the personnel included in the adoption and adaptation programs demands organization, use the scientific potentialities, and analyze both the successful and unsuccessful experiences.

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Received: September 2013