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Specifics of self-commercialization of innovative products by machine-building companies

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Abstract. Scientific literature considering modes and methods of enterprises innovative products commercialization was analyzed in the article. Also authors' opinions about commercialization of innovative products by manufacturing companies through using the products for own needs were described. Based on the information from the studied literature and statistical data was concluded that the most appropriate and most popular method of commercializing innovative products by machine-building companies is using the products for the needs of the company (for internal needs or for product sales). However, this method has significant advantages as well as partial disadvantages expressed in certain risks occurring during commercialization process implementation. To provide clearer understanding of these issues the article describes the special features of the aforementioned method in accordance with business objectives and conditions of use in the enterprise.

Key words: commercialization, innovative products, modes and methods of commercialization, self-commercialization, machine-building companies

INTRODUCTION

Commercialization of innovative products is one of the key stages in the innovation process as it delivers competitive advantages to a company. Commercialization of innovative products allows for the product market launch aiming at economic benefits.

Commercialization of innovative products manufactured by machine-building companies can be implemented in following modes: independently by a company manufacturing innovative products; jointly with the commercialization company (engaging outsourcing company (or several companies) that will be responsible for commercialization process (certain stages of the process); and in a mixed mode (combining the two previous modes). Whereas, the relevant methods for self-commercialization of innovative products include: the use of products for the company's needs (for internal needs; for product sales); establishing a subsidiary and the sale of patent rights. These methods are most suitable for that particular mode as it is appropriate and practicable for a company to undertake them alone.

The most suitable method of commercialization of innovative products by manufacturing companies is using them for the company's needs (for internal needs or for product sales). This statement is supported by statistics and scientific sources. The method is aimed at maximizing profits and keeping all information related to innovation within the company. But the unassisted sale of innovative products is a quite risky method of commercialization, as it requires full support with the company resources at all stages of the process. In case of incompetent commercialization, the company may incur significant losses. A clear knowledge and understanding of the positive and negative aspects of the above method may help the company to assess benefits and predict possible risks of commercialization of innovative products.

MATERIALS AND METHODS

Commercialization of innovation, in particular its modes and methods, is an urgent problem which is actively studied in contemporary scientific literature. The scientists studying the modes and methods of commercialization include [2, 4, 6, 11, 12, 19, 20, 21, 22,] et al.

Bliznichenko M.O. and Marchenko Z. I. [2] claim that the use of innovative products for own business brings an owner maximum profit resulting from the products sale and monopolistic ownership. At the same time the authors note that while using this commercialization method the company may incur substantial costs associated with the arranging of manufacturing process, marketing, sales, etc. [11] support the statement that the use of innovative products for own business is the most profitable option. The authors, however, note that while using innovative products for own business, added value will consist of two components: a portion of the value that is part of the intellectual capital obtained in pure form, and the rest of the surplus value derived from sales of innovative products together with using intellectual capital in pure form.

This statement is also supported by [19]. The author notes that in terms of profitability, commercialization through the use of innovation for own business is the most effective method. He asserts that this commercialization method is accompanied by significant risks and is quite costly. It is difficult to quarrel with this statement while a company practicing self-commercialization remains fully responsible for result as it administers the entire process without any assistance.

So, the cited authors' opinion confirms that the most profitable and effective method is self-commercialization of innovative products by manufacturing companies through using the products for own needs. This fact is also confirmed by the relevant statistics. The analysis of the distribution of innovation funding in industry (Table 1) allows the statement that the main source of innovation funding are own funds, which share significantly increased in 2013 and accounted for 72.9% of total costs (63.9% in 2012).

10 companies received state financial support from national budget and 24 companies from local budgets, totaling 1.9% (2.2% in 2012 respectively). However, state involvement in the innovative development of the country should be much higher as the public sector is also interested to improve the state position on the world stage. 12 companies received funds from domestic investors and 12 from foreign, which consisted 1.3% and 13.1% (1.3% and 8.7% in 2012 respectively). The poor investment in innovation process can be explained by various factors, including the deteriorating economic and political situation in the country, increasing distrust of foreign investors to the Ukrainian market, etc. 55 companies took advantage of credit facilities in 2013 which accounted for 6.6% (21.0% in 2012 respectively). According to statistics data [10, 13, 14, 17] the main source of innovation financing are own funds, which indicates that companies practice self-commercialization of innovation.

Besides, [21] in his book The introduction of scientific and technological results into commerce provides the following interesting information on innovation commercialization by different means (Table 2). As the table shows, the least effective way of commercialization is to sell information about the development. This can be explained by the fact that the result that innovation can bring will be much more valuable collectively than just the information about the relevant idea. Also, while selling the information a company loses rights to the innovation.

Table 1. Breakdown for innovation funding by sources, %

Funding sources	Year		
	2011	2012	2013
Own funds	52.9	63.9	72.9
Credits	38.3	21	6.6
Home and foreign investors' funds	0.7	10	14.4
Funds from state and local budgets	1.1	2.2	1.9
Other sources	7	3.1	4.2

* Source [10]

Table 2. Economic efficiency of different methods of commercialization

#	Commercialization method	Economic efficiency, USD
1	Selling information relating to the development	5,000 – 20,000
2	Assignment of rights to use intellectual property	15,000 – 50,000
3	Using innovation in own company	All profits remain within the company
4	Growing business for sale to other corporations	500,000 – 2,000,000
5	Growing businesses for sale on the stock exchange	Over 10,000,000

* Source: [21]

In turn, assignment of rights to use intellectual property is more cost-effective, nevertheless it is not the most efficient way as the information about innovation becomes disclosed and the company loses privacy. The author also highlights such commercialization methods as "growing business for sale" to a big company and for sale on the stock exchange. These methods are the most profitable. However, the use of intellectual property rights for own business allows all profits from innovation remain within the organization, which in turn can be more cost-effective than the sale of the business. If necessary, the company may sell it at any time.

Based on the information from the scientific literature [2, 6, 7, 11, 19, 21] and statistical data [10, 13, 14] it can be concluded that the commercialization of innovative products by machine-building companies through the use of the products for their own needs (for internal needs or for product sales) is the most appropriate method of commercialization. However, this method has significant advantages as well as partial disadvantages expressed in certain risks occurring during commercialization.

RESULTS AND DISCUSSION

Based on the information from the studied literature and statistical data it can be argued that the most appropriate and most popular method of commercializing innovative products by machine-building companies is using the products for the needs of the company (for internal needs or for product sales) (see Fig. 1).

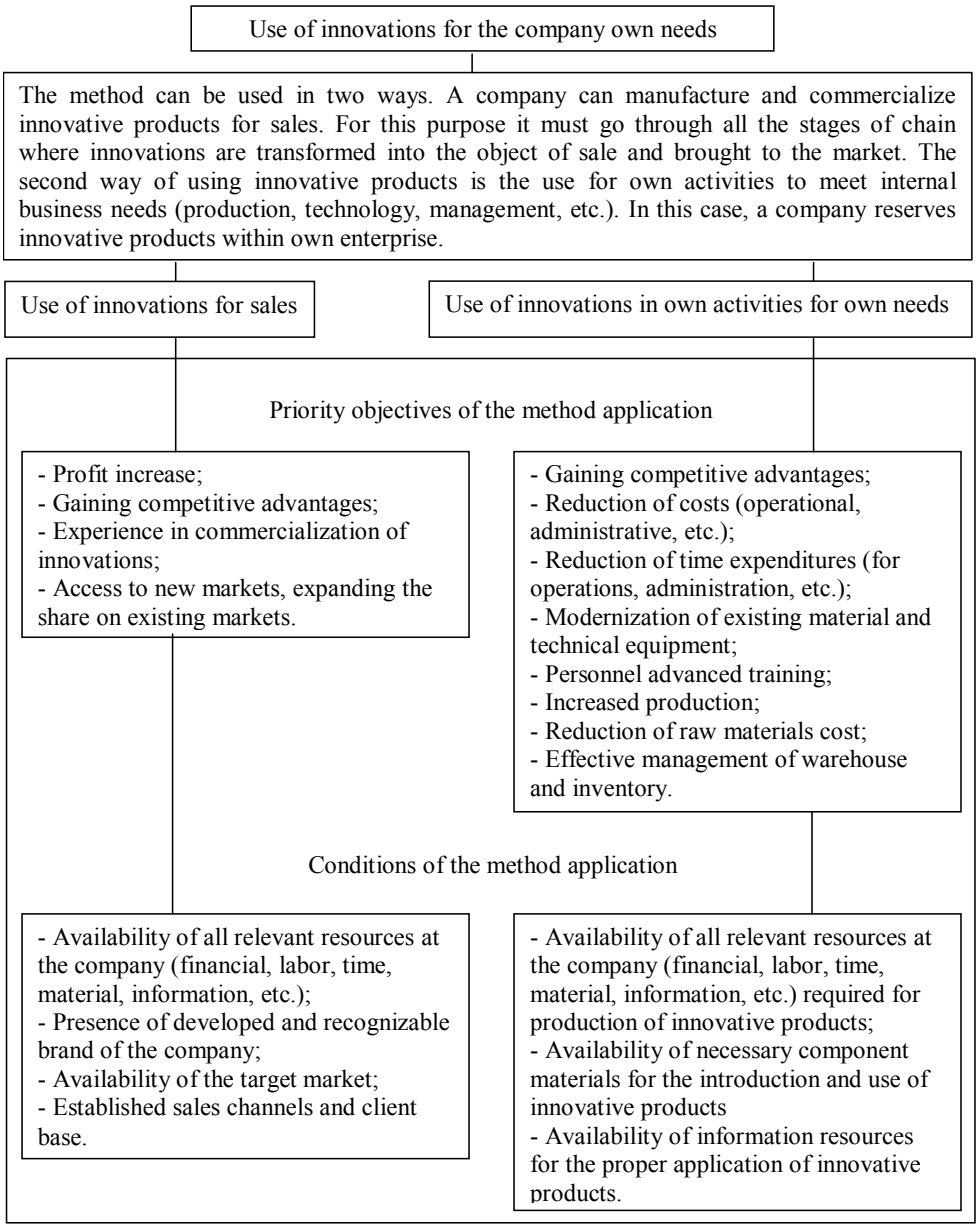

Fig. 1. Commercialization of innovative products by machine-building companies through using the products for company own needs

Table 3. Stages of innovative products sales by machine-building companies

Stages of innovative products sales by machine-building companies	Description of stages of innovative products sales by machine-building companies
1. Gathering information on relevant products market	– Identifying the needs of the market; – Determining the market capacity; – Detecting products similar to innovative products by their functional properties; – Identifying the domestic market potential; – Identifying opportunities for entering foreign markets.
2. Assessment of company resource capabilities for self-commercialization	– Availability of financial resources (available funds for commercialization, ability to obtain a loan, availability of liquid assets); – Availability of labor resources (qualified staff experienced in commercialization of innovation (marketing specialists, etc.), lawyers knowledgeable about intellectual property issues; – Availability of material resources (raw materials and equipment for the manufacture of innovative products, software for commercialization, etc.); – Availability of information resources (information on market needs and the relevance of innovation, information required for legal registration of patent, information for marketing promotion of innovation, information required for the marketing of innovative products, etc.) – Timing constraints.
3. Justification of economic feasibility of innovative products self-commercialization	– Calculating all potential costs associated with the commercialization of innovative products (resource support, legal registration, marketing promotion, etc.); – Justification of sales prices for innovative products; – Forecasting revenues from sales of innovative products; – Budgeting commercialization of products; – Determination of break-even point.
4. Preparation of necessary documents for legal registration of property rights	– Gathering information on the required documentation; – Proper preparation of required documents
5. Registration of legal status (acquisition of title)	– Filing all documents to the intellectual property registration authority; – Obtaining title to innovative products; – Certification
6. Develop and launch a marketing program (advertising, PR, other marketing events for sales promotion)	– Optimization of product lines; – Development of communication policy (advertising, PR, sales promotion activities, etc.).
7. Formation of client base, making agreements with buyers and establishing sales channels	– Search for potential buyers; – Negotiations with potential end customers and intermediaries; – Stipulating all conditions of the agreement, preparation of agreement; – Forming and signing agreements.
8. Products sale and servicing	– Sales of innovative products to end customers and intermediaries; – Warranty service and after sales service
9. Testing effectiveness of innovative products commercialization	– Calculating all actual costs associated with the commercialization of innovative products (resource support, legal registration, marketing promotion, etc.); – Analysis of revenue from sales of innovative products; – Comparison of planned and actual costs and revenues; – Analyzing the profitability of innovative products commercializing and achieving break-even point.

*Resource: made by the author analyzing research material [1, 3, 5, 8, 9, 15, 16]

To select the optimal method of innovative products commercialization it is advisable to consider – in addition to business opportunities – the objectives and conditions of the method application. With the sale of innovative products a developer is mainly focused on entering new markets or expanding existing markets and, consequently, increasing its profits. Since products are innovative a company gains competitive advantages over other market insiders. Due to the fact that the company carries out the process of commercialization alone, it gains experience in this area and can commercialize its further products with less effort. This objective of the commercialization method is typical and most reasonable for companies where innovation activities dominate the business.

However, depending on available resources a company may face certain restrictions on the use of a particular method. Regarding the launch of innovative products on the market a company should, in the first place, have all the necessary resources (financial, labor, time, material, information, etc.). As the method is mainly focused on profit a company should have a target market for products with established distribution channels and potential client base. Also, for more active sales a company should have a developed and recognizable brand.

As can be seen from Table 3, at the first stage of innovative products sales a machine-building company has to collect information on relevant products market. At this stage it is necessary to undertake some actions aimed at identifying the target market.

The next stage of the innovative products sales is the assessment of company resource capabilities for self-commercialization. Based on the information received regarding the resource capabilities of the company, it is necessary to calculate accurately the economic feasibility of commercialization of innovative products carried out by the company alone. The next step in the innovative products sales is pricing for products.

Further the possible revenue from sales of innovative products should be predicted. The next step is budgeting for commercialization of innovative products. That is a combination of the two previous stages.

Having analyzed revenues and costs relating to the commercialization, and having completed budgeting process, it is necessary to determine a break-even point, i.e. the sales of products, where total revenue equals total costs. Whereas, revenue and costs from sales of innovative products are calculated as follows:

$$R = Pq*Q + \sum_{1}^{i} Pk, \quad (1)$$

where: R – revenue from sales of innovative products, UAH; Pq – the price per unit of innovative products sold, UAH; Q – the number of units of innovative products sold, units; Pk – the price of advice on the use of innovative products, UAH; *i* – the amount of advice provided, units:

$$C = C1 + C2 + C3 + C4 + C5 + C6 + C7 + \\ +C8 + C9 + C10 + C11 + C12 + C13 + C14, \quad (2)$$

where: C – costs for innovative products sales, UAH; C1 – the payment for advisory and information services, associated with the support of legal registration of title to the products, UAH; C_2 – the payment for patenting of title to the products and their manufacture, UAH; C_3 – the payment for products certification (if applicable) , UAH; C_4 – the payment for licenses and other government approvals for conducting business (if applicable) , UAH; C_5 – the advertising costs, UAH; C_6 – the cost of packaging and packing materials (if applicable) , UAH; C_7 – the cost of paying interest on financial loans obtained for replenishment of working capital (if applicable), UAH; C_8 – the tax costs, UAH; C_9 – the cost of compensation for storage, handling, transshipment, packaging, transport and insurance costs incurred by a provider included in the price of products on the basis of deliveries under the agreement of the parties, UAH; C_{10} – the cost of services rendered by freight forwarding, insurance and intermediary organizations (including commissions), the cost of which is included in the price of products on the basis of deliveries under the agreement of the parties, UAH; C_{11} – the payment of export duties and customs fees (if applicable) , UAH; C_{12} – the warranty and maintenance costs, if it is stipulated by sales terms, UAH; C_{13} – the wages of employees involved in the commercialization process, UAH; C_{14} – the benefits-related deduction, UAH.

Further stage of innovative products sales is to prepare the necessary documentation for the legal registration of property rights and registration of legal status (acquisition of title). Having received legal title to innovative products, the company is able to further promote the products with no risk of losing the title to such products. However, depending on the type of product, the company may be required to obtain appropriate certifications to further activities.

The next step in the innovative products sales is to develop and launch a marketing program for products promotion and marketing. Upon determining the range and modification options of innovative products marketing communication policy for promotion of innovative products should be developed and implemented. The next step in the innovative products sales is to develop a client base, reach agreements with buyers, and create sales channels.

A further step is the sale of products to resellers and end customers. At this stage of commercialization, based on feedback, the company gets the first results regarding the demand for innovation, and it can assess all advantages and disadvantages of using the products. In case of defects in products use, the company needs to fix them through warranty service. Also if the putting the product into service is a complex process or in case of any failure the manufacturer shall carry out after-sale maintenance service, if it is stipulated in the agreement.

The final stage in the innovative products sales is testing the effectiveness of the completed commercialization. This stage is designed to carry out a mandatory study of results received from the completed actions. The main indicator of successful commercialization is profit ratio of innovative products sales (3):

$$P_R = P_n / R_{n.}, \quad (3)$$

where: P_R – the profit ratio of innovative products sales; P_n – the net profit from sales of innovative products, UAH; R_n – the net revenues from sales of innovative products, UAH.

Concerning the use of innovative products in company business to satisfy own business needs, it should be noted that it brings many benefits to a company during its internal activities and thus gives it competitive advantages in the market in comparison with other companies. Innovative products can be used both in production (innovative equipment, new production technology, etc.), and for other economic and administrative processes. In particular, the use of innovative products can help reduce both material costs and time in different organizational processes. Also innovative products help to modernize the existing logistics equipment, which in turn can result in increased production. Another main objective of applying this method is professional development of the staff, effective management of warehouses and inventory and so on. Thus, on the basis of the above it can be concluded that the use of innovative products in own business activity to meet the in-house needs will result in significant competitive advantage.

However, in order to apply this commercialization method, as well as in case of innovative products sale, one must have all the appropriate resources for

manufacturing these products at the company. It is also necessary to have information to be able to properly use innovative products and have the necessary completion materials to introduce and use innovative products at the company.

CONCLUSIONS

Based on the above it can be argued that the commercialization of innovative products by machine-building companies through the use of the products for the company's needs (for internal needs or for product sales) is the best method of self-commercialization. However, it should be noted that this is a rather complicated process. Also, this method has both advantages and some risks for the company business. To provide clearer understanding the article describes the special features of the aforementioned method in accordance with business objectives and conditions of use.

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