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EXTERNAL PATENT EXPLOITATION STRATEGIES: MOTIVES AND FORMS

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Abstract: Too often traditional internal patent management strategies are used, while the exploitation of the newer notion of external patenting would allow to capture greater value. Therefore, the aim of this article is to identify and analyse the most common external patent exploitation motives and its forms. The research method applied is the literature review in the area of strategic management. As the analysis has shown, the motives of external patent exploitation can be divided into strategic (internal and external) and monetary motives, which allowed their clearer depiction. The most popular forms of external patent exploitation are: licensing out, cross-licensing, patent pools, patent selling, joint ventures and strategic alliances. Their use is dependent on multiple factors and connected with specific advantages and risks, as exemplified in the article.

Keywords: patent management, intellectual property, strategic management, technology management.

1. Introduction

Patent management is positively correlated with multiple dimensions of firm performance (Somaya, 2012). Empirical research shows that the number of patents granted contributes positively to firm's financial performance (Maresch et al., 2016). However, it is not the size of a company's patent portfolio, but the patent management competences that determine the value created by patents (Somaya, 2016). Those capabilities are still rare, which leads to ineffective management of intellectual property (IP) (Soranzo et al., 2017).

Beginning from 1421, when the Florentine architect Filippo Brunelleschi obtained the first modern patent, the inventors' strategies were quite similar (Al-Aali, Teece, 2013). After creating the invention, one should apply for the patent protection. Then after receiving it, one should manufacture the product and profit from the quasi-monopolistic position for a limited

time. In the case of an infringement of IP rights by the competitors, it is possible to demand compensation and prohibit the distribution of infringing product. This is the internal patent exploitation strategy. Still the most common motive to patent is to protect product technologies, followed by protecting the freedom to operate (Holgersson, Granstrand, 2017).

However, nowadays knowledge of alternative strategies is necessary, as mostly only international corporations can afford the traditional strategy of exercising market power, as it requires significant funds for the development and patenting of the invention and for the long-term lawsuits in foreign jurisdictions.

The questions of whether the patented invention ought to be commercialized internally or externally ought and under what conditions need to be analysed by researchers and managers. What is known, however, is that the choice of the proper activity is dependent on relations between the availability of complementary assets within the company and the appropriation regime. IP should be treated as an asset, value of which should be maximized (Palfrey, 2011). Very often the best way of doing so is exploiting it externally. However, there is a lack of a comprehensive presentation of this issue in the literature. Therefore, the aim of this article is to identify and analyse the most common external patent exploitation motives and its forms based on a literature review.

2. Research method

The research method applied is the literature review in the area of strategic management. Such analysis allows identifying and analysing the most common motives and forms of external patent exploitation. In order to achieve this aim, the databases Emerald, ScienceDirect and ProQuest, as well as Google and Google Scholar were searched. The following phrases were used: external patent exploitation, patent protection motives, patent protection forms. Special emphasis was put on empirical and case study papers as they allow a practical depiction of the issues under review. We also analysed the publications referenced in the studied articles. The time scope is 1998-2018.

3. External patent exploitation strategy

Along with the recent changes in the propensity to patent, the forms of the patent exploitation have evolved. Munari and Oriani (2011, p. 4-5) underline the decline in importance of the purely defensive character of patents (e. g. prevention from copying or blocking competitors), towards an external exploitation-oriented approach, leading to an improvement

of enterprises' competitive position. Leone und Laursen (2011, p. 88) emphasize the growing importance of patents used as "currency" allowing technology exchange or knowledge trade. The diversity of patent management strategies is reflected in the differentiation in the use of possible patent obtaining procedures (Kacprzak, Kotarba, 2018).

Lichtenthaler (2005, p. 233) presents a definition of the external patent exploitation strategy based on the work of Ford and Ryan (1981, p. 117-126): "external knowledge commercialization (exploitation) describes an organization's deliberate commercializing of knowledge assets to another independent organization involving a contractual obligation for compensation in monetary or non-monetary terms". With reference to that, a new approach to the role of patent rights has been proposed: patents can be used as instruments facilitating technology sharing (Leone, Laursen, 2011, p. 88). In the case of a strong IP protection and the lack of assets required to commercialize internally the know-how, the propensity towards licensing or other external exploitation strategies grows.

A change towards more technology-sharing motives of IP exploitation is a consequence of the occurring opportunity to create more value for the company. Therefore, a dynamic increase in licensing activities has been observed for over 20 years (Gassman, Bader, 2011, p. 115).

4. Motives of external patent exploitation

Koruna (2004, p.241-254) lists 6 most common objectives of patent exploitation: (1) generating income, (2) gaining access to knowledge, since many firms realized that without the external knowledge and competences, further development may be hindered, (3) technological standardization, which may be a consequence of the broad know-how diffusion, and thus there occurs a displacement of competing technologies (useful in IT and electronic industries), (4) profiting from infringements, (5) learning effects and (6) assurance of the freedom-to-operate and avoidance of patent infringement through access to other patent portfolios, thanks to cross-licensing deals. Leone and Laursen (2011, p. 89-95) mention the following additional advantages for the knowledge provider: (7) a chance to create new market (product) opportunities, (8) profiting from a technology development by using the complementary resources of a third party, (9) deterrence of new entries on the market. Following motives should be added: (10) a chance for market penetration without resources and competences and (11) an opportunity to make an ally by avoiding patent claims and litigations.

This stays with accordance with Holgersson and Granstrand's (2017) empirical research, which shows that the most significant motive to patent is to protect product technologies and freedom to operate. Open innovation seems to be of increasing importance to firms and is related to stronger bargaining motives to patent and protection motives.

The motives behind the external patent exploitation are grouped in two domains: monetary motives refer to the measurable, financial income, while strategic motives are further divided into internal and external (Gassmann, Bader, 2011, p. 117-119). The former comprises of (12) maximization of returns, (13) winning new sources of earnings for the company and (14) a cost reduction. One of the strategic objectives of the external effects, connected with the ability to create strategic alliances, joint ventures or license out know-how is (15) risk reduction. Should the R&D be too risky or cost-intensive to one, there is a chance to transmit the further development of an invention to another party, and thus the patent holder can profit from the technological improvement, while reducing the exposure to risk. Moreover, enhanced external effects come about through: (16) strengthening the corporate networks and (17) reputation improvement.

Empirical findings from German industry (Blind et al., 2006) confirm the analysis. Strategic patenting motives are crucial, as they improve the reputation of the company and its position in negotiations. They also create incentives for R&D employees and allow a way of measuring their performance, which is especially applicable in large companies. Unfortunately, their wide-ranging patent portfolios threaten new entrants, which can be inferred from the high emphasis of the small companies on the exchange motive.

Table 1. shows the summary of the main motives for external patent exploitation.

Table 1.
Summary of the main motives of the patent external exploitation

External patent exploitation motives		
Strategic motives		Monetary motives
Internal: - assuring the freedom to operate - access to external knowledge - risk exposure reduction - learning effects	External: - entry to new markets - new market entries detterence - setting standards - patent enforcement - reputation improvement - stengthening of the corporate networks	- maximization of returns - new sources of earning - reduction of costs

Source: Authors' own elaboration based on the literature (Koruna, 2004, p. 241-255; Lichtenhalter, 2005, p. 238-239; Gassmann, Bader, 2011, p. 117-118; Leone, Laursen, 2011, p. 89-99).

When it comes to the main motives seen from the perspective of a licensee (technology recipient), the following may be distinguished: (1) a chance for an immediate technological catch-up with rivals and better access to the market, (2) achievement of technological diversification, (3) new market opportunities, (4) an access to significant patents and (5) a chance for a "multiplication in blocks of innovation" (Leone, Laursen, 2011, p. 96-99). Furthermore, there is (6) a chance of profiting from the superior know-how, due to better product quality or by way of well-established licensor branding.

5. Forms of the external patent exploitation

According to Lichtenthaler's (2005, p.232-240) meta-analysis, a change in approach to patent commercialization can be observed in the favouring of external exploitation by way of: licensing, cross-licensing, patent pools, patent selling, joint ventures and strategic alliances (analysed in detail below).

5.1. Licensing

The role of licensing has increased over the years. The principle of licensing is clear: the patent holder gives to a third party a right to exploit the invention protected by a patent for a set fee, while the rights to the patent stays in the hands of the patent owner. Three types of license characteristics can be differentiated: a degree of exclusivity, scope and the content of the transaction and the type of the license (Hentschel, 2007, p. 54-57; Gassman, Bader, 2011, p. 120-121). The degree of exclusivity refers to the number of licensees who are in possession of the right to exploit a particular license. An exclusive patent licensee is thus a legal subject who has the right to solely exploit the invention. The scope and the content of the transaction are determined each time during negotiations between the licensor and the licensee. It might either come to granting a license in the form of a patent specification, without the transfer of knowledge, or a license that covers the transfer of knowledge in the form of patent specification, know-how and technical expertise. Licenses without know-how contain information about the type of a patent, territorial scope, degree of exclusivity and temporal framework of the license. However, those including know-how provide additionally R&D reports, samples, prototypes, market studies, competitive analysis and even data of collaborators or customers. Furthermore, the licensor's experts are also provided, in order to complete efficiently the knowledge transfer. One should also consider the viability to license out with reference to the know-how recipients (other regions, other industries, competitors, suppliers or customers).

Leone and Laursen (2011, p. 89-91, 95-96) present the licensor's and licensee's dilemma. The former issue refers to the dilemma of a patent holder who may either license-out the permission to exploit the know-how under certain conditions or decide on the internal patent development and commercialization. The licensee's dilemma bases on the issue whether to invest and develop technology throughout own R&D projects or rely solely on external sources of knowledge (license-in). However, entire reliance on external sources is undesirable, because one can gain the most only when having R&D resources that enable the most effective exploitation of the acquired know-how. Therefore, both approaches should be rather complementary – one to another, rather than considered as substitutional. Belingheri and Leone show that many start-up companies license-in from external companies, providing additional channels for acquiring know-how (2017).

Licensing is particularly beneficial when a firm does not have the resources to protect its IP rights. Moreover, low license fees can discourage competitors from developing competing inventions. Companies too often rely on the traditional strategy of exercising market power. This is exemplified by the case of the tooth whitening strips patented by Procter & Gamble (P&G) that were a significant success, which translated into a halo effect: increased popularity of other products of this company (Fisher and Oberholzer-Gee 2013). Their competitor – Colgate-Palmolive company could not afford a reduction in the market share and as circumventing P&G's patents was extremely difficult, they decided to release their own whitening strips. They were much less effective, but cheaper. This led to a price war that reduced the profits of the products in this category for a long time. A much more profitable solution for P&G would have been to cooperate with Colgate-Palmolive by licensing.

5.2. Cross-licensing

The principle of cross-licensing is based on a mutual patent exchange between two independent enterprises. Cross-licensing firms get access to additional patent portfolios. Those companies assure mutually a right to use the patented knowledge for further development or product commercialization. While in the past cross-licensing was based solely on a mutual exchange of licenses, nowadays, the role of monetary compensation has risen. Depending on the content of the agreement, a licensing fee for the exploitation of patented invention may be charged, however in principle, the compensation should ensue also in the form of a license. The idea behind cross-licensing is to assure freedom-of-action (freedom to operate) and an access to knowledge from external sources (Grindley, Tecce, 1997, p.1-12; Reitzig, 2004, p. 35-40). Hentschel (2007, p.47) stresses that cross-licensing is a very suitable tool for cumulative industries, where innovations are built thanks to many interrelated technologies. Empirical research confirms that it may be advisable to share technologies with other firms to improve the competitiveness of the technological sector (Holgersson, Wellin, 2017). Another empirical study shows by comparing patent data concerning licensing and cross-licensing that companies may be reluctant to share their IP with rivals without obtaining IP in return (Grzegorczyk, Glowinski, 2017).

There are two types of cross-licensing deals: (a) the IP rights included in the agreement are licensed for its lifespan or (b) for a certain period of time (Gassmann, Bader, 2011, p. 44-46). After the validity of the deal expires, a new agreement is necessary. Siemens and Microsoft can be set as the example of the effectively implemented agreement concerning patent sharing. Thanks to the mutual access to their patent portfolios, these companies are capable of enlarging their offer to the customers.

5.3. Patent pools

A patent pool is a joint patent licensing deal, which includes enterprises willing to share their state-of-the-art knowledge with other legally independent subjects (Shapiro, 2001, p. 119-150). Their rising popularity is due to the fact that access to IP rights that protect many modern technologies is problematic, because of their fragmentation (Di Minin, Faems 2013, p. 9). In order to obtain access to a particular technology, many bilateral licensing agreements would have to be settled, which is costly, time-consuming and risky, as the lack of consent of one of the right holders could undermine the whole undertaking.

Moreover, nowadays high-tech competitors are often subject to network externalities: the most popular technology among users attracts the providers of complementary products, which increase the technology's value to customers. This results in favouring the technology that has the biggest user base and not the best technology. In order to outcompete technological alternatives, firms have started both to collaborate in developing the platform's technology and to compete with each other in providing different, but compatible versions of the "shared" platform. They contribute their inventions and related IP rights which results in a patent thicket: "an overlapping set of patent rights requiring those that seek to commercialize new technology to obtain licenses from multiple patentees", which is extremely difficult to circumvent (den Uijl et al., 2013, p. 34). Patent thickets lead to many problems, one of them being a very time-consuming process of obtaining required licenses. With such excessive IP rights, co-created technologies are likely to be under-used, even though they could allow for the joint technology to be the most popular and be set as a technological standard. However, in some cases (e.g., CD, MP3), producers of co-created technologies have successfully established an industry eco-system by using patent pools to simplify the patent thicket. They create transparency and support market adoption. An example of a patent pool is One-Blue, containing the majority of patents that create the Blue-Ray technology (den Uijl et al., 2013, p. 41).

5.4. Sale

The patent holder may permanently transfer (sell) to a third party all the rights resulting from the patent protection. Although external patent exploitation has gained importance recently, researches were investigating the possibility of selling state-of-the-art invention already in the 80's of the previous century (Ford, 1988, p. 85-95).

Chesbrough (2007) states that assets sale is a good solution if they have more value for the buyer than the owner. Considering IP rights, this may be the case when the patent owner does not have enough resources for utilization of the patented technologies. Moreover, often a sale of a patent takes place when the patent right has been granted to a company, but is not related to the core strategy pursued by the firm. Furthermore, public research institutions are the organizations that usually sell their patents.

The problem with the sale of IP is the disclosure of know-how. While the disclosure of too little information can result in wrongly assessing its value by a potential buyer, revealing too much may lead to halt of negotiations and using the acquired know-how by the rival on its own (Fisher, and Oberholzer-Gee, 2013). In order to prevent the latter, companies should build patent fences, which protect not only the main invention, but also the processes and complementary or substitutional products. Such action decreases the financial soundness and the technical possibility of evading such IP rights and makes partial disclosure of the patented knowledge much safer (Reitzig, 2004).

5.5. Joint venture and strategic alliances

Through setting up joint ventures, the grounding legal subjects may combine the developed technologies, IP and know-how, which are often complementary to each other (Ford, 1988, p. 85-95). Thanks to the joint work on advancing the R&D projects and then patenting the joint inventions, the costs and risks incurred within the undertaking are split between the participating parties, and thus the access to new markets or technologies is facilitated (Granstrand, 2000). However, Delerue's empirical research (2018) showed that joint patenting may be designed to hold the parties hostage as a means to ensure partnership continuity.

In contrast to joint ventures, the parties of the alliance stay legally independent, since capital binding is not required. Strategic alliances between companies or research institutions may be very beneficial, especially in the early phase of R&D projects and in the case of technologies that are not yet ready for market entry. In strategic alliance, all parties bring to the mutual project complementary knowledge and patents. Thus, activities may be conducted more effectively, enabling an earlier market entry or an increase in the market shares in a certain segment. Furthermore, the exposure to risk decreases, since all partners of the alliance carry the costs and risks.

Ziegler et al. (2013), in a multiple case study, show an example of a firm whose business strategy concentrates on the research-intensive part of the pharmaceutical value chain. This company focuses on developing drug candidates until clinical phase two and then tries to find a partner among other firms in the sector for the late-stage development and marketing of the product. Such a strategy apart from the technology transfer also requires sharing the associated know-how.

One of the main motives of joint ventures and strategic alliances is the co-creation of technical standards in an industry, similarly as in the case of patent pools. Patenting of a technical standard in a specific industry (e.g. telecommunications) may create a sustainable competitive advantage (Holgersson, 2012, p. 25; Leiponen, 2014).

6. Summary

Skilful IP management allows the gain of appropriate value from R&D and sustainable competitive advantage. However, patent management is often neglected. With the rising competition in high-tech sector, patent management competences are becoming more significant than firm's patent portfolio (Somaya, 2016). Too many companies depend on the traditional internal patent management strategies, while external patent exploitation could create superior value from this form of IP rights.

The starting point of popularizing external patent exploitation is its motives, which illustrate why this strategy could be beneficial for patent-holders. Dividing them into internal and external strategic motives, as well as monetary allowed their clearer depiction.

Being familiar with the external patent exploitation motives and forms may help to identify the most appropriate strategies and thus enhance the probability of a satisfying return on the investment in a novel technology. The most popular forms of external patent exploitation are: licensing out, cross-licensing, patent pools, patent selling, joint ventures and strategic alliances. As it is shown, their use is dependent on multiple factors and is connected with specific advantages and risks. Future research should focus on analysing case studies of particular external patent exploitation strategy, as they allow for practical illustration of a particular strategy.

This analysis of motives and forms of external patent exploitation may be of importance not only to academics dealing with intellectual property, technology and knowledge management, but also for managers willing to effectively appropriate the value from their intellectual property.

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