Managing An Out-Licensing Program: The State-Of-The-Art

By Ulrich Lichtenthaler and Holger Ernst

Abstract

Technology licensing has recently become a broader trend in many industrial firms. However, the insights into the current extent and management of corporate out-licensing are strongly limited. Therefore, this paper presents the results of a questionnaire-based study into the out-licensing activities of 154 European firms across industries. The study provides large-scale empirical evidence for the scope of corporate out-licensing activities. Moreover, it deepens our understanding of the current state of managing out-licensing activities in industrial firms. After an introduction to the topic, the design of the study is described. Then, the results of the survey are presented, and managerial implications are discussed.

Introduction

Due to the imperfections in the markets for intellectual property, technology licensing is much more difficult and complex than commercializing products and services. Despite the managerial difficulties that result from these imperfections, a substantial increase in the technology licensing activities of firms across industries can be observed in recent years. As this increase has not been sufficiently reflected by academic research, we lack a detailed understanding of the current scope of corporate out-licensing. Moreover, the insights into the management of corporate out-licensing activities are strongly limited.

At an aggregate industry or country level, there are recent empirical data, which show the existence of markets for technology. By contrast, descriptive company-level data, which give an overview of the development of technology licensing in recent years, hardly exist. There is mainly anecdotal evidence that corporate out-licensing increased during the 1990s. The most popular example is IBM, whose licensing revenues amounted to more than US$ 1.9 billion in 2001, up from US$ 30 million in 1990 (Chesbrough 2003; Kline 2003). Against this background, the present study aims at deepening our understanding of out-licensing activities at the firm level. Moreover, a detailed benchmarking analysis of managing out-licensing activities is presented.

At present, two rather contradictory facts emphasize the need for research into out-licensing. First, out-licensing activity is increasing against the background of the imperfections in the markets for technology. Second, many firms experience substantial difficulties in managing their out-licensing activities, whereas some pioneering firms realize enormous benefits. Therefore, the present article presents the results of a questionnaire-based study into the out-licensing activities of 154 European companies across industries. In the next section, the design of the empirical study is described. Afterwards, the results of the survey are presented. The final section focuses on the study's managerial implications and concludes.

Research Design

After analyzing the literature and conducting exploratory interviews, we contacted LES industry members in Germany, Switzerland and Austria. The survey had previously been mentioned in a newsletter of LES Germany, whose support is gratefully acknowledged. To address a cross-section of middle and large industrial firms in these countries, we additionally considered companies ranked among the 500 largest firms in Germany, the 100 largest firms in Switzerland and the 100 largest firms in Austria based on revenues. Due to the importance of the corporate intellectual property department in technology licensing, the heads of these departments were contacted. In firms with a dedicated licensing function, the head of this unit was contacted.

Thus, the study examined firms whose main business is the application of technological knowledge in their own products. We have analyzed neither start-up companies nor firms that mainly provide R&D services. Due to the focus on technology-oriented industrial companies and due to a considerable overlap between the LES member firms and the top 500 or top 100 firms, 412 companies were identified as potential participants. Data collection was undertaken via a detailed questionnaire, which was administered in English. A total of 155 firms participated in the study which corresponds to a response rate of 37.6 percent. Of the 155 questionnaires, data were sufficiently complete from 154 firms.

The companies in the sample are relatively large with an average number of employees of 15,431 and average revenues of EUR 3,912 million. Regarding the technology intensity of the companies, the R&D intensity is 6.9 percent on average. However, caution is required with regard to interpreting the mean of R&D intensity because it is influenced by the high values of some rather small companies. With regard to the country of origin of the firms, about 70 percent of the companies are based in Germany, 19 percent have their headquarters in Switzerland, whereas the remaining 11 percent are based in Austria. Concerning the distribution of the firms across industries, about 42 percent of the companies are active in the automotive/machinery industry, 28 percent in chemicals/pharmaceuticals, 18 percent in electronics/semiconductors, whereas the major business of the remaining 12 percent of the companies is in other industries.

Results

Extent of Out-Licensing

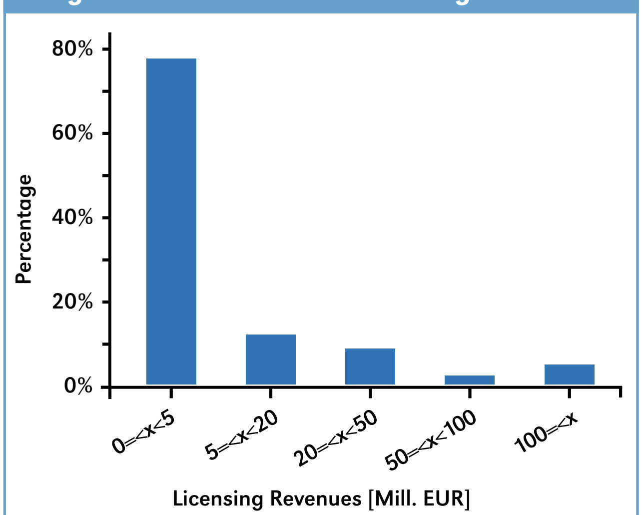
First of all, we aimed at quantifying the current extent of out-licensing in practice and the development of these activities in recent years. Therefore, the firms' revenues from licensing out and selling technologies in their last financial year have been examined. Due to the high confidentiality of this number, the revenues have been measured in the following five classes: EUR 0-5 million, EUR 5-20 million, EUR 20-50 million, EUR 50-100 million, and over EUR 100 million. Figure 1 shows that the annual licensing revenues of the large majority of firms in the sample are currently below EUR 5 million.

In addition, the increase in licensing revenues over the last five years has been measured which allows us to evaluate the recent development of out-licensing activities. In general, the data show a substantial increase in out-licensing during the last 5 years (mean of 3.4 on a 7-point scale, with 7 indicating a very strong increase). A more detailed analysis, however, reveals that more than 50 percent of the firms in the sample report only an incremental increase or no increase at all (categories 1 and 2 on the 7-point scale). By contrast, about 40 percent of the firms report a major increase in their licensing revenues (categories 4-7 on the 7-point scale). Therefore, the recent increase in out-licensing has obviously not been driven by the activities of all firms but rather by more intense out-licensing activities in a minority of companies.

The percentage of licensing revenues from the top three licensing-out agreements relative to all licensing revenues is 66 percent on average. While this number focuses exclusively on the monetary benefits of technology licensing, it shows that a small number of successful out-licensing deals may already lead to an appropriate monetary return on investments in developing licensing activities, such as assigning dedicated employees. In addition, the results have shown that, on average, the licensing revenues make up about 1.8 percent of the firms' overall operating revenues with a median of merely 0.5 percent (Figure 2). Thus, the data show that, in relation to product business, the out-licensing activities are still rather limited in most firms.

Furthermore, the licensing revenues amount to 20.6 percent of the firm's operating income on average (Figure 3). For calculating these percentages, the means of the classes of measuring licensing revenues have been used for the first four classes. For the fifth class (EUR over 100 mill.), EUR 250 mill. was set as an appropriate value. However, this figure has to be interpreted carefully because there are

Figure 1: Distribution of Licensing Revenues



■ Ulrich Lichtenthaler (corresponding author), Assistant Professor Chair for Technology and Innovation Management, WHU – Otto Beisheim School of Management, Burgplatz 2; D-56179 Vallendar; Germany.
Phone: +49-(0)261-6509-245
Fax: +49-(0)261-6509-249
Email: lichtenthaler@whu.edu.

■ Holger Ernst, Professor, Chair for Technology and Innovation Management, WHU - Otto Beisheim School of Management, Burgplatz 2; D-56179 Vallendar; Germany.
Phone: +49-(0)261-6509-241
Fax: +49-(0)261-6509-249
Email: hernst@whu.edu.

Figure 2: Distribution of Licensing Revenues Relative to Overall Revenues

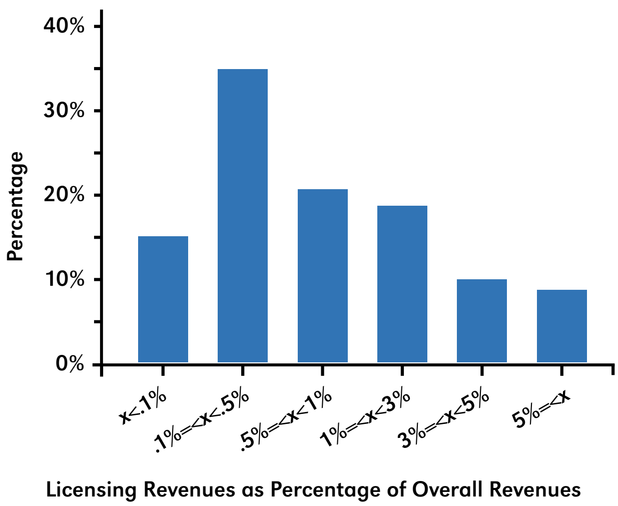
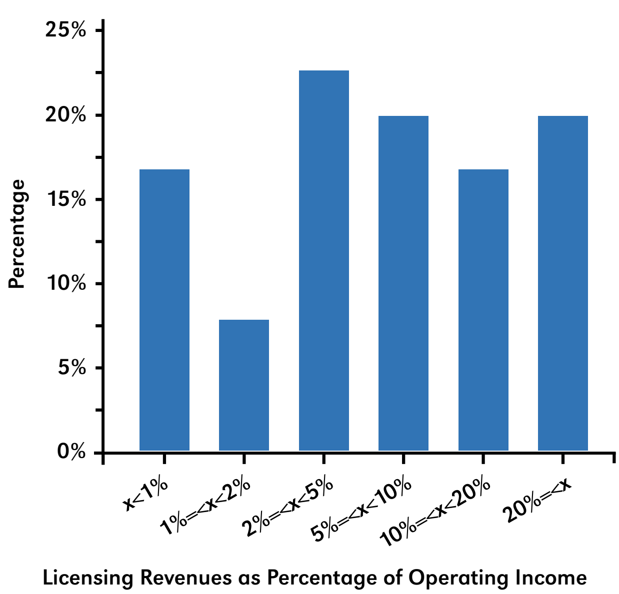


Figure 3: Distribution of Licensing Revenues Relative to Operating Income



various companies with a very low operating income in the sample which somehow distorts this number. Here, the median of 5.3 percent appears to be more meaningful. Comparing these numbers with the firms' licensing revenues relative to their operating revenues underlines the strong positive impact that successful out-licensing activities may have on a firm's operating income due to the high profit margins that may often be realized in out-licensing.

In addition, we have found that technologies are commercialized in the firms' own industries and in other industries with a slight prevalence of out-licensing activities inside the companies' own industries, i.e., to buyers, suppliers and competitors (mean of 4.3 on a 7-point scale, with 7 indicating licensing inside the own industry). In addition to the purely monetary dimension of generating licensing revenues, this result points to the importance of strategic functions of out-licensing, e.g., gaining 'freedom-to-operate', which may primarily be pursued by licensing technology inside a firm's own industry or in related industries. Furthermore, this finding underlines that companies are willing to license technology in their own industries despite the danger of strengthening current or potential competitors.

Management of Out-Licensing

Having addressed the scope and development of out-licensing, we now consider the current state of managing out-licensing programs. Regarding the firms' strategic approaches to these activities, we find that a large part of the firms still pursue out-licensing in an ad-hoc way. Nevertheless, a substantial portion of the companies view out-licensing as a strategic activity and have already adopted a relatively formalized strategy for these operations (mean of 3.2 on a 7-point scale, with 7 indicating a very formalized strategy). Thus, numerous companies have obviously recognized the importance and the potential benefits of well-developed out-licensing activities. In addition, a considerable number of companies closely align their out-licensing strategies with their product strategies (mean of 3.9 on a 7-point scale, with 7 indicating close alignment). Accordingly, many firms regard out-licensing not merely as an isolated operation but integrate it into the broader context of corporate strategy.

With regard to the content of out-licensing strategies, we find that the majority of firms pursue a relatively open approach towards technology licensing (Figure 4). Thus, there are often very limited general restrictions regarding the out-licensing of particular technologies, e.g., about the issue of licensing out technologies that are close to the firm's core technologies (mean of 4.2 on a 7-point scale, with 7 indicating strong restrictions). Increasingly, firms regard out-licensing as a proactive activity, which is part of their overall business strategy and may include all technology assets. Accordingly, it goes far beyond a marginal activity of commercializing residual technologies. This finding is unexpected because it strongly contrasts the relatively limited use of out-licensing in practice. Thus, it has to be underlined that this limited use is obviously not the result of the unwillingness of companies to license out technology. Together with the findings on the formalization of out-licensing strategies, this result rather shows that many companies aim at licensing out a considerable portion of their technology portfolios or are at least willing to do so. However, they fail to realize the potential inherent in an open approach towards out-licensing.

Concerning the process of carrying out out-licensing activities, the data show that a substantial portion of the companies have adopted a systematic process for managing these activities (mean of 3.0 on a 7-point scale, with 7 indicating a very systematic process). Similar to the formalization of out-licensing strategy, however, most companies still address these operations rather unsystematically. Regarding the organization of out-licensing activities, we find that about half of the companies in the sample have not assigned any employees specifically to these tasks. By contrast, about 22 percent of the firms have assigned one or two employees to these tasks, and about 12 percent of the companies have 3-5 persons in place that are dedicated to out-licensing. Moreover, about 3 percent of the firms even employ more than 20 persons that are occupied full-time with coordinating and realizing out-licensing activities (Figure 5). With regard to the organizational integration of specialized licensing employees, 22 percent of all firms have a dedicated licensing function. This means that about 44 percent of the firms that employ dedicated employees have set up their own organizational unit for them.

Figure 4: Restrictions to Out-licensing

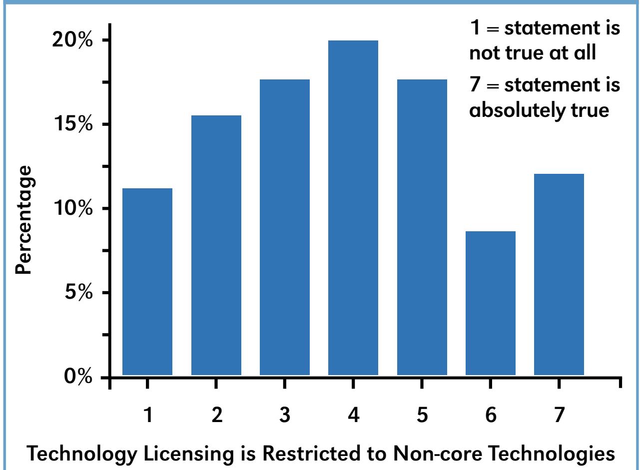
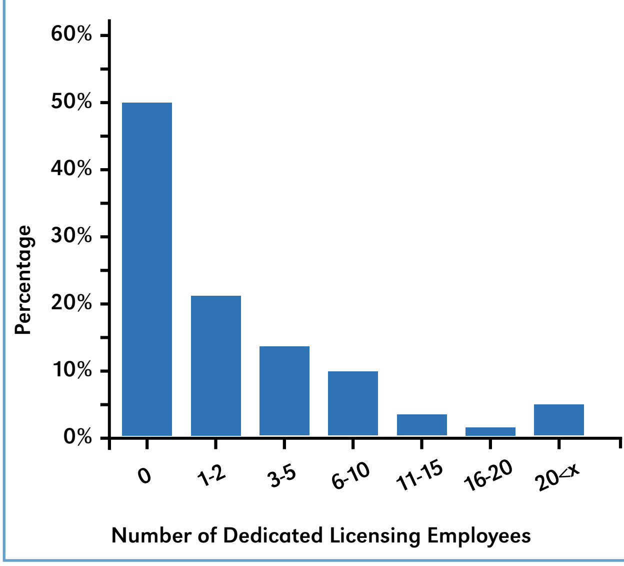


Figure 5: Number of Employees Dedicated to Out-licensing



Conclusions

With regard to the scope of out-licensing, the results have shown that most firms' technology licensing activities are still relatively limited in comparison with their product business. Despite the recent increase in out-licensing, the findings largely confirm the results of earlier studies (e.g., Razgaitis 2004; Lichtenthaler 2005). Due to the high margins that may be realized in these activities, however, successful out-licensing operations may strongly contribute to the operating income of firms. As this aspect had only been described for the examples of some pioneering firms, the results of this study have provided empirical evidence for this fact.

Furthermore, a considerable increase in out-licensing over the past five years could be observed. Accordingly, companies that do not actively address this issue will tend to fall behind their competitors. As out-licensing may have a considerable positive impact on a firm's product business due to its strategic dimension, e.g., setting industry standards, successful out-licensing may make an essential contribution to overall firm performance. Thus, the present study is among the first works to provide large-scale empirical evidence for the current state and the recent increase in out-licensing at the firm level, which had merely been assumed in earlier works.

Moreover, our findings have underlined that a small number of successful deals may already lead to an appropriate monetary return on investments in strengthening out-licensing activities. Accordingly, there are good reasons for industrial firms to actively address technology licensing by assigning dedicated employees because a few out-licensing agreements may justify the initial investments in employing dedicated licensing employees.

With regard to managing out-licensing activities, it has to be emphasized that various firms have adopted a formal out-licensing strategy, which is often coordinated rather closely with their overall corporate strategy. However, there are strong differences between the leading firms on the one hand and the large number of companies that have not formulated a clear out-licensing strategy on the other. Moreover, we have found that a surprisingly large portion of firms pursue an open approach towards out-licensing. Thus, many firms are basically willing to externally leverage technology but obviously fail to realize this potential. In addition, many firms lack a systematic process for managing out-licensing activities. This finding strongly contrasts the importance of process approaches to internal technology exploitation, i.e., new product development (Ernst 2002). Furthermore, most firms have not assigned any dedicated employees to out-licensing.

Concerning the management of out-licensing, we may therefore highlight that many firms do not actively manage the external mode of technology exploitation. In these companies, out-licensing is mostly limited to realizing opportunities that randomly arise in specific situations. Accordingly, these firms have not substantially changed their rather passive approach towards out-licensing in recent years. Although these firms increasingly consider out-licensing a proactive activity instead of an ad-hoc operation, they are still in the process of transition from neglecting technology licensing towards considering it a highly strategic activity.

By contrast, a small group of firms addresses its out-licensing activities extremely strategically and professionally. These companies have assigned substantial resources exclusively to coordinating and realizing these activities. Thus, our findings support the perception that the increase in technology licensing is driven by pioneering firms, whereas a large number of companies still use licensing transactions to a limited extent. Nevertheless, there is a clear trend towards more intense technology licensing. Therefore, it will become increasingly difficult for companies to completely refrain from outward technology transfer in the future, which will not merely be an option but rather a necessity to keep up with the firm's competitors. Refraining from out-licensing will likely lead to a substantial weakening of a firm's competitive position. Thus, a proactive strategic approach and a professional management of technology licensing will gain additional importance. ■

References:

1. Chesbrough, H. (2003). The Logic of Open Innovation: Managing Intellectual Property. *California Management Review*, 45, 33-58.

2. Ernst, H. (2002). Success factors of new product development: a review of the empirical literature. *International Journal of Management Reviews*, 4, 1-40.

3. Kline, D. (2003). Sharing the Corporate Crown Jewels. *MIT Sloan Management Review*, 44, 89-93.

4. Lichtenthaler, U. (2005). External commercialization of knowledge: review and research agenda. *International Journal of Management Reviews*, 7, 231-255.

5. Razgaitis, R. (2004). U.S./Canadian Licensing in 2003: Survey Results. *les Nouvelles*, 39, 139-151.