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Management of technology licensing as a foreign market entry mode: The case of leading Italian pharmaceutical and biotech companies

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Technology licensing has been recognized for decades as one of the new market entry modes. Companies often issue licenses in foreign countries in order to enter a new market. This paper aims to unearth how companies manage the technology licensing, purposely used by firms in order to enter new markets. Starting from the perspectives given in the Dunning's eclectic theory on foreign market entry modes, and by adopting the process view perspective from the technology management literature, and also incorporating the Dynamic Capabilities Framework, this paper tries to explain the managerial aspects of technology licensing as the foreign market entry mode.

Although technology licensing as a market entry mode has been previously thoroughly explored, limited attention has been given to the possible ways companies approach in managing technology licensing for the new market entry purpose. In the paper authors rely on the multiple case study research approach in order to reveal the relevant managerial aspects implemented by Italian pharmaceutical and biotech companies that exploit technology licensing for the new market entry purpose.

The key findings in this paper indicate two points: (i) companies adopt the process view perspective for managing technology licensing as the foreign market entry mode and (ii) throughout the stages of this process firms tend to develop their dynamic capabilities (sensing, seizing and reconfiguring). These research findings contribute to a deeper understanding of technology licensing as a market entry mode in the Innovation and Technology Management literature, but also in the Internationalization literature, by integrating the elements coming from these two research streams. The managerial implications resulting from this paper may be especially useful for the firms operating in the research intensive industries (like chemical, semi-conductor, biotech, etc.), enabling them to recognize the relevant issues in technology licensing process for the market entry purpose.

1 Introduction

While competition has rapidly become knowledge and technology based, companies need to effectively manage their technological assets in order to realize any potential inherent in their intangibles

and to benefit from their innovation investments (Chesbrough, 2003; Teece, 1986). Ford (1988) proposed technology licensing as one of the forms for exploiting technology, where knowledge is the economic good exchanged, in the form of technologies, patents, ideas and know-how (Grandstrand, 2000). This research concentrates on technology licensing (further on called licensing), which may be motivated by some monetary and non-monetary drivers, enabling firms to realize a new market entry (Koruna, 2004b; Reitzig, 2004; Arora et al., 2001; Grindley and Teece, 1997; Veugelers and Cassiman, 1999). Practically, licensing for the market entry purpose reduces the entry costs when accessing a market (Fosfuri, 2004; Birkenmeier, 2003).

Guadamuz (2005) defined technology licensing as "the transfer of technology by means of a contract of industrial property rights". Moreover, a licensing agreement may also transfer protected or unprotected know-how, training of specialists, transfer of procedures and technical assistance. Licensing agreement is a result of technology licensing and it is constituted by a sourcing firm purchasing the rights to another firm's patents or technology for a lump sum payment and/or royalties (Hagedoorn and Hesen, 2007). Licensors are firms that own the essential patents and licensees are firms that purchase the right to use these patents (Joshi and Nerkar, 2011). Particularly, this paper explores the use of licensing for the foreign market entry purpose.

Researchers claim (Bianchi et al., 2009; Birkenmeier, 2003; Escher, 2003) that the main barrier to the successful licensing is a lack of appropriate management of it. Licensing management explores all the managerial activities that companies deal with when engaged in technology licensing. There are firms that experience considerable managerial difficulties with it, whereas others realize enormous benefits (Elton et al., 2002; Lichtenthaler and Ernst, 2006, 2007). Research on the management of technology licensing activities is still relatively limited and previous works do not address particularly the managerial challenges (Nakamura and Odagiri, 2005). Some research gives insights on the aggregated industry level, but do not explore closely how do firms manage their technology licensing activities (Anand and Khanna, 2000; Arora et al., 2001). There are works that have previously focused on the licensing outcomes, but have not concentrated on the managerial activities leading to these outcomes (Kim and Vonortas, 2006; Nagaoka and Kwon, 2006). However, as far as the authors' knowledge, none of the previous works explore the management of technology licensing, observed as a new market entry mode.

This article aims to give a first step towards closing the research gap in the research on technology licensing as a market entry mode, by addressing the following question: *How firms manage their licensing activities, used in order to enter foreign markets?* This question is explored by analyzing the empirical evidence coming from explorative case studies from the four leading companies in the Italian pharmaceutical and biotech sector. The paper starts from the Duning's OLI framework from the market entry mode literature, combined with the process view perspective from the technology management literature and some elements introduced in the Dynamic Capabilities perspective. The key findings indicate two points: (i) companies adopt the process view perspective for managing technology licensing as the foreign market entry mode and (ii) throughout the stages of this process firms tend to develop their dynamic capabilities (sensing, seizing and reconfiguring).

This article is structured as follows. The second section will give some theoretical foundations from the relevant literature. Section three will explain closer the research approach and the methodology applied. In section five the main findings will be discussed. Section six will conclude with the main ideas deriving from the paper and with the possible directions for the future research. The outputs of a research target at developing a systematic analysis of the critical managerial issues to be faced during technology licensing as the market entry mode.

2 Literature Review

Starting upon the definition of technology licensing given by Guadamuz (2005) ("the transfer of technology by means of a contract of industrial property rights"), a brief literature is given on management of technology licensing used as a foreign market entry mode. In this context, the technology management and the foreign market entry mode literature were reviewed.

2.1 Technology Licensing in Technology Management Literature

There are many works on technology licensing, which are sole theory and do not address managerial challenges (Nakamura and Odagiri, 2005). In order to manage licensing properly, researchers stress the importance of strategic openness in the firms (Chesbrough, 2007; Davis and Harrison, 2001). Companies should be shifting from closed to open licensing strategy (Chiaroni, et al., 2010), which does not limit licensing activities only to the transfer of internally unused technology (Dodgson et

al., 2006; Prugl and Schreier, 2006), but employs an active licensing with clear strategic goals. Another point states that companies should establish a formal licensing strategy (Pitkethly, 2001; Davis and Harrison, 2001; Rivette and Kline, 2000), used as a tool for achieving monetary and strategic benefits. There are papers indicating that companies need to implement an active strategy, where they actively seek for licensing opportunities (Fosfuri, 2006; Kim and Vonortas, 2006). Several authors support the notion that inter-firm collaboration has shown that managing technology transactions requires a process view (Bianchi et al., 2009; Hoffmann, 2005; Chiesa and Manzini, 1998). Similarly, some researchers highlight the importance of a systematic licensing process, which may start upon the technology sale process from Chiaroni, et al. (2010). In essence, the idea is to systematize the technology licensing process in several stages and to facilitate management of its activities (Koruna, 2004a; Tschirky et al., 2004). The industry experts and the indications from the researches agree on the fact that a formalized process is important, although the specific number of process stages may vary (Ernst, 2002; Cooper and Kleinschmidt, 1995). Accordingly, this process does not usually follow all the steps sequentially, but iteratively including feedback loops and reiterating some phases. In the Chiaroni et al. (2010) paper, the major steps of the technology sales process are planning, intelligence, negotiations with potential licensees, technology transfer, and control. Each stage is comprised of specific managerial challenges and main tasks to be performed. These activities are usually complex, differing in every licensing case, and need to have a systematic management that will consider the entire process. The process aims to allow companies to achieve an optimum management of all activities in licensing. So, licensing as a mode for the foreign market entry can be approached as a managed and structured process with the clear aim.

As managerial and organizational processes lead to the development and deployment of firm's dynamic capabilities (Helfat et al., 2007), management of the process of licensing within the firm is closely related to its dynamic capabilities development and deployment. Teece (2007) explains that the dynamic capabilities framework entails the following components: sensing opportunities and threats, seizing opportunities and reconfiguration of resources. By structuring the technology licensing process, the abilities of companies to sense, seize and reconfigure, are being developed and enstrengthened. Initially, the dynamic capabilities approach was made for analysis of the sources of wealth creation and capture by firms (Teece et al., 1997). The Dynamic Capabilities Framework showed that companies need to align their resources with the demands of the market through sensing, seizing and reconfiguring activities (Teece, 2007). Firstly, firms need to focus on sensing activities, which are seen through seeking for the new opportunities. Previous works state that the basic routines of the sensing capability are: (i) generating market intelligence (Galunic and Rodan, 1998) and (ii) disseminating market intelligence (Kogut and Zander, 1996). In this phase, companies scan, explore and analyze the information from their surrounding and in this manner discover existing and create new opportunities. Bianchi et al. (2010) develop a step-by-step methodology, based on the TRIZ idea, for the identification of opportunities for licensing a firm's technologies outside its core business, which fits the purpose of the sensing phase. Moreover, firms must manage and filter the information, which will enable them to identify the information of interest (Ocasio, 1997). Secondly, the seizing the opportunity follows, which is related to pursuing of the new initiatives (Van den Bosch, Volberda and De Boer, 1999) and seizing opportunities (Teece, 2007), by considering acquiring, assimilating, transforming, and exploiting knowledge (Zahra and George, 2002), and responding to market intelligence (Teece, 2007). Thirdly, after sensing and seizing the opportunities, the reconfiguration of resources initiates. Among others, reconfiguration is accomplished by managing strategic fit of the process, observing the appropriateness matters (Galunic and Rodan, 1998), timeliness matters (Zott, 2003) and efficiency matters (Kogut and Zander, 1996). This research analyzes whether the process view of technology licensing used for the foreign market entry purpose allows firms to develop the three dynamic capabilities.

2.2 Technology Licensing in Foreign Market Entry Mode Literature

Most of the international business literature examines licensing in the new market entry modes context (Aulakh et al., 2009). In the research on the internationalization process models, academics observe licensing from the transaction costs perspective and usually compare its efficiency with other foreign market entry modes (like exports, joint ventures and wholly owned subsidiaries (Anderson and Gatignon, 1986; Buckley and Casson, 1976; Contractor, 1984)). In general, this literature sees licensing as a low-commitment/low-return entry mode, which companies use primary to acquire some experiential knowledge on the foreign markets before they continue further to commit to this new market (Arora and Fosfuri,

2000; Johanson and Vahlne, 1977). Initially licensing was mainly applied as an alternative strategy to FDI (Brouthers and Hennart, 2007; Goldscheider, 2002). Increased competition and faster product and technology cycles have led companies to make a thorough evaluation of their technology portfolio, considering licensing as a commercialization strategy to generate additional revenues at almost no additional cost. When the choice of the market entry mode is in question, licensing is viewed as a low investment, low risk/return alternative which provides least control to the licensing firm (Woznick, 1996; Agarwal and Ramaswami, 1992). This experiential knowledge of a foreign market is especially valuable because some authors argue that net profit resulting from the licensing transaction and received by the licensor is lower than the net profit received by keeping the technology in-house or licensing it to a firm's subsidiaries (Kotabe et al., 1996). Authors explain that the major reason for this is seen in high transaction and opportunity costs coming from the technology transfer to other firms. Dunnings' OLI eclectic paradigm, extensively used to compare the foreign market entry mode choices (Terpstra and Yu, 1988; Sabi, 1988; Kogut and Singh, 1988; Davidson and McFetridge, 1985; Caves, 1982; Dunning, 1980), puts a strong emphasis on factors influencing the preference for licensing versus FDI to enter foreign markets (Dunning, 1993). Dunnings' OLI eclectic paradigm analyzes the foreign market entry mode choices decisions in terms of ownership (O), location (L), and internalization (I), or OLI. Each one of the OLI factors has been associated with precise advantages that can enhance the firm performance. Further on, researchers present licensing as the second-best entry strategy, which primarily enables companies to extract residual value from mature technologies (Telesio, 1979).

However, firms increasingly rely on licensing to enter foreign markets and gain global competitive advantage (Fosfuri, 2006; Hill, 1992, 1997; Kotabe et al., 1996). Only limited attention has been paid to management activities of licensing as a mode of entry, which can provide with an option to grow when uncertainty is resolved favorably, while also offering enough flexibility to abandon the market in the event of negative information (Ahsan and Musteen, 2011). In this sense, an important issue not studied thoroughly in the foreign market entry mode literature should answer questions on ''how to license'' in the foreign markets rather than ''whether to license'' (Aulakh et al., 2009). Similarly, in this work authors implement the OLI perspective in the technology licensing management, which companies exploit when engaged in licensing for the foreign market entry purpose.

The literature review on technology licensing in technology management literature and foreign market entry mode literature, points out on a gap in the previous research, not explaining the managerial activities encountered by the companies that engage in technology licensing for the foreign market entry purpose. In order to untangle this overlooked issue, this research observes the case studies originating from the leading Italian pharmaceutical and biotech companies that engage in licensing for this purpose. The analysis adopts several ideas from the reviewed literature, like the process view of licensing aligned with the Dynamic Capabilities framework and Dunnings' OLI eclectic paradigm. The next section provides more detailed information on the methodology applied.

3 Methodology

For the purpose of this research comparative multiple case studies were applied (Yin, 2003), because they enable an in-depth examination of each case and also enable a cross-case comparison (Eisenhardt and Graebner, 2007). As explained in the previous sections, this paper is more focused on answering 'why' and 'how' research questions, which suite this methodology (Eisenhardt, 1989). Different forms and approaches to the management of licensing as a foreign market entry mode have not been significantly documented, which can be appropriately investigated and presented with a qualitative approach. Relying on the theoretical sampling logic given by Siggelkow (2007), this study has chosen to observe four leading Italian pharmaceutical and biotech firms. The pharmaceutical and biotech industry was chosen, because these industries indicate a strong presence of active licensors (Schilling, 2009; Kim, 2009; Arora and Ceccagnoli, 2006; Rivette and Kline, 2000; Grindley and Teece, 1997). Importantly, there is an active market for technology in the chemical processes (Arora et al., 2001). When setting up selection criteria on whether to include the company in the research, the following was accounted: (i) selected companies have been identified as active licensors (ii) selected companies have already been engaged in licensing in the foreign markets; (iii) sample of companies was not limited to any firm size. The "polar type" sampling procedure (Eisenhardt and Graebner, 2007) was not used, because it was not necessary for the purpose of this research. The overall performance of licensing was not an issue of interest here, but the managerial activities met during technology licensing for the foreign market entry purpose. However, pure theoretical sampling was enough to allow experimental situa-

tion, where the phenomenon of interest was studied under particularly insightful circumstances (Siggelkow, 2007). Finally, research results coming from the exploratory case study analysis are not statistically generalizable (Yin, 2003), but exploratory. The overall goal is analytically and theoretically to combine the existing body of knowledge on technology licensing management from the technology management research and research on technology licensing coming from the foreign market entry literature, in order to build a basis for future theoretical and empirical studies on technology licensing management used as the foreign market entry mode.

Preliminary list contained ten companies that may fit the explained selection criteria. These firms were identified in consultation with the experts from the Licensing Executives Society Italia (LES Italia), a nonprofit organization that operates in the field of business law, intellectual property and technology licensing, trademarks and intellectual property. LES Italia has more than 300 members, representing the largest firms, industrial organizations, research institutes, law and patent firms that aim to promote opportunities for licensing. Afterwards, each of the firms was contacted in order to gather information on the company and to make and additional check whether it fits the sampling criteria defined. Eventually, the final sample comprised of four firms that met all the criteria stated above. In Table 1 some preliminary information on the companies included in the sample are provided.

In the data collection procedure, the research mainly relied on the semi-structured personal interviews with the key informants. All the interviews were conducted in the period between the January 2012 and May 2012. In each company the interviewed persons were heads of licensing units. If the firm didn't have a dedicated licensing unit, either responsible person for the management of research and technology, or person responsible for

Table 1 Preliminary Information on the sampled companies.

Firm	Sector	Total turnover[a] (# employees)[c]	# of patents (# licensing agreements)[b]	Interviewed personnel
Company A[1]	Diagnostic	1.000.000 (3000)	1500 (N.A.)[d]	- Integrated Research Director - Technology Opportunities Director
Company B	Pharmaceutical	68.000 (280)	7 (60)	- Head of Licensing & Business Development - R&D Director -International Sales Manager
Company C	Biopharmaceutical	529.000 (800)	308 (N.A.)	- Marketing e and International Sales Director - Head of Licensing Unit
Company D	Pharmaceutical	500.000 (2000)	258 (50-60)	- Head of Business Development

[1] The names of the firms were omitted on purpose, as the interviewed personnel request.
[a] Total turnover in thousands of euro, as of 2010 (source: interviews and company archival data).
[b] Number of patents and number of licensing agreements (source: interviews, company archival data and company website).
[c] Calculated as full-time equivalent employees.
[d] N.A. = not available.

the international markets was interviewed. In all the cases a second person, generally from R&D or marketing department, was interviewed in order to obtain a different assessment. Moreover, at least one member of the top management team (if present) was interviewed for each firm. A minimum of three interviews for each company was made and a total of thirteen thorough face-to-face interviews were used as a basis of this research. Interviewing multiple respondents from each of the firms was done with the aim to accomplish data triangulation and to reduce the retrospective and personal interpretation biases. All the interviews lasted between 1 and 3 hours, they were digitally recorded and manually transcribed by typing all the interviews in the digital form. For this purpose computer software called Express Scribe has been engaged. Express Scribe is professional audio player software designed to assist the transcription of audio recordings, which enables controlling audio playback using a transcription keyboard (with "hot" keys). This software was particularly useful, while it enabled valuable features for transcribing (like variable speed playback, multi-channel control, file management, etc.).

Importantly, the documented information on the management of technology licensing for the foreign market entry purpose, but also general data on the company, were collected through secondary sources (like internal documentation, project reports and company web site). All the multiple interviews and the documented data collected were primarily used to triangulate the information gathered. The Appendix A presents the major topics of interest and the open-ended questions asked during the interviews. All the major topics and the open-ended questions from the Appendix A have served as a research protocol, allowing the interviewer to

Table 2 Operationalization of the dynamic capabilities (relying on some elements from the work of Pavlou and El Sawy, 2011).

Capability	Brief Description	Code	Basic Routines to identify
Sensing	Spotting and interpreting the opportunities	1.1	Generating market intelligence (Galunic and Rodan, 1998)
		1.2	Disseminating market intelligence (Kogut and Zander, 1996)
Seizing	Seizing and pursuing the opportunities	2.1	Acquiring, assimilating, transforming, and exploiting knowledge (Zahra and George, 2002)
		2.2	Responding to market intelligence (Teece, 2007)
Reconfiguring	Reconfiguring assets	3.1	Appropriateness matters (Galunic and Rodan, 1998)
		3.2	Timeless matters (Zott, 2003)
		3.3	Efficinecy matters (Kogut and Zander, 1996)

lead a semi-structured examination, but also to keep the record of the interview procedure in the case of replication or extension of the analysis (Yin, 2003).

When the data analysis started, firstly the collected information was manipulated by relying on the data categorization and contextualization techniques (Miles and Huberman, 1999). Secondly, the structured data analysis process was followed. This process consisted of a preliminary within-case study and an explanation building investigation, followed by a cross-case comparison. The investigation in this research initiated by inducing whether the companies from the sample applied any structured process like approach in managing licensing as the foreign market entry mode, which was suggested in the literature review section. In order to check if within this licensing process in the companies some of the elements of Dynamic Capabilities Framework were recognized (sensing, seizing and reconfiguring) and developed, the Dynamic Capabilities Framework had to be operationalized by giving a set of activities that characterize each of the dynamic capabilities. In Table 2 the list and codes of these activities and criteria were provided, which was derived from the analysis of the dynamic capabilities literature.

This operationalization was applied to identify whether through the licensing process for the foreign market entry purpose, firms develop these dynamic capabilities. The structured procedures for data collection and analysis, but also the semi-structured interviews, were used in order to enhance the reliability of the research (Yin 2003). Table 3 (in the Appendix B) presents the brief description of the companies studies, their examples of licensing projects as the foreign market mode and describes the licensing phases identified.

4 Results and Discussion

This section presents and discusses on the main findings from the case studies. Table 4 (given in the Appendix B) gives the results of the analysis of all the process in order to identify the dynamic capabilities developed along the process. All the companies involved in the research, recognized within their foreign market entry strategy a strong exploitation of licensing for this purpose. Integrated Research Services and Technology Opportunities Director interviewed in front of the Company A explained that operating on a global scale is not just a choice but also a necessity, because innovation in pharmaceutical industry is costly and long lasting, and the only way to obtain the return of investment is to launch it on a world wide scale. On average it takes 12 years from beginning of the development to the market approval, costing between $0.8-1 billion (Austin, 2006), and with high attrition rate that allows only 2-3% of products to actually be launched on the market),The findings do not aim to categorize, but to present the content of the managerial activities coming from the technology licensing process as the foreign market entry mode. The process perspective helps academics to study, but also practitioners to carry out, the management of technology licensing as the foreign market entry mode.The interviews performed confirm that the phases taken from the paper of Bianchi et al. (2011) considerably reflect the proposed process stages. Furthermore, within the context of this process some elements of the Dynamic Capabilities Framework have been recognized, pointing out that this process like approach enables development of the dynamic capabilities for this purpose.

4.1 Planning

In the companies examined, the planning stage does not have any observed specificities and it is considered to be a part of the process of building the company's strategy to internationalize on foreign markets. The reason for this finding can be explained by the fact that in the choice of the sample, firms that already engage in active licensing and engage in licensing in the foreign market have been examined. So, they do not have the planning phase, because in their case it is already implemented in their overall company strategy. The alignment between the overall firm strategy, and internal and external exploitation programs is the main activity actually performed in the planning stage. In the interview with the Head of the Licensing Unit in the Company D, she explained that her company has already developed strategy to rely on technology licensing for the foreign market entry purpose and that the whole process initiates with data collection on the foreign market.

4.2 Intelligence

This phase of the process has in previous studies been characterized by the technological and market environment scan, the sale opportunities identification, and the contractual mode choice (Bianchi et al., 2011). When companies involved in this research decide to enter the foreign market they firstly start with the ***market seeking*** on which market to enter and afterwards with ***partner seeking*** within this market. Similar concept has been recognized with other authors, explaining that licensing is shaped by industry level and market level related concepts (Walter, 2012). Partner see-

king has been identified within the intelligence phase of other similar research works (Bianchi et al., 2011) and has been considered as highly important. Further on, when they involve in the ***market seeking***, companies closely process the following parameters:

- **Freedom to operate:** an in-depth study of the state of the art in patents in order to check if there is a already present on that market (see e.g. Company A and B);
- **Exclusivity:** evaluation of the exclusivity of their product; whether firm can attain the allowance to produce and sell the product; presence and availability of similar products on the market (see e.g. Company A and D);
- **Cultural differences:** observing how the general business culture in the country fits firms' ideas for that market; if the cultural differences may facilitate or aggravate their presence in the market (e.g. Company A managers give an example of Japan, where the employees are loyal to the country on the first place, and afterwards to the company, see also Company B);
- **Market size:** see e.g. Company B and D.

The market analysis is the foundation for the ***partner seeking***, which includes the evaluation of the following features of potential partners:

- **Financial capabilities:** financial foundations, sales, company size (e.g. Company B states that long decision timing in bigger companies may make problems), see e.g. Company A, B, C and D;
- **Technical capabilities:** portfolio of products, possibility for cross-licensing, degree of specialization (e.g. when Company B licensed the product for tumor in Canada, they explored the companies that are active only for this specific tumor), experience (see e.g. Company A, B, C and D);
- **Commercial capabilities:** presence in the field, location of a partner (e.g. Company A manager explains that suitable partners are in Princeton, New Jersey, where the majority of world pharmaceutical industry is based and it is close to university), presence in other markets (e.g. Company C was seeking for a partner in Russia that was also present in other former Soviet Union and Eastern European markets), see e.g. Company A, B, C and D.

Interestingly, the Company C has a fully formalized intelligence process that has a step-by-step procedure for the market analysis and the partner analysis, based on the evaluation of potential markets and partners. The management of this process is lead by the dedicated functional unit, specialized for the market intelligence, suggested by other authors as well (Kale et al., 2002; Bianchi et al., 2011A). This process initially aims to build a "Long List" of pharmaceutical companies belonging to the main National Trade Associations, after which the public available information relevant to assess partner's "generic and specific requirements are being gathered. Company C then filters the data collected, firstly by excluding the companies with an unfitting business model. The unfit companies are recognized as the ones that base their business on the generic drugs production, on the offer of specialized R&D services, on exploitation of the plain homeopathic treatment ideas, etc. In the next step the in depth desk analysis and profiling of the short listed companies is done by ranking of the short listed companies. In the ranking Company C observes their Product Portfolio Fit (therapeutic field, number of drugs, the expertise they have on the regulatory activities, presence in other markets) and Economic and Financial Soundness (financial foundation of the company). This procedure, in the abstract level, may be employed in other industries as well.

After the analysis of the interviews with the managers, a strong presence of the routines that develop the sensing dynamic capabilities has been noticed. 100 percent of the companies from the sample appear to be relying on the routines for generation of the market intelligence (Galunic and Rodan, 1998) and dissemination of the markets intelligence (Kogut and Zander, 1996).

4.3 Negotiation

The negotiation stage introduces the communication with the partners with the intention to sell the technology and to establish the contractual agreement (Bianchi et al., 2011). Negotiations include several aspects that companies manage when they rely on licensing in order to enter a foreign market. It is considered as a particularly risky stage, because companies need to disclose certain information on their technology in order to negotiate on the technology sale. The person from the Company A responsible for managing the Technology Opportunities Department sees this phase as a "complex process within the process, which needs to be managed extremely cautiously ". All the negotiations are performed in multiple stages manner (see e.g. Company B) and they are concentrated around:

- **Commercial aspects:** dealing with financial indicators and returns (see e.g. Company A, B and D);
- **Technical aspects:** questions of approval for the product on the market, timing and cross-licensing (see e.g. Company A, B and D).

It is important to stress that companies often engage in "multiple- negotiations" (like in the case of Company A). This situation is common when there is a need for so called "stacking provision", which appears when a certain owner of a patented technology intends to manufacture products under the license and for this purpose it needs to obtain additional licenses from other parties who own rights in related, actual or potentially overlapping technologies. This is a case when a company has to negotiate with more companies whose patents they need for production of the current product or whose patents overlap to some extent. In any case in the negotiation phase firms can practice some methodologies that facilitate the overall negotiations (like the Thompsons' (2011) mixed-motive negotiation techniques and some practical intangible-asset evaluation methods reviewed in the paper from Smith and Parr (2000)).

The negotiation stage also allows enterprises to build up their seizing dynamic capabilities. For instance, companies A, C and D, show the significant presence of evolution of their acquiring, assimilating, transforming, and exploiting knowledge activities (Zahra and George, 2002), and market intelligence response activities (Teece, 2007). By definition, the seizing dynamic capability perfectly fits into the main goals of the negotiation stage of the process, but our analysis also puts forward the notion that the presence of routines that enable and expand this capability is identified in the realization stage (like in the example of the Company C and Company D). Nevertheless, in 75 percent of the companies (Company A, B and D) seizing dominates the negotiation stage, and in 50 percent of the companies (Company C and D) it has been also identified in the realization stage. In one firm (Company D), the negotiation phase has an important role for the deployment of the reconfiguration capability in the firm.

4.4 Realization

After intelligence and negotiation firms arrive to the realization phase, involving the actual transfer of technology between the counterparts (Bianchi et al., 2011). The major hindrance appearing here is caused by the tacit nature of knowledge, which is difficult, long-lasting and expensive to transfer. So, the managers from the firms studied try to circumvent this obstacle by continuing to provide the support to the partner company even after the transaction has officially been completed. In this manner, partnering firms' business and treatment of the licensed technology is backed up by the licensor firm. The realization stage in licensing process for the purpose of the foreign market entry includes the two aspects:

- **Technology transfer:** seen as pure transfer of know-how and the supporting documentation (Company A, B, C and D);
- **Marketing support:** for instance, Company C makes a detailed marketing support for the partnering company, containing the information and knowledge to enter the market (similar point observed in the Company D).

This marketing support gives closer explanations on the experience of the company and their previous partners in the foreign markets. It is made with the aim to help partners in the new markets to understand how the product works and what its benefits on which they should focus are. The marketing support is transferred to partnering company through trainings, seminars and written documents (similar point observed in the Company D).

This stage enables the development of the seizing dynamic capabilities. In 50 percent of the companies realization stage gives firms an opportunity to develop their seizing capability. Seizing and reconfiguring capabilities are more active and operational capabilities in the company. So, it may be concluded that the actual realization phase advances these two, operational capabilities.

4.5 Control

As stated in Bianchi et al. (2011) work, the control stage entails the monitoring of the partner's behavior and compliance with the contract. In the licensing process used for a company to enter a foreign market, two main points are controlled after the realization of the technology transfer and marketing support. These points include:

- **Contract management:** introduced the control of the terms given in the contract, which include the respect of intellectual property aspects and the respect of the outlined commercial arrangements (like the achievement of the minimum quantities of sales and fulfillment of the time framework given in the contract, as explained by Company B, C and D);
- **Alliance management:** concentrated mainly on the monitoring the heed of the commitments of the partner company (see e.g. Company B and C).

Both of the points presented above are controlled on a pre-defined periodic basis relying on conference calls, meetings, additional trainings and written reports. The question of the size of the partner company has a strong impact on the control phase. Head of the Business Development in Company D explains that bigger companies are more autonomous are and more difficult to follow.

Control phase of the licensing process has allo-

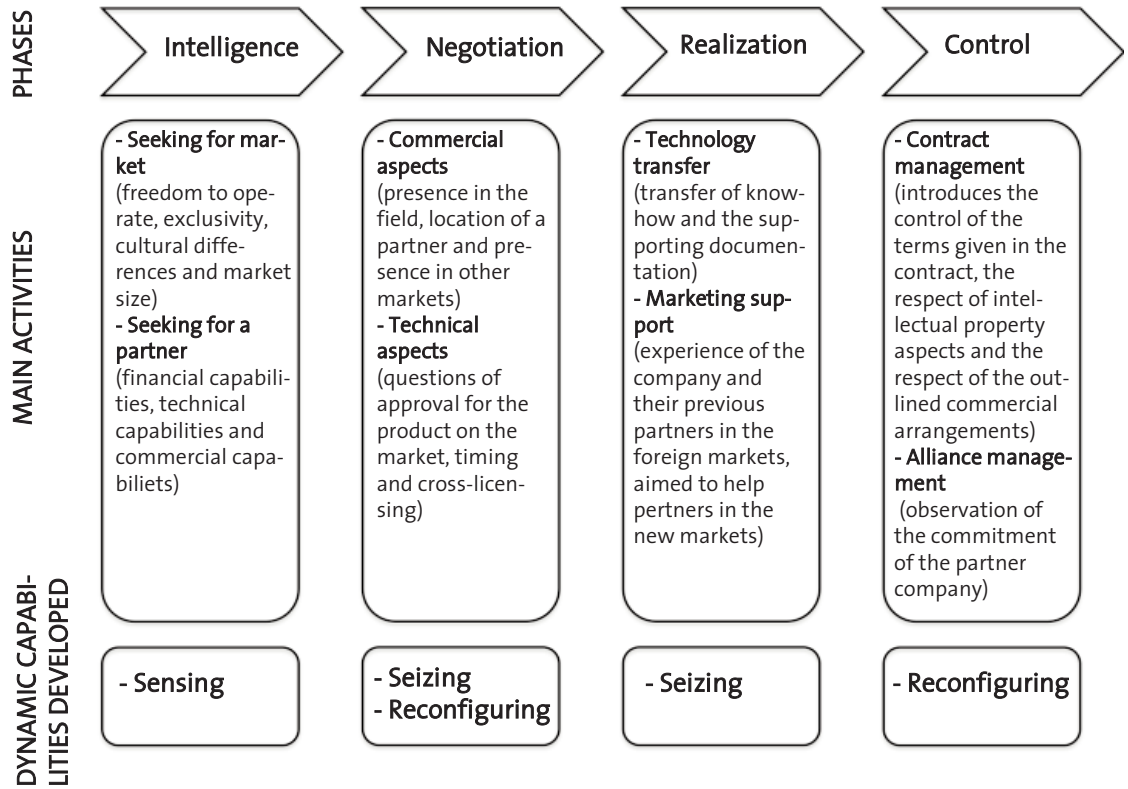
wed the formation of the reconfiguring dynamic capability. In the 75 percent of the firms some elements that improve the appropriateness matters (Galunic and Rodan, 1998), timeliness matters (Zott, 2003) and efficiency matters (Kogut and Zander, 1996) have been found. As the Head of Licensing & Business Development in Company B said, after the realization of the transfer of the technology, the firm still continues to align the partner company with the points stated in the contract. This is done with the aim to harmonize the timing and the sales amount assigned in the contract.

The Figure 2 presents proposed process of technology licensing used as the foreign market entry mode, which was developed relying on the findings from this research. In the Figure 2, the main activities in each of the phases are presented and also the dynamic capabilities which are developed along the process.

5 Conclusion

An active technology licensing has become a strategy exploited strongly within the firms. It will certainly be seriously considered in the future in the managerial research and within the companies themselves, because it enables companies to achieve both financial and strategic benefits and returns on their innovation efforts. However, the technology licensing for the foreign market entry purpose is complex and hard to manage. This paper aimed to present the process view perspective, which facilitates its management. To point out, the identified process stages may not fit ideally within the licensing as the foreign market entry mode in all the firms. Different environments and contexts of application of this process view may slightly vary, like they varied also in the firms from our sample. The papers also shows that the throughout the licensing process used as the foreign market entry mode, enables companies to develop three dynamic capabilities (sensing, seizing and reconfiguring), which are useful further on for the company. This paper, however, has not explored the performance issues resulting from the different ways of management of the licensing process as the foreign market entry mode, which is an interesting venue for the future research. As this is a quanti-

Figure 2 The process of technology licensing used as the foreign market entry mode with the main activities in each of the phases and the dynamic capabilities developed along the process.



tative based analysis, it is not appropriate for generalizing the results. In any case, the process based view can be appropriately examined by applying the longitudinal panel data analysis, quantitative research approach, which is one more suggestion for the future research.

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Appendix A

Interview Protocol

Company in general:
- Portfolio of activities, products/services
- Firm information (size, businesses, industry, location, geographical location, products and services commercialized, main financial figures)

Licensing activities:
- Technology licensing to enter foreign market (main goals, amount, frequency, people involved, reference to one or more licensing projects)
- Firms' degree of internationalization (presence in international market)

Licensing process:
- Technology licensing process identified ((i) planning; (ii) intelligence (identification and evaluation of exploitation potential); (iii) negotiation; (iv) realization (one-directional or bi-directional technology transfer); and (v) control; boundaries of each of the process stages)
- Tasks/activities in process stages (management)
- Degrees of formalization (e.g. (i) formal structures - existence of procedural routines, (ii) informal structures)

Dynamic Capabilities:
- Please indicate if the following activities appear during your licensing process used for the company to enter a foreign market (indicate also in which process stages these activities appear):
- Sensing capability:
(i) generation of market intelligence
(ii) dissemination of the market intelligence
- Seizing capability:
(i) responding to market intelligence
(ii) acquiring, assimilating, transforming, and exploiting knowledge
- Reconfiguring capability:
(i) observing appropriateness matters
(ii) observing timeliness matters
(iii) observing efficiency matters
- Please discuss how practically you perform these activities

Appendix B

Table 3 This table presents a brief description of the companies studies, their examples of licensing projects as the foreign market entry mode and describes the licensing phases identified.

Company	Company Info	Examples of licensing projects as the foreign market entry mode	Recognized licensing stages
Company A	Company A is an integrated international group that operates in life sciences sectors (diagnostics, therapeutics, instrumentation, services). - **Turnover:** over € 1 billion (65% made in foreign markets); data from 2010, data from 2011 are similar and slightly increased. - **Employees:** 3000 - **Core business:** International leader in imaging diagnostics (wide range of products and solutions for all diagnostic methods), have the biggest diagnostic centre in Italy (3-4 million analyses per year). - **Operates in:** US, Canada, Brazil, all Continental Europe, UK, Ireland, China, Japan and Scandinavia. - **Number of licensing agreements:** Not available (1500 patents, mostly to form barriers for the few breakthrough patents).	The turning point for the company was in the '80s, when the Company A developed a new breakthrough agent in radiological imaging. On one side this lead to big growth and production, but it was also a company's' decision to become truly international company, operating on a multinational basis. The Company A made a decision not only to have licensees for collecting royalties, but to establish full presence in the market. This presence was mainly through joint ventures, where Company A made a point of having a 51% of the venture (because they really wanted to have this joint venture as something on what they had control, gain direct experience from the territories and not to be seen as just a simple collector of royalties). More recently, some of the companies have become fully owned by Company A, which is their second step when entering a new market. Once the company learns how to behave, the situation is more mature to establish themselves as a fully owned company.	- **Intelligence:** Company A has alerting services that on weekly basis control patents of their interests. Alerts go through some databases which provide constant update on the given keywords and areas that the company wants to keep under control (alerted on the patent activities from other companies). When company seeks for a foreign partner, it observes portfolio of patents and their degree of specialization (potential of cross-licensing), experience of a partner, business culture of the local country (e.g. Company A managers give an example of Japan, where the employees are first loyal to the country, then to the company), location of a partner (e.g. suitable partners are in Princeton, New Jersey, where the majority of world pharmaceutical industry is based, and it is close to the university). When company wants to enter a new market it observes: **Freedom to operate** (an in-depth study of the state of the art in patents in order to check if there is a already present on that market); **Exclusivity** (how good is an exclusivity of their product: company may have the allowance to produce and sell the product, but very similar product may be available on the market). - **Negotiation:** Company A negotiates around: **commercial aspects** (financial indicators and return), **technical aspects** (approval for the product on the market and cross-licensing).

Company	Company Info	Examples of licensing projects as the foreign market entry mode	Recognized licensing stages
Company B	Company B is a family owned pharmaceutical company that is involved both in development and manufacturing of the pharmaceutical products. **- Turnover:** €68 million (10% in foreign markets); income in royalties and down payments is around 2% and it is decreasing. **- Employees:** 280 **- Core business:** Beyond the more traditional activities in the osteoarticular field and in the product pipeline renovation, tumors and the nervous system pathologies present the future areas of interest. **- Operates in:** Italy, France, UK, Canada, USA, Mexico and United Arab Emirates. **- Number of licensing agreements:** 60.	Company B licenses only finished products, so they transfer mainly the know-how, dossiers and secrets not covered by patent. Their licensing agreements are also supply agreements for the finished products. The first product from Company B today is a liquid solution for the vitamin D-3, which will probably secure the survival of the company in the next years. Company B is now searching for a partner for the authorization and distribution of the product in the main European countries. They are working hard on the life cycle management, in order to understand which new products can be created around the same molecules. On the other side, company is also improving their business intelligence activities in the other markets.	**- Intelligence:** Company B screens the companies in the market that are active in the same therapeutic field (e.g. the product for tumor they license in Canada, they explore the companies that are active only for this specific tumor), explore the real market size (by purchasing data or doing research by themselves) and cultural differences of the countries. They observe their product portfolio of the local companies, size of the company (long decision timing in larger companies may cause problems). Company B uses dedicated organized meetings, conferences or specialized fairs to contact partners. **- Negotiation:** Company B does a multiple stage negotiation. Normally, all the aspects of cooperation they combine in one agreement that includes a know-how licensing agreement, trademark license agreement and supply agreement of the finished product. **- Control:** Company B has a dedicated functional unit that works only with licensing agreements. It does not only control the **contract management**, but also an **alliance management**. This is done through periodic phone conferences and meetings, where they observe the commitment of the partner company. Company B introduces the control of yearly achievement of the minimum quantities of sales.

Company	Company Info	Examples of licensing projects as the foreign market entry mode	Recognized licensing stages
Company C	Company C is one of Italy's leading biopharmaceutical companies, with a solid history of developing innovative drugs for illnesses of high social impact. - **Turnover**: €491 million (data from 2009). - **Employees:** 800 - **Core business:** Leadership in core areas of anti-inflammatory, respiratory, rare diseases, neurology, onco/ hematology and nephrology. - **Operate in:** Italy, Germany, Belgium, Spain, Portugal, Poland, Greece, Albania, Turkey, Russia, Kazakhstan, Korea, Hong Kong, Azerbaijan, Armenia, Uzbekistan, Uzbekistan, Tajikistan, Mexico, Dominican Republic, Venezuela, Brazil, Columbia, Peru and Chile. - **Number of licensing agreements:** Not available	Company C was present in Russia, but was not satisfied with the results and wanted to change the partner. The old partner was not a local company, it was an Indian company, and it had a lot of products that were competing with Company C products. So, they found a local partner that was also able to cover the former Soviet Union countries and Eastern Europe (a regional player). The strategy was to give all the portfolio of the company to the partner. The main products in this deal are: a drug for treatment of inflammation associated with pain (the most important product of Company C) and mucolytic drug for chronic and acute respiratory diseases. Company C generally supplies with the finished product when entering a new market, because it is the way to keep it secret even when the generic production becomes available.	- **Intelligence:** Company C starts with market analysis performed by the dedicated functional unit for licensing. It has a formalized process for evaluation of potential partners, which consists of: Identification of a "Long List" of pharmaceutical companies belonging to the main National Trade Associations; Gathering of public available information relevant to assess partner's "generic and specific requirements"; Exclusion of companies with a clear business model unfit assessed through the analysis of their product portfolio and stated mission (e.g.: generic companies, specialty-R&D companies, homeopathic companies...); In depth desk analysis and profiling of short listed companies; First ranking of short listed companies based on: **Product Portfolio Fit** (therapeutic field, number of drugs, the expertise they have on the regulatory activities, presence in other markets) and **Economic and Financial Soundness** (financial foundation of the company). - **Realization:** Company C made a marketing support (the information and knowledge to enter the market) for the partnering company. It includes the Italian and foreign partners experiences. The main aim is to help them understand how the product works and which its benefits on which they should focus are. - **Control:** Partners needed to send annual marketing plan, attend meetings made to check the progress of registration and sales, send monthly reports containing sales data, comments on sales performance and information on generic products.

Company	Company Info	Examples of licensing projects as the foreign market entry mode	Recognized licensing stages
Company D	Company D is one of the leading Italian pharmaceutical groups, operates in both the pharmaceutical and the fine chemical industries. - **Turnover:** € 500 million (around 24% from foreign markets) - **Employees:** 2000 - **Core business:** Its products, all of which have a high therapeutic content, are mainly used in the cardiovascular, immuno-oncological, gynaecological, dermatological, orthopaedic and neurological areas. - **Operate in:** Italy, Russia, Brazil, Turkey, Greece, Chile, Portugal, USA, Spain, France, Morocco, Albania, Macedonia, Bulgaria, Romania, China, Korea, Vietnam, Iran, Iraq, Egypt, Libya, Algeria, Sudan, Kenya, Georgia...) - **Number of licensing agreements:** 50-60	Company D licenses the right to produce the finished product from the raw material company produces. This is their approach in Korea, Turkey and Greece. The product is the iron compound, which is their innovation breakthrough. It is iron bound with milk protein (casein). Company D has this sophisticated binding that is very tight in condition of low PH. When a patient drinks it, it goes to the stomach, where the level of PH is very low, so the biding of the protein towards the iron is very tight and no iron is released in the stomach. When this complex flows into intestine, where PH is very high, the proteins are immediately digested and iron is released and absorbed. In the common treatment of iron deficiency anaemia, one of the major side effects is the gastritis problem, especially in the pregnant women. With this product these classic iron side effects are avoided. It was released in the early 90s. In some countries there are generic producers of this compound. Company committed a lot of resources to carefully protect this compound.	- **Intelligence:** Company D looks at all the countries and finds up to 5 potential countries. Then identify all those possible partners that in these countries could bring their product to target doctors. Company observes in potential partners their structure, portfolio of products, if they had synergies with their portfolio, their sales, their presence in the field, financial capabilities, technical capabilities and commercial capabilities. These data is collected through databank, meetings, personal connections and consultants. - **Negotiation:** After identifying the partner Company D goes with the licensing deal, where they reveal: what, how, in which way and in which timing they have to do. Fundamentally, the question of time is observed. - **Realization:** It can be a transfer of know-how, or it can be even a commercial know-how. It depends on what kind of technology is transferred. If the rights for production are also transferred, the company helps the partner to produce, follows them and informs and advises them. It depends who is their partner, what kind of technology are they transferring. - **Control:** The bigger is the company, the more autonomous they are and more difficult is to follow the project. Company D follows the milestones they put in agreement and key times for the fulfilment of the tasks. Again, the point of time is more contractual than ever.

Table 4 The results of the analysis of all the process phases in order to identify the dynamic capabilities developed along the process.

Companies		Dynamic Capabilities by code							
		Sensing		Seizing		Reconfiguring			
		1.1	1.2	2.1	2.2	3.1	3.2	3.3
Company A Process Stages	P							
	I	√	√					
	N			√	√			
	R							
	C							
Company B Process Stages	P							
	I	√	√					
	N			√	√			
	R							
	C					√	√	√
Company C Process Stages	P							
	I	√	√					
	N							
	R			√	√			
	C							√
Company D Process Stages	P							
	I	√	√					
	N			√	√	√	√	√
	R			√	√			
	C						√	