

Managing Inventions Marketing

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Product classification ideas that can help universities identify potential licensees

Technology marketing management is an aspect of university-industry partnerships that have in common a mutual advantage and a benefit to society. Each exploits a compatibility or complementarity in objectives and methods in what Anand (1987) characterizes as a recognition of a common ground. It entails testing, developing and fostering relationships that involve, or that might result in the commercialization of a new product or process.

A license agreement is an example of a partnership contract. Ideally, under a license the university retains royalty income, as licensee of an invention. The company, as licensee, makes a profit and society enjoys the benefits of a new technology in the marketplace. The process is nurtured by research and communications regarding identifying and potential new product ideas having a potential for commercial development either now or in the future.

The responsibility for technology marketing in the university is normally assigned to a unit that may be called the Technology Transfer Office (TTO), and university-produced inventions, or ideas for new products and/or processes, will be alternatively referred to as university-produced technologies, new product ideas, invention disclosures, external submissions, or configurations thereof as commonly employed in the field. In its marketing role the TTO attempts to find licensees for university-produced technologies.

One section of this article discusses attitudes and behavior patterns among companies that might

have an influence on marketing outcomes. Another treats classification schemes that facilitate marketing of new product ideas with potential licensees. There, responses from companies concerning invention evaluations are examined. The article focuses on declarations, which comprise more than 60% of replies to solicitations from universities regarding licensing opportunities. Approval marketing management more frequently found in the literature include negotiation of the license agreement, and concomitant monetary (Miles, 1986) and legal issues, document content and substance (Goldschneider, 1984).

Marketing management entails the processing of vast amounts of information. This task can become overwhelming without the assistance of computers, and it is hoped that the article provides ideas that are helpful in organizing technology findings and the results thereof for a data processing application. The ideas offered have been substantially incorporated in a management information system at the Research Foundation of State University of New York. Also, while the focus is on university-produced technologies, the material is relevant to commercially technology marketing as well. It may be of interest to all individuals and organizations involved in the inventions marketing process.

NATURE OF THE MARKET

The producers of goods and services comprise the marketplace for inventions seeking licensees, and attitudes among these invited external submissions vary. This is confirmed by Miles and Belin (1988). The authors surveyed 1,288 companies and obtained 243 usable responses. Companies responded

as follows to the authors' questions concerning orientation toward unsolicited ideas: (A) 102 examined ideas after receiving a signed waiver from the submitter; (B) 76 examined patented ideas only; (C) 9 rejected all unsolicited ideas without examining them, and immediately informed submitters of this policy; (D) 8 ignored all unsolicited ideas; (E) 128 evaluated promising ideas and responded based on the results of the evaluation, and (F) 11 completed the author's "Other" category.

However, a total greater than 102 is derived from the numbers. This is due to multiple checks by respondents. Most responses are the checks of items (A) and (B). A requirement of a waiver in the absence of a patent in the explanation from some respondents. Others checked (A) and/or (B), first screening for promising ideas before applying (A) and/or (B).

The (A) and/or (B) responses reflect concerns in industry of compromising rights in technologies that might be anticipated in the ongoing research at its laboratories. Unfortunately, this concern is a dilemma for the university sector. Under item (A), unconditional disclosure of proprietary information endangers patentability. With respect to item (B), the university's patent budget is usually a limited one and applications for patents are normally directed toward inventions demonstrating evidence of licensability. Since the determination of licensability is substantially dependent on the outcomes of evaluations by the industrial sector,

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communication with this sector in most cases, is a crucial input into the university's patenting decision.

Udell and Baker also note that a number of departments in a firm may respond to the external submission, each with its own particular mission in mind. The departments cited are customer relations, marketing, legal/patent, product development, engineering, research and development, and other (mostly management), making for a potentially varied and complex milieu for the invention disclosure.

Further, consider the multiproduct corporation. These companies frequently have affiliated inventors constituted as separate entities — as branch operations, subsidiaries, or divisions, each with its own departments and product line champions, existing under the umbrella of the parent company.

■ Variability ■

Companies also exhibit variability in the criteria they employ in selecting new-product ideas for development. Cooper and de Bevoise (1984) identify 36 screening items. These are reduced to a factor representation of 11 screening dimensions. Dominant among the dimensions are financial potential, corporate synergy, technological and production synergy, and differential advantage, in that order.

Financial potential, the most important screening dimension, includes high sales expectations, profit potential, and a strong likelihood of success. The synergy dimensions relate to the company's ability to develop and manage the new product within existing structures of organization and know-how; the inventors fit in the company's current business; six-to-six sales force and distribution channels; technological capability; production skills and resources. New ideas with differential advantage are those providing fine-to-the-market technological breakthroughs.

The authors note the correspondence of the screening criteria on internal concerns. None of the important dimensions describe the conditions of the market at which the new product is to be directed.

Also, decision making at this early stage provides little time for gathering and analyzing data relevant to external market conditions. Significantly, the results of the study demonstrate that declaration by potential licensees does not always constitute a judgment regarding commercial viability. As evidenced this, the real world is replete with one studies of successful firms based on new technologies that were rejected by established companies.

The dominant criteria identified by Cooper and de Bevoise parallel the advice generally given to prospective licensees, namely, that they target companies possessing suitable manufacturing facilities and a demonstrated ability to launch a new product. The Udell and Baker study indicates that effective marketing of the new product line requires a knowledge of corporate structure, departmental contact points and champions of external submissions as a technology source for market development.

CLASSIFICATION SCHEMES

There are hundreds of thousands of manufacturers in the United States, and possibly as many in foreign countries. This target for the new-product idea is continually changing its size, composition, structure and management, and knowing who to contact requires great record-keeping, research, and vigilance on the part of the TTO.

The industrial sector quickly becomes aware of most promising new technologies. Companies respond to awareness creation by the TTO, journal articles, publications of issued patents, news releases, notifications from technology brokers, contacts with university faculty, and information from new scientific journals. It receives TTO invention disclosures that are based on research on the industry, or on surveys of company interests. These mailings of inventions might also reflect the accumulated experience of the TTO with industry deriving from a relationship that spans many years.

This list does not exhaust the channels and media contacts available for new technologies meeting

industrial sponsors. The TTO's ability to access its ever-expanding marketing means, however, of communications with the industrial sector could be expedited by a discriminating information processing and retrieval mechanism; that is, a classification scheme for matching inventions with companies.

Classification schemes and concepts of markets abound. Each company has its own means of key words and product nomenclature. Industrial directories offer a varied menu. Consider the organization of the Corporate Technology Directory (1988) and the Thomas Register (1987), two commonly cited sources. Diversity prevails in government schemes as well, as is evident in the Manual of Classification of the U.S. Patent and Trademark Office (1986) and in the Standard Industrial Classification Manual (1987).

For most inventions, marketing inventors finding the fit for a technology in a number of classification schemes, and then writing about contacting firms listed thereunder. With the accumulation of experience by the TTO, mailings based on listings in industrial publications and surveys are increasingly replaced by in-house knowledge regarding markets. Eventually, candidate company selections first come from the internal resources of the office. In this way new inventions go first to companies with whom the TTO has established relationships, and having proven records of hospitality to the external submission. What makes this possible is the consistent application by the TTIs of a marketing classification scheme.

For this purpose, the TTO might use the Standard Industrial Classification (SIC) code, at the seven-digit level, with an expansion field to take account of sub-segments that might be required. The SIC code is widely recognized. It is commonly used, but at the four-digit level, in state directories of manufacturers, government reporting on industrial performance, and not infrequently in industry publications, an example being Dun and Bradstreet's Million-Dollar Directory (1987). It is also referenced in the Corporate Technology Directory.

Classification of the SIC code at the four-digit level, as is generally the case, is too broad, and therefore the suggestion of its use at its seven-digit level. At this level, the Pharmaceuticals Preparation Industry (2834) provides 54 categories by which inventions might be identified. This provides for more directed targeting, its invention involving a cure for the common cold would then not be sent to producers of poultry and animal remedies. Producers of vitamin preparations are separated from makers of water-decontamination and purification tablets. The expansion field in this industry might further separate for disease categories.

Many companies produce in multiple markets and industries. Some coding would be at the invention level, it would be possible to identify the multiplicity of a firm's activities by the different types of inventions with which it is identified as a potential licensee. Information on companies would include evaluation responses, to be used in rankings for future invention mailings as described below.

EVALUATION RESPONSES

A company's record of collaboration with the university sector in new-product development is considered an important criterion in its selection as a licensee candidate. However, most companies have no agreements in place with particular institutions, and have a company response to invention disclosures provides useful information on its interest in exploring opportunities for such collaboration.

According to the studies cited earlier, businesses do subject new product ideas to certain selection criteria. At the conclusion of an evaluation, therefore, the TTO might report that this information be shared with it. A dialogue in this regard would promote a better understanding of particulars in new technologies that companies are sensitive to, and as feedback, the information could help inventors modify inventions into more desirable forms. Since it reflects the

perceptions of potential licensees regarding commercial viability, the information could also serve as a basis for TTO reports justifying either patenting or releasing inventions to investors.

Business Literature

The TTO might be guided by the business literature in designing a check-sheet for accompanying responses. Providing a structure for evaluation responses assists as a reminder and facilitates interpretation and action. This is particularly helpful in companies involved with many scores of technologies at a time. Furthermore, the response can also reflect the degree of interest a company has in an invention. The interest could be assigned a weight, as from "1" (not likely interest) to "10" (the extremely interested, representing companies with evidence of collaboration with the university, and used in conjunction with a classification scheme as previously discussed. The TTO's condensed marketing experience could then be accessed for listings of potential licensees, targeting allocations from most favored to least favored, for future disclosure mailings. Targeting thereby benefits from the reservoir of knowledge concerning the industrial sector that accumulates with time.

In addition, faculty inventors are frequently criticized for not being responsive to the needs of the industrial sector. Providing them with a disseminated interest in participating in new product development with meaningful reactions from the industrial sector is giving them information that could be helpful to their engagement as active partners in this process. Also, an invention is often the result of many years of dedicated research. Failure to locate a licensee and to file for a patent makes it incumbent on the TTO to provide an accounting of its activities. Organized and regular feedback of company responses demonstrates best efforts on its part to establish a relationship that would reward a patent, while at the same time allowing for accumulation of the necessary inven-

torial for a comprehensive report to the inventor in the event a decision is made to discontinue action on the invention.

CONCLUSION

This paper has addressed one aspect of university-produced inventions management. It reveals the complexity of the environment in which new technologies are traded, with a focus on communication considerations and how these might be facilitated. It also draws attention to the important and often neglected fact that feedback from industry on desired inventions has an important part to play in ensuring creation of market needs among faculty, inevitably, the abundance of detail being about demands for computer applications in targeting companies, follow-through and in the liaison role of the Technology Transfer Office, and the paper suggests schemes that might be helpful in this regard.

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