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STRATEGIC MANAGEMENT OF PATENT PORTFOLIOS: CHALLENGES AND OPPORTUNITIES IN INTELLECTUAL PROPERTY RIGHTS

AUTHORED BY - AISHWARYA PANDEY[1]

Introduction

The intellectual property management is concerned with the task of managing innovation with the processes and procedures which are needed, for transforming that innovation into valuable patent rights.[2] The scheming, collecting, and scrutiny of IP data is most significant in any establishment involved in taking effective, useful, and deliberate decision. From the viewpoint of IP-portfolio management, the means as well as the procedures which allow the possession, assessment, and arrangement of information of intellectual property are generally similar, irrespective of the fact that whether the ultimate result is accompanying a planned or a tactical approach.

What is the value of the patents? Though this is a very plain and simple question, yet it has engaged a generation of patent scientists and legislators as the recent trends in the patent system give away an apparently unfathomable puzzle as answer.[3] According to one view, volume of patent applications has multiplied sharply in recent times, indicating that patents are enormously valuable.[4] Whereas, according to another view held by scholars, all existing data shows that normal anticipated patent value is enormously small (and possibly damaging when considering acquisition costs), the predominant and a huge number of patents are of no value, and for those that have worth, it is almost impractical to decide it ex ante.[5]

Thus, such perennial and concurrent facts primarily confront the patent system's typical perception of being the creator of incentives for invention, but if inventive patents have slight or no predictable monetary value, then why are people and business-related establishments are

[1] Research Scholar, Faculty of Law, University of Lucknow

[2] Burdon J. IP Portfolio Management: Negotiating the Information Labyrinth. In Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices MIHR: Oxford, U.K., and PIPRA: Davis, U.S.A. (2007).

[3] Kevin G. Rivette & David Kline, Rembrandts In the Attic: Unlocking the Hidden Value Of Patents (2000).

[4] Stephen A. Merrill, Richard C. Levin & Mark B. Myers A Patent System for The 21st Century, 30 (2004).

[5] Mark A. Lemley, Rational Ignorance at the Patent Office, 95 Nw. U. L. Rev. 1495, 1507 (2001).

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patenting so strongly?[6] after all, where is their value? This puzzle, like the other call it is known as patent *paradox.* The patent portfolio theory puts aside this puzzle namely, patent paradox and clarifies the basic aspects of the modern patent practice. Underlying the patent portfolio theory, the understanding is that the sum total is larger than the few of its parts, in case of patents. The real worth of patents is not in their separate value but in their accumulation that is in a gathering of related patents.[7] The value of patent portfolios is of such importance, which shows the very fact that how a company's patenting determinations are mostly irrelevant to predictable value of separate distinct patents.[8]

A **patent portfolio** is a collection of related patents that are retained under joint control. In patent portfolio, **relatedness** is a vital factor. It is not like corporate portfolios, for example, where extensive divergence is a standard object, the patent portfolios are more restricted in a technical area. This difference is grounded on the know-how of the holder of patent portfolio. Although patent portfolios are commonly retained by technology-based companies or well-informed enterprises,[9] largely varied stock portfolios are a better alternate for holders who do not have comprehensive information available on individual industry or technology. The advanced intensive knowledge of technology and facilitates the patent portfolio holders to generate more confined and directed collections of patents (in case of patent portfolio management). Though patent portfolio consists of related patents, it does not mean that they are not varied in every respect and are too narrow. Indeed, the ability to exploit the variances between patents aggregated makes the patent portfolios a controlling means in the contemporary innovation market.

Thus, the patent portfolio is best comprehended as an assemblage of distinct patents that have some shared essential technical characteristics. The patent portfolio can focus on detailed difficulty in an business, For example, the methods for employing 90-nanometer and tinier conductors, while producing semiconductor.[10] Or it can be based on processes; for instance, the portfolio of bio-pharmaceutical patents may be directed to the medication of a particular disease in a definite manner, such as the usage of statins to deal with stages of human

[6] Robert P. Merges & Richard R. Nelson, On the Complex Economics of Patent Scope, 90 Colum. L. Rev. 839 (1990).
[7] Richard C. Levin, A New Look at the Patent System, 76 Am. Econ. Rev. at 199, 201(1986).
[8] Id.
[9] Mark A. Lemley, Reconceiving Patents in the Age of Venture Capital, 4J. Small & Emerging Bus. L. 137, 138 (2000).
[10] John Markoff, Advanced Micro Narrows Gap in Race for New Chip, N.Y. Times, at C5, (Aug. 17, 2004).

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cholesterol[11]also, the portfolio can be more straightforwardly be directed at a particular product, such as a genetically transformed agricultural product or end user electronic product. In patent portfolios with respect to both, the problem or product basis, the main uniting idea is that, they are collection of correlated patentable inventions in a manner that is coherent as well as focused. Surely gatherings of not as much connected or all the more totally unconnected patents can and do subsist - some may even call them "portfolios," but these casual assortments are a bit more than that and therefore do not have the power of a genuine patent portfolio.

Though, the theory of patent portfolio not requires a definite volume of patents so as to formulate a portfolio, but the volume is still significant. Practically, all advantages of the patent portfolio recognized are generally proportionate to the sum total of individual patents of the individual components. [12] The number of patents that make up an operative portfolio is not unlimited and obviously, rest on various terms and conditions-based aspects, for example, the technology concerned with the industry organization, the presence of competitive portfolios and others. Also, it's possible that the returns get reduced from adding patents to a portfolio, if the size increases beyond a particular point. But as a common notion, 'more is better'[13]. The advantages of patent portfolios escalate with their range, which shows that the explicatory force of the patent portfolio theory in the modem patent setting is elucidated.

The task and significance of patent portfolio in IP portfolio management (IPM) is escalating substantially in companies, universities and legal entities. Pushed by the quick pace and extent of current industrial and technical progress, the increase in amount of patent data, and the progressively more viable and comprehensive situations. There is a necessity to administer the patent system extra efficiently, so as to boost efficacy and attain a viable control in the market. In many regards, this means organizing instruments and methods that have been common in the sphere of trade and commerce.

For the successful management of intellectual property, a unique combination of skills is needed. Portfolio managers requires more wider practical knowledge, corporate insight, and in-depth expertise of patent laws and procedures in the domestic and foreign country. Patent database are required to be maintained, as well as there is a need of strong IP database tools in

[11] All-in-One Pills for Heart Disease, Harv. Health Letter, 3(2004).
[12] John P. Sumner & Steven W. Lundberg, Software Patents: Are They Here to Stay? Computer Law. (1991).
[13] John R. Allison & Mark A. Lemley, The Growing Complexity of the United States Patent System, 82 B.U. L. REV. 77, 96-97 (2002).

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order to keep records of inventions, patent prosecution, patent information and related industry, financial as well licensing data.

Advantages of Patent Portfolios

As discussed above, a patent portfolio is a collection of related patents, held by a company or a firm[14]. It is focused on a technological area, such as Information and Communication Technology, or a specific problem, such as those arising in creation of harmless genetically modified organisms[15]. There have been several theories regarding the actual value of a patent, and a singular patent is not worth the restrictions imposed for acquiring it[16]. However, as a part of a portfolio, the value of a patent increases[17].

Apart from this, which is the most significant advantage of a patent portfolio, there are several others. These benefits can be divided into two categories - scale, and diversity. The scale related advantages of patent portfolios arise from the fact that in the business world, a well-constructed patent portfolio is a kind of a 'super patent', which has access to several of the market advantages normally attributed to singular patents, only on a larger scale. The collection of individual patents into a portfolio of closely related patents enables the holder of the portfolio to enjoy true monopoly in the market by aggregating the power of the individual patents.

The diversity-based benefits of patent portfolios arise out of the distinctive nature of the individual patents in the portfolio. This is because portfolios are not just a singular super patent, but also a structure which allows the holder to assess the areas of further innovation and minimize risk in such ventures. They basically act as a mechanism of hedging the risk, such that investment into research would almost always lead to a return, even if not in the way it was envisaged.

The Scale Related Benefits of Patent Portfolios

The obvious scale related benefit is the broadening of the subject matter of monopoly held by the firm, when distinct but related patents are held together. However, there are certain other benefits conferred by a portfolio of related patents, as opposed to a portfolio of non-related

[14] Gideon Parchomovsky; R. Polk Wagner, Patent Portfolios, 154 U. Pa. L. Rev. 1 (2005).
[15] Ibid.
[16] Ibid.
[17] Ibid.

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patents. They are:

1. **Further Innovations:** A patent portfolio covering various aspects of a technological area provides a broader scope of protection, and minimizes the risk of infringing a patent belonging to somebody else[18]. This also ensures that wider range of technological possibilities is available for further research and innovation, as it ensures that the portfolio holder will have a better chance of patenting the result of further research too. This aspect of patent portfolios, i.e. the freedom of movement in the chosen technological area, as well as in the offshoots that may result from such innovation, the ability to invent and manufacture products with in-house resources is a priceless advantage in an economic environment where flexibility and speed are a required imperative for taking the lead.
2. **Access to Offshoot Innovations in Related Areas:** The magnitude of the patent portfolio also makes the coordination and consolidation of technological developments in related areas easier to manage[19]. A strong patent portfolio is conducive to a strong market position in a particular technological field, ensuring that a lone innovator of an important and related invention considers combining resources with the patent portfolio holder instead of becoming a competitor[20]. This increases the access of the portfolio holder to innovations that might otherwise not be attainable.
3. **Mitigation of Expensive Lawsuits:** This is an important result of a portfolio that provides a broad exclusivity in a technological area. In case a patent in the portfolio is infringed by another, the enlarged scope of protection due to the enhanced portfolio ensures that it will be easier to prove infringement, encouraging the other party to settle rather than pursue a defence[21]. If, on the other hand, it is the portfolio holder who is the potential infringer, and the scope of the portfolio covers a sufficiently large are of the technological field, then the portfolio holder is likely to have a better defence in a counterclaim[22]. This would also encourage the other party to settle, rather than risk an expensive lawsuit that may result in a declaration of invalidity of his or her own patent.

[18] Peter C. Grindley & David J. Teece, Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics, 39 Cal. Mgmt. Rev., Winter, 8, 9, (1997).
[19] Donna J. Kelley & Mark P. Rice, Leveraging the Value of Proprietary Technologies, J. Small Bus. Mgmt. at 1, 9-10 (2002).
[20] Benjamin Pimentel, Inventors Patent Ideas to Pre-Empt Their Rivals; Companies Then Must Buy Rights to the Devices, S.F. Chron. (2003).
[21] George L. Priest & Benjamin Klein, The Selection of Disputes for Litigation,13J. Legal Stud. 1, 15-16 & fig.6 (1984).
[22] Ibid.

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4. **Better Bargaining Power:** As discussed above, the increase in the likelihood that the portfolio holder's claims of infringement of patent in the portfolio is proportional to the broader scope of protection of the particular field. This also provides a powerful bargaining tool as it is likely that at least some claims will be proven as correct. This ensures a better bargaining position in settlement negotiations. It is also beneficial in other negotiations, such as when a firm wants to invest in improving or extending a particular area of technology wherein the portfolio is strong[23].
5. **Enhanced Ability to Attract and Retain Investment:** An individual patent may not be able to attract the same amount of investor confidence that a portfolio addressing a broad area of a particular field will be able to. This is not only because the wider monopoly that a portfolio enjoys, but also due to the minimized risk of litigation and the consequent result that it may be declared invalid, nullifying the value of any investment. Furthermore, as discussed above, a portfolio holder has a better bargaining position in case of an infringement, or in case of a possible infringement action against him or her. Moreover, unlike individual patents, portfolios also serve as indicators of the competitiveness and long-term prospects of the portfolio holder, thus providing valuable information to capital markets enabling the decision to invest[24].

The Diversity Related Benefits of Patent Portfolios

The advantages of patent portfolios, exceed their standing virtually as super-patents Patent portfolio are not just individual patents, but relatively a set of connected but separate individual patents, and each patent component being part of the total aggregate portfolio. The fact that in this assortment no patents are defining the value is the main advantage of patent portfolios. By making significant the whole portfolio over the separate single patents, a portfolio permits the owners to substantially circumvent the scope of risk and ambiguity which are pervasive to invention in the current economy. Precisely, the below mentioned are the advantages of the diversity feature of patents portfolio

1. **Deals with Ex Ante ambiguity concerned with Technology:** Innovation is known to be an ambiguous business, as there is no assurances of success and often without any guarantee of forthcoming prospects and circumstances emerging in future. Companies operating in an innovation-based setting know that impending potential technological

[23] Rajiv P. Patel, Patent Portfolio Strategy for Start-Up Companies: A Primer, Pat. Strategy & Mgmt., 1 (2002).
[24] Supra note 19.

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developments will influence their research and development efforts either negatively or positively. As a hasty choice of implementing a particular technology or to conduct a certain research may turn out to be unprofitable or misleading years later. Patent portfolios can aid in reducing some of this vagueness by letting owners to defend themselves over a larger part of technology development than would be possible with individual patents.[25] For an instance, what if, a company decides to follow a semiconductor development research path that involves using a newly created material to substitute the silicon substrate. By creating a patent portfolio that focuses on a number of material forms or traits, the company can deal with the apparent ex-ante ambiguity about the exact characteristics of the material that will in the end be effective in the due course of development. A portfolio-based strategy will direct a company to pursue patent protection, not just for materials that are most probable to produce outcomes, but also for as various different but associated materials as practically probable. [26]Thus, the strategic, tactical and well-planned patent portfolio will support its holder in impeccably adapting to the changing technologies when trying to tread the path of research and development effort**.**

2. **Enlarges the Freedom of Research Inquiry:** Another directly relevant advantage of patent portfolios is that holders of patent portfolios can enlarge their efforts to develop their technology. This means that the diversity of the patent portfolio allows researchers to progress without restrictions into separate but related research areas, with the reassurance that patent protection is offered. Taking into consideration, the variety of safeguard offered by the portfolio, these related researches can be performed with a lesser amount of concern of infringement and with a better distinctiveness expectation. Thus, the semiconductor researchers mentioned above can much freely i.e. without any restraint, take part in research beyond the limited focus of that project available, possibly examining the employment of the new materials in other applications, having potentially due to which significant advantages may occur in the business.[27]
3. **Deals with ambiguity Related to Future Market Conditions:** It is obvious that the technology is not the only sphere which is ambiguous in the innovation-based market.

[25] Robert P. Merges, As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform, 14 Berkeley Tech. L.J. 577, 58990 (1999).
[26] The U. S. Patent Act, 35 U.S.C. Sec 112 (2000).
[27] Thomas A. Stewart, 3M Fights Back, FORTUNE, (Feb. 1996) http://archive.fortune.com/magazines/fortune/fortune_archive/1996/02/05/207343/index.html.

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The shortcoming of the forthcoming market conditions, such as accessibility to and cost of materials, can be solved by keeping a varied patent portfolio.

4. **Deals with ambiguity associated to Future Competitors:** Having a patent portfolio also helps in the forthcoming actions of a competitor in the market. The diversity of patent portfolios means that a company's upcoming innovation pathway will be larger in prospect and therefore will be less chances to get effected by the intrusion from competitors' patent-associated and market-associated actions.For an instance, If a company at time has a substantial market or innovation benefit or both, the formation of a major patent portfolio concentrated on that benefit will offer a lasting (though not permanent) protection against standing competitors or the predominating advent of new competitors. Again, the diversity of the portfolio will mean that such protection will be extra resistant to ambiguity than would be possible in the context of individual patent.
5. **Deals with ambiguity in the Patent Law:** Above all, the diversity characteristics of patent portfolios may provide protection against ambiguity associated with patent law. The reason behind this is that no single patent finalizes the worth of a portfolio decisively. Any ambiguity in the statute that could influence the worth of a single patent has less effect. In the recent decades, the patent regime has gone through a substantial number of amendments, although several of these amendments may have directed to better certainty,[28] but still there exist such crucial spheres where the uncertainty is increased. For an instance, in case of Statistical studies, it is exhibited that while determining the claim construction issues, which is decisive for scope and validity, is largely variable, and depends on the identity of the judges who are hearing the case.[29] The Courts has also been engaged in an endeavor to limit (or at least outline) the effects of the theory of equivalents, leading to vagueness as to the impending practicability of the patent system in broadening the scope of applicable and lawful patents. The recent emergence of the new requirement of “written description" give rise to uncertainty on the validity of a number of patents, particularly in spheres of rapidly “evolving or changing technology.”[30] This increasing level of uncertainty about the validity and scope of patents only upsurges the relative advantages of patent portfolios as the reason is that

[28] Craig Allen Nard, Process Considerations in the Age of Markman and Mantras, U. ILL. L. REV. 355, 357 (2001).
[29] R. Polk Wagner & Lee Petherbridge, Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance, 152 U. PA. L. REV. 1105, 1163-70 (2004).
[30] Harris A. Pitlick, The Mutation on the Description Requirement Gene, 80 J. Pat. & Trademark Off. Soc'y 209, 222 (1998).

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the value of a portfolio is not straightforwardly attached to an individual patent or a trivial number of patents. As, several of these improbabilities relate to available fact-related information about different patents concerned and the patent portfolio holder may rely on the existence of a protected area than would otherwise be possible.

Issues in Patent Portfolio Management

The advantages mentioned above are not co-existent. This does not mean that they are mutually exclusive. Rather, there must be a balance; otherwise the while advantages related to one feature would increase, the advantages related to the other would decrease proportionally. The tension between these two features result because of the opposing nature of the features. While "effective patent portfolios are both *sizable* - covering an expanse of closely related subject matter - and *diverse* - composed of distinct individual patents, thus diminishing the importance of any specific patentable subject matter[31]", maximization of one feature leads to a degradation of the other.

Increasing the portfolio size means acquiring similar closely related patents, however, increasing the portfolio diversity means acquiring patents related to distinct subject matters. The balance between these two features is necessary, as a heavy tilt towards one feature negated the benefits of the other[32].

A portfolio that only concentrates on diversity will have significant gaps in the subject matter coverage, leading to gaps in protection that would have been otherwise a result of the patent portfolio[33]. Such a gap could be of an advantage to a competitor, who would find it easier to engage in research and development to acquire a closely related patent and thus acquire a superior position in the particular technological area. Similarly, a portfolio that only concentrates in the size, and not diversity will end up compromising the diversity related benefits of a patent portfolio, as it would cover a relatively small area of directly related patents[34].

Another issue with patent portfolios is its interaction with patent thickets[35]. A patent thicket is

[31] Ibid.
[32] Eric W. Pfeiffer, Mine Games: Companies Are Coining Intellectual Property, FORBES (24 Jun. 2002),
[33] Ibid.
[34] Ibid.
[35] Supra note 19.

a situation where a number of patents apply to a single commercial product[36]. To be effective, a portfolio must consist of numerous related patents, and this concentration of such patents in possession of certain firms will lead to an increase in the transaction and information costs associated with innovation[37]. When market strategies of a firm are driven by portfolio creation and management, to innovate, innovators would first have to determine information about pre-existing patents and negotiate licenses with their owners[38]. In such a situation, innovation would end up depending upon success or failure of the bargaining procedure, and lead to a more monopolistic market as firms with weak portfolios struggle to survive[39]. Considering that infringement suits are expensive, a portfolio holder will have an advantage over small companies and new entrants with weak portfolios, who will be forced to settle to avoid and expensive litigation[40].

All of this points to a favorable environment for large, well-funded market players. Strong portfolio holders have an obvious advantage over their competitors, and will play a more dominant role in directing further innovation. Furthermore, this complicates the prospects for new entrants into a patent dominated field, who are more likely to be discouraged, and deterred by the advantages available to portfolio holders, some of which will act as complementary disadvantages for them.

Due to strong portfolios, a new entrant will enter with few patents, a higher risk of litigation, and increased costs for building its own portfolio to develop a competitive edge. Due to monetary constraints arising out of the above-mentioned factors, they also cannot easily engage in cross licensing, further stunting efforts of investing into research with the intention of developing new innovation[41]. This is disadvantageous to the society as there have been various studies which have concluded that small firms and new entrants are more active in the field of producing innovations that socially valuable[42].

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[36] Carl Shapiro, Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting, in 1 Innovation Policy and The Economy 119 (2001).
[37] Clarisa Long, Information Costs in Patent and Copyright, 90 VA. L. REV. 465, 474-82 (2004).
[38] Ibid.
[39] Michael A. Heller & Rebecca S. Eisenberg, Can Patents Deter Innovation? The Anticommons in Biomedical Research, 280 SC. 698, 699 (1998); see also: Arti K Rai, Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust, 16 Berkeley Tech. LJ. 813, 831-38 (2001).
[40] Manny D. Pokotilow, Why Alternative Dispute Resolution Should Be Used for Intellectual Property Disputes, Intell. Prop. & Tech. L.J., (July 2004).
[41] Clayton M. Christensen, The Innovator's Dilemma: When New technologies Cause Great Firms to Fail, 130 (1997).
[42]Jonathan M. Barnett, Private Protection of Patentable Goods, 25 CARDOZO L. REV. 1285, 1288 (2004); see also: Richard J. Rosen, Research and Development with Asymmetric Firm Sizes, 22 Rand J. Econ. 411, 419-21

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These factors also lead to significant issues with competition laws, as it becomes clearer that patent portfolios provide better monopolies than individual patents. While intellectual properties are excepted from the monopoly restricting effect of competition laws, certain aggressive portfolio management strategies, especially those that ends up harming the consumers, may lead to competition and antitrust rulings against patent portfolios, such as enforcement of patent holding caps, directing that no portfolio can exceed consist of a certain number of patents[43].

Conclusion

Patent portfolios are singularly effective in increasing the value of individual patents such that the value of the aggregate is greater than the sum of its parts. A strong portfolio has the ability to act as a super patent, providing much better monopolistic advantages than individual patents.

Appropriately managed, a patent portfolio can lower costs of further innovation and develop a strong technological profile of the holder, inviting investment and leading to further research and development. This includes not only identification of previously unexplored areas that would benefit from research and development, but also identifying patents that have lost their value and need to be divested from the portfolio, freeing up resources that could be useful elsewhere.

This is advantageous for the society also, in much the same way that the patenting system is. Society is the ultimate beneficiary of the cost-effective research and development that result from a properly managed patent portfolio. However, aggressive strategies that are intensely focused on pursuing creation of a monopoly to the detriment of the competitiveness of the market can also create the opposite effect.

These strategies, such as inordinate amount of litigation against new entrants, enforcing the superior bargaining power of the portfolio holder against them, are likely to attract the penalties of antitrust law, and may prove to be more detrimental to the society's interests in the long run, as the incentive to innovate diminishes in proportion to the increase in barriers to the entry of new players in the technological field. However, this is not the predicted resulted, only one of them.

(1991).
[43] Ibid at 19.

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Competition issues can be managed without scrapping the system of patent portfolios, or imposing limitations on it. It has the potential to achieve all that an individual patent is purported to achieve, as it acts as a super patent. For this potential to be unlocked however, the scale and diversity features of patent portfolios, explained above, must be balanced. An optimal balance between them would lead to a portfolio which is not only big enough to cover a broad aspect of a particular technological field, it is also diverse enough to bring new areas into the focus of research and investment. Such a patent portfolio would indeed act as a super patent.