

An in-depth analysis of patent thickets: a case study of Lithium ion accumulators.

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The knowledge based view of the firm highlights the value of specific knowledge for the firm. Knowledge protection hence becomes an important part of any firm willing to gain competitive advantage from their knowledge. The patent system has been developed to allow firms to keep their advantage, at least for a while. Increasingly, the patent system is used to patent strategic knowledge that blocks other firms from marketing their innovations. This results in overlapping patent rights. When at least three firms have overlapping patents between them then such a situation is referred to as a patent thicket. In other words, a thicket slows down the marketing of an innovation. Indeed, firms need to find their way around different patents before they market an innovation. Thickets are generally considered to have a negative impact on innovation since they make market entry difficult and reduce firm-side incentives to innovate.

We aim at proposing an extensive study of patent thickets within lithium ion accumulator technologies. Using a combination of IPC codes and keywords, we identified 38399 patents worldwide between 2000 and 2015 amongst which 10973 linked by either a category X or a category Y citation.

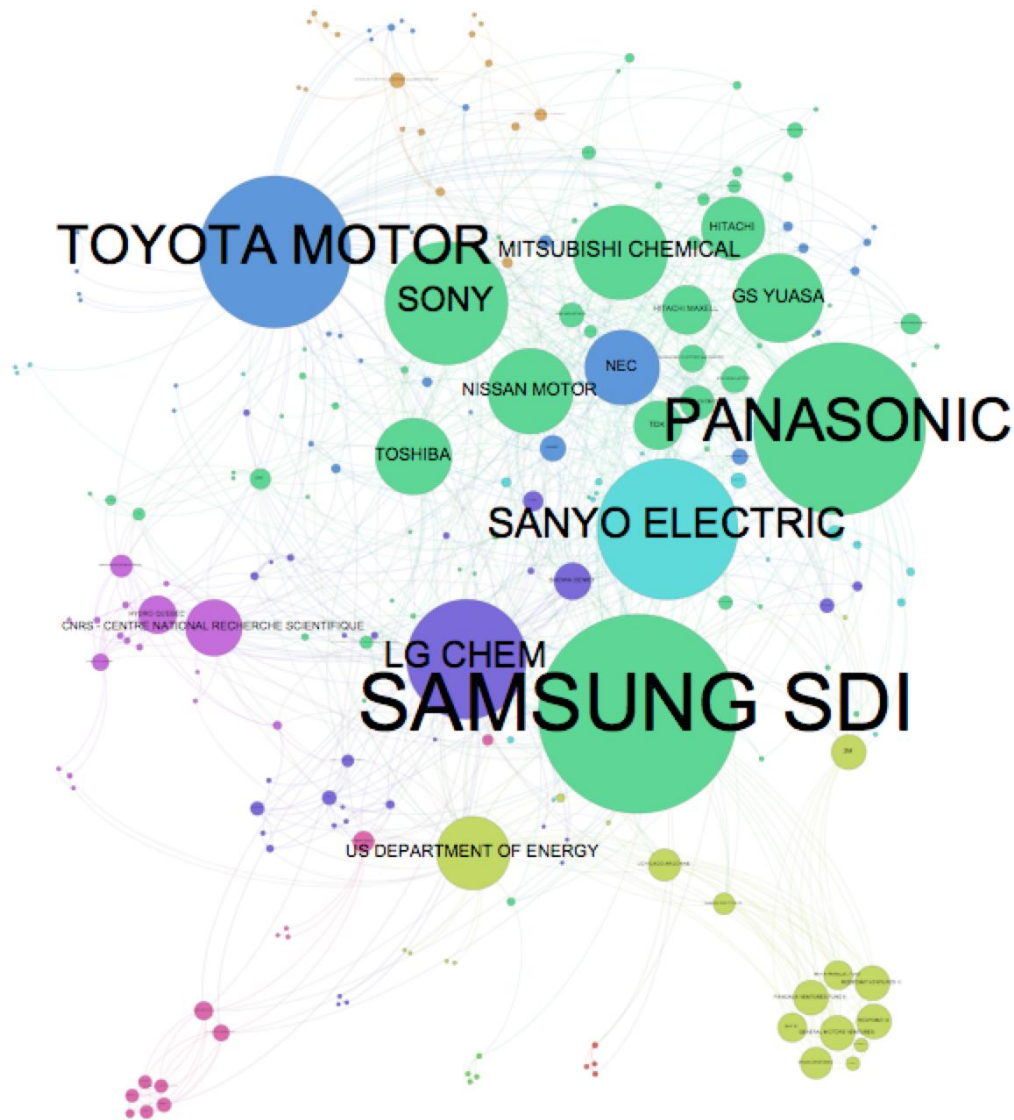
Different categories of citations exist. Some are more relevant for the analysis of thickets than others. The most valuable citations are the X and Y category. A category X citation implies that a patent cannot be considered novel or even an inventive step without said citation. The same is true for a category Y citation expect that at least two documents have to be cited together for the patent to be considered novel or an inventive step.

These definitions imply that a firm citing another cannot market its invention unless the firm holding the cited patent agrees to let it use its technology. Hence, it either pays a license or it risks being sued once the invention has been marketed. Our aim is to

This dataset allowed us to identify 1849 patent thickets between 285 firms over the 15 year period. The network interconnecting these thickets is shown in figure 1. Results show that the leaders of the market (Panasonic, Toyota, Nissan, Samsung, Sony) are involved in a large number of thickets (320 for Panasonic, 282 for Toyota and 371 for Samsung).

We wish to extend the standard analysis of patent thickets in three ways. Since thickets are usually identified between three firms, our first step will be to extend thickets to higher levels and find coherence in the observed thicket. Second we will study the strength of thickets by looking at the number of times we identify the same firms in a thicket (for any given level). Finally, we follow the evolution of the thickets over time to better understand how thickets are formed and how they might be reinforced.

Figure 1: Patent thickets in lithium ion accumulators technologies worldwide from the year 2000 to 2015.



References

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