



## SME tailor-designed patent portfolio analysis

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### ABSTRACT

The management of patents is acknowledged to be closely correlated to a company's profits. Thus, evaluation of patent portfolios is an essential task for companies producing or depending on technology-related products. While global players and consultants already have considerable experience in this field, no tool has so far been available that meets SME requirements. The Innovation and Patent-Centre at the Chamber of Commerce in Hamburg, a German think tank for patent management, has now developed a tool specially suited for SMEs. The article describes the methodology of the tool and compares it to other state-of-the-art tools. The tool gives an easy-to-understand overview for personnel with different professional backgrounds and facilitates strategic cross-functional discussions. Field tests carried out with SMEs in different industry sectors and with varying patent portfolio sizes and structures have shown good results.

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### 1. Introduction

The management of patents has proven to be closely correlated with a company's profits [1]. Thus, a company's patent portfolio is increasingly regarded as of major interest for strategic business development decisions. Global players acknowledge this and implement well-defined patent strategies [2]. This implies thoroughly surveying, evaluating and benchmarking patent portfolios. In contrast, SME find it difficult to analyse their patent portfolios within reasonable time and budget limits and still focus mainly on administrative tasks [3]. With SME making out the majority of Hamburg based companies, this is lamentable for the local economy. Hence, the Innovation and Patent Centre (IPC) at the Hamburg Chamber of Commerce decided to find a method to analyse patent portfolios specially suited for SME. As SME are playing a similar important role in many other regions in the world, the IPC-method should be of major interest to other consulting institutions and companies. Why is there apparently no appropriate method available for SME to evaluate their patent portfolios?

Part of the answer can be found in the way strategic business development decisions are usually made. Clearly, the (estimated future) turnover is a predominant figure in investment calculations [4]. But estimating future rents for patented technologies is much more difficult than forecasting future earnings for new products, as it is not yet clear, what kind of products can possibly be produced

with the new technology. Either the patented technology will lead to entirely new products or it will change a product's functionality and yield completely new business opportunities. Or it will do both/neither. The challenge here is to decide under extremely high uncertainty conditions. Thus, estimating future rents becomes an extremely time-consuming task – too much so for many SME. Furthermore, it can be dangerously misleading. A company trying to assess the market potential of a patent will easily get trapped in a vicious circle: If a company thinks a patented technology will yield only small profits, it will limit the marketing efforts. This leads to low turnover and will provoke even less marketing efforts (and so on). Hence, developing a method based on estimating future rents would be of little interest for SME.

Second, academic research and commercial consulting companies concentrate in developing tools for big, globally operating companies, as they appeal more to them – both from a monetary and reputational point of view. But given the completely different preconditions of SME and big companies dealing with patents, those tools will often not be applicable for SME. Big companies usually have access to a sophisticated network of partners, be it R&D-partners or intermediaries, to help exploit their patents. The company's name is generally well known and anybody in need of a new technology solution will first look at companies that first jump to the mind. As Arnoud Engelfried, a patent attorney in charge of licensing at Philips, puts it “[...] But a lot of companies contact us. They know – through databases and mouth-to-mouth-propaganda – that Philips holds a lot of patents and has an open innovation philosophy” [5]. SME have to face completely different pre-conditions. SME typically lack the infrastructure and budgets to invest in new business fields. And contacts to intermediaries willing to invest in conditioning and exploitation of patents

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are rare. Furthermore, the uncertainty about the quality of their patents is usually relatively high among potential licensees.

## 2. Patent portfolio analysis – state-of-the-art

The origins of patent portfolio analysis can be found in the portfolio-matrix first introduced 1973 by the Boston Consulting Group (BCG) shown in Fig. 1. The BCG portfolio plots the market share on the horizontal axis and the growth rate on the vertical axis. Depending on the values of both parameters, products are placed in different quadrants. Every quadrant permits giving different strategic suggestions for the specific investments considered. Using this method, even technology-based investments can be analysed.

Patent portfolio analysis now implies some rethinking of the portfolio design to permit the extraction of worthy information. Of course, products to which the patented technology has already been applied in can easily be analysed. Presumably, this will not reflect the patent's entire potential. At the time of evaluation, it will only be possible to anticipate new products to some extent. This makes the calculation of market share very difficult.

An approach to patent portfolio analysis has been undertaken by Ernst [6]. The benchmark portfolio plots the number of patents (“Technologische Stärke”) of different companies in a certain technology field and the value of the patent portfolio in the technology field (“Attraktivität”). Each company's patent portfolio forms a bubble. The method includes patent-specific indicators in the

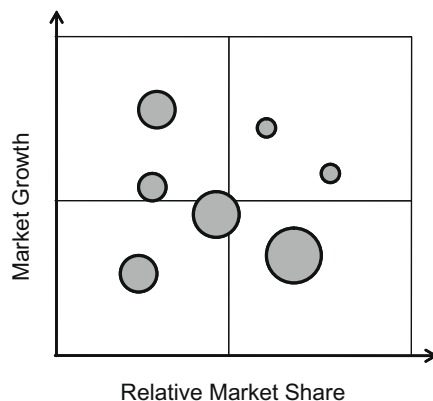


Fig. 1. Boston consulting group portfolio.

calculation of the patent portfolio value. Empirical evidence for patent-specific indicators have so far been found for forward citations (documents citing the patent), market coverage, and patent-class-ranges [7]. But even this portfolio model at the forefront of patent portfolio analysis, does not fully satisfy the requirements for a useful strategic tool for SME, as it does not permit the evaluation of single patents, but rather treats the patent portfolio within a technology field “*en bloc*”.

Portfolio-methods considering single patents have been presented by Hofinger [8] or the Danish Patent Office [9] (“IP-score”). These evaluation methods are extremely time-consuming, as a qualitative scoring-method is applied and multi-functional interviews have to be carried out for every single patent.

As a consequence of the current state-of-the-art in patent portfolio-analysis the IPC has focussed on developing a tool that evaluates patents initially does not just evaluate related technologies and at the same time evaluate single patents. Furthermore, the tool has to be cost- and time-effective. And it should provide a guide for strategic action.

## 3. The IPC patent portfolio analysis tool

The portfolio developed to meet the above-mentioned goals is shown in Fig. 2. It comprises a horizontal axis, which reflects the value a company attributes to a patent (company value) and a vertical axis, representing the market value, seen from outside the company (market value). The axis divides the portfolio into four quadrants and the patents are placed in the portfolio depending on the market and company value. Each quadrant enables SME to devise a bundle of generic portfolio strategies for the patents that have been positioned in it.

### 3.1. Company value

The company value is defined by indicators showing the technology-related efforts made and gains achieved by the company with the patented technologies. This could be e.g.:

- Turnover or profit margin
- R&D-costs or -budget

The turnover constitutes the pay-off a company gains with a certain technology and so it naturally increases the technology's importance for the company. The profit margin of a company indicates cost-effectiveness.

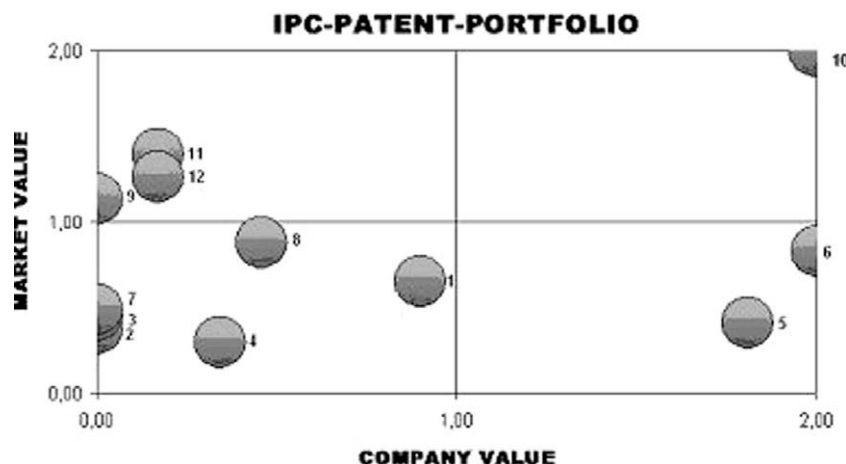


Fig. 2. Innovation and patent-centre, HKS GmbH 2006: The IPC patent portfolio design.

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