

Title: Combining patent forward citation and TRIZ analysis in a simple method for the identification of major innovations from a specific technology field

Abstract:

The present study combines patent forward citation count and TRIZ analysis in a method for the identification of the major impact inventions on the modern biotechnology, a highly dynamic, knowledge-based area, on which patents are considered a crucial instrument for intellectual property protection. The combination of patent forward citation and inventive level analyses was applied on the 0.3% most cited patents related to biotechnology applied to the human health, focusing the *in vitro* diagnostic reagents niche. Documents were retrieved from an online database, and analyzed by the perspective of TRIZ inventive principles, engineering parameters and inventive levels. All significant inventions on the modern biotechnology area could be identified in the selected resulting group, confirming that the proposed method was able to identify the best, valuable and innovative patents in a specific R&D area. The resulting robust patent list can provide core information on major trends, players, expiration dates and free operation niches, for example, without an overwhelming amount of documents and the need of expensive or user-unfriendly software or packages. It can also be elected as a starting list for further patentometrics initiatives. The proposed methodology can be used as basic framework to perform modest, yet pertinent studies on specific technical fields or technologies. The combination of these patent analysis information as a tool for innovation management can be also be adapted to other several knowledge areas, and help academic, corporate and government foresight and forecasting studies, for example, by increasing the innovation impact of worldwide research and development initiatives, and ultimately, industry performance.

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