

**STRATEGIES FOR LOWERING BARRIERS FOR NANO-TECHNOLOGY COMMERCIALIZATION:
THEORY AND RESULTS OF AN EMPIRICAL STUDY IN EUROPE**

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[dx.doi.org/10.18374/EJM-13-3.1](https://doi.org/10.18374/EJM-13-3.1)

ABSTRACT

This paper analyses the nanotechnology industry with respect to the application of open innovation. By analyzing different open innovation practices first in a theoretical discussion, we identified the broadcast search mechanism as the open innovation method with a great potential to overcome the commercialization barrier in nanotechnology. First, broadcast search aims at a better directed, target oriented research and second, it helps to improve matching between supply and demand of research. The characteristics of nanotechnology as a platform industry make matching a very crucial element of improving commercialization efficiency. Based on these theoretical results, we conducted a more detailed industry analysis of nanotechnology. In a large scale quantitative survey, we addressed success factors and barriers to commercialization, including a detailed assessment of open innovation. Our survey on nanotechnology firms shows further that external cooperation is already a central element in some firms' research strategy, however, organized absorption and in particular dissemination of knowledge is still neglected. Additionally, we see that higher readiness levels (with respect to technology, organization, manufacturing and investment) are positively associated with open innovation and that large firms in nanotechnology are more open towards external cooperation. There are no significant differences across European countries or branches.

Keywords: *Open Innovation, Technology Management, Innovation Management, R&D, Nanotechnology, Commercialization Barriers*