

Selecting Research Topics with Product Development in Mind

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Each year, companies and universities pour hundreds of millions of dollars into scientific research. And each year, a few great ideas emerge from the sea of research projects and blossom into promising technologies that will have great success in the open market. However, for every one successful technology there are many more great ideas that stagnate and are slowly forgotten. What differentiates the successful projects from those that struggle for attention is market need.

The evolution of a research project can be considered a series of unique phases. With each progressive stage, fewer projects continue down the pipeline. These phases take the forms of securing funding, completing and publishing research, refining and transitioning into product development, and being introduced to the market. For many projects, the critical point in their evolution occurs between the publishing and product development phases. This is the point in a project's evolution where market need becomes a critical consideration in the project's success.

While many research topics do a great job of advancing scientific understanding, product development is ultimately a business venture. The majority of research projects do not translate well into meeting a market need. Perhaps the right application has not been identified or the marketplace just is not ready for a new technology. For ideas struggling to graduate from the research phase into the product development phase, new realms of

considerations, such as the business model, production cost, or product yield, suddenly appear. It becomes apparent that a great deal of additional capital will be needed to invest in the refinement, production, and marketing of the project. A project is no longer judged on its technical prowess or intrigue, but rather it is considered in terms of its risk-to-reward ratio and up-front costs versus long-term return. The appeal of a well-addressed market need quickly becomes the biggest advantage that a fledging project can have.

When companies, government agencies, or venture capital firms evaluate the breadth of research published each year looking for projects to fund, they target the projects that most directly address a market need. When compared against other ideas that need further research simply to find a suitable market, it becomes an easy decision for funding groups to direct their money toward the projects with the best risk-to-reward ratios: projects that began their consideration of market need early. Projects that exhibit compelling market needs have stronger business plans, and the

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technology behind them can graduate into further development. Ideas that do not attempt to address a market need, no matter how strong the science behind them, will always have an uphill battle to overcome their risk-heavy risk-to-reward ratio.

For research topics that successfully plan ahead to address a market need, there is ample opportunity for the project to receive continued funding and grow into a product with great potential. Government grants, venture capital, and corporate buyouts all provide opportunities for good ideas and good research to evolve into products that become market successes. The biggest challenge for researchers who want to see their science move beyond the lab stage is identifying

and addressing a market need early in the research, and driving their project toward that market need. Success in driving toward a market need will give any project the assets it needs to become a competitive business venture and continue down the path to successful technology development.

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