

Five Lessons From Harvard's Commercializing Science Program

Our country's challenge isn't the lack of innovative ideas; the hard part is turning them into commercially successful products.

Harvard University offers a fascinating and important class on Commercializing Science. The class is taught jointly by Harvard's Business School, Law School, School of Engineering and Applied Science, and Kennedy School. The diverse disciplines are part of what makes the course so significant. In the "real world," successful commercialization efforts require effective alignment of many corporate functions. This fall, I was asked to serve as an expert advisor to the program.

For the first 75 minutes, the class follows the traditional HBS case study method. For the rest of the class, the students work in cross-discipline teams. These teams were tasked with developing a commercialization plan for some of the ideas emanating from Harvard's labs. Their "final exam" consists of presenting their recommended commercialization plan to about 200 faculty members, students, and potential investors.



Here are five lessons from this innovative Harvard program for anyone looking to bring new technologies to market.

1. There is no shortage of innovative ideas.

If the work being done in Harvard labs is indicative of what is happening in university and commercial labs throughout the U.S., then we don't lack for innovative ideas and inventions. There are a breathtaking number of game-changing technologies under development in the Harvard labs. Here are examples of some projects under commercial consideration:

- A bioreactor that contains microbes which convert greenhouse gases to energy.
- A composite material that prevents ice from forming on solid surfaces.
- Software that will dramatically reduce the cost of deploying corporate IT systems.

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2. Classic product research such as web-based surveys don't work with breakthrough innovations.

As they developed their commercialization plans, the students and scientists faced a number of basic questions:

- What are the best markets for this breakthrough innovation?
- Why would customers buy it?
- What problem does it solve?
- How important is it that this problem gets solved?

Even if ample funds were available for classic product research, asking customers and prospects about disruptive innovations usually does not work. The customers can't imagine the impact that an innovation can have on their life. They cannot articulate what they need.

Henry Ford once said, "If I asked my customers what they wanted, they would have said a faster horse."

3. Simply talking with people is the most effective research.

Speaking with people whose lives would be impacted by the invention provides the most useful insights on the value of an innovation. Do not ask what they think of the invention. Instead try to understand the problems they currently face that the invention would address.

For example, potential target markets for the composite that prevents ice formation could include the airline, trucking, communications, or power industries. Therefore the goal is to interview people who de-ice planes, oversee truck operations, manage power distribution, or

support communications lines. Here are some sample questions to ask a communications company about this product:

- What types of problems does ice buildup cause you?
- How often does ice build up on lines/towers and cause these problems?
- What does ice build-up cost you?
- How much would you value ice-free lines/towers?
- How often do you evaluate new technologies?

The point is not to ask about specific features of the material but to focus on the customers' needs and challenges.

4. Getting people to talk is not difficult.

I often hear people complain that they are not able to find people to interview. Friends, family, friends of family, former co-workers are all great sources. People are happy to speak about their problems.

And don't forget social media tools like LinkedIn.

When the ice-free team wanted to investigate the trucking industry as a possible market, I went to LinkedIn. I learned that the brother of a former coworker was an executive with a major transportation company. We quickly got an email response to our questions. Based on his response, we ruled out the trucking industry as a possible target market.

The process took less than an hour. There was no need for an expensive market research study.

5. Avoid resorting to technical jargon to explain an invention.

Research scientists often have a hard time clearly explaining their inventions to lay people. This is understandable since the scientists frequently just assume that everyone knows as much as they do about their area of expertise.

The authors of *Made to Stick*, Chip and Dan Heath, refer to this phenomenon as the curse of knowledge. The same expertise required to develop a breakthrough invention can make it difficult to remember what it is like not to be an expert.

After only three months of working with the scientists, it was fascinating to watch the students resort to highly technical jargon when preparing their final presentations. It took

significant coaching to remind them to first explain what commercial or societal problem the technology addresses.

When presenting complex technology to non-experts, seek input from someone who is not familiar with the technology to help craft the presentation.

The students they gave the class great reviews. I was energized by witnessing up close the power of bringing together bright, energetic people from a variety of disciplines to develop commercialization plans.

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