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# Bringing new high-technology products to market: Six perils awaiting marketers

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**Abstract** In fewer than ten days during the summer of 2016, millions of smartphone users around the world went crazy over Pokémon Go, an augmented reality videogame app. If only all new high-technology products—and their investors—could enjoy such runaway success! Alas, the road to new technologies can be bumpy, and marketers of new high-tech products face numerous obstacles. Six perils await these marketers: significant market uncertainty, significant technological uncertainty, issues of compatibility within a product's complex multi-component system, struggles to orchestrate self-reinforcing network effects, challenges of navigating ecosystem complexities and competition, and inherent risks of making hard choices among multiple product-market options with significant path dependency. This article discusses these dangers and concludes with advice regarding steps marketers can and should take to make the journey to market less perilous.


## 1. New technology's unsure path in the marketplace

Featuring high contrast and low power consumption, electronic ink-based displays are used in mainstream products such as e-readers, mobile phones, and watches. Electronic ink's commercial fate seems secure—that is, until some other new technology comes along.

Electronic ink's fate was anything but secure in 1997 when E Ink pioneered the then-brand new technology. Even in 2005, a good eight years after E Ink's founding, the outlook for electronic ink was grim. A contemporary Harvard Business School case characterized the company as beset by "numerous false starts" and flirtation with various approaches (Yoffie & Mack, 2005, p. 1). I thought of electronic ink's early days when reading a recent article titled "The Bumpy Road to New Technology" (Plambeck, 2016):

> The hype of a new technology is outpacing commercial success. Sound familiar?
>
> These days, interest in artificial intelligence has probably never been higher. The biggest companies are chasing it and venture money is flowing toward it. The same could be said for

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> a couple of other technologies: virtual reality and self-driving cars.
>
> In all three cases, the road to widespread commercial success appears longer than [just] around the corner, despite the interest. So it goes with the technology industry.

Joseph Plambeck is spot on, both in his choice of the story's title and the claim, "So it goes with the technology industry." The road to new technologies is bumpy, and marketers responsible for bringing shiny new tech to market have a tough row to hoe.

An early look at why bringing new technologies to market is so difficult captured the essence of the answer in one equation (Moriarty & Kosnik, 1989, p. 8): "High Tech = High Uncertainty about Technology and the Market." Moriarty and Kosnik (1989, p. 8) defined *market uncertainty* as "ambiguity about the type and extent of customer needs that can be satisfied," and *technological uncertainty* as "not knowing whether the technology—or the company providing it—can deliver on its promise to meet needs, once they have been articulated."

To better elaborate why new high-tech products' road to market is bumpy and which perils await their marketers, this article expands in three ways on the aforementioned explanation of "high uncertainty about technology and the market." First, it offers more complete characterizations of both market and technological uncertainties. Second, it introduces four additional challenges. Third, and finally, it concludes with some advice to marketers of new high-tech products as they contend with the six perils that await them.

## 2. Significant market uncertainty

Moriarty and Kosnik (1989) equated 'market' with demand parties, but no market is complete without two additional components: (1) supply parties, and (2) the formal and informal rules/regulations governing how demand and supply parties meet and agree on, execute, and settle transactions. New technologies often are accompanied by significant uncertainty in each of these three facets of a market.

### 2.1. Uncertainty in market demand

I never cease to be amazed by the exact market-size forecasts that are offered for new technologies five, ten, and fifteen or more years into the future. *Transparency Market Research* ("Artificial intelligence," 2016) provided a case in point with its headline: "artificial intelligence market to reach US $3,051.35 billion by 2024. . . [driven by] deployment of disruptive technologies." The basis for this estimate? The 2015 global artificial intelligence market of $126.24 billion is expected to expand at a compound annual growth rate of 36.1%. While the forecast is qualified by appropriate words and measures of caution, the projected growth rate of 36.1% is very exact. . . and very iffy, especially when one considers the alleged motivator of the forecasted growth: deployment in disruptive technologies. If there is one thing we know about disruptive technologies, it is that there are no certainties when it comes to their rollout in the marketplace and adoption in society. We are left to wonder: Why aren't market-size forecasts for revolutionary technologies always accompanied by statements or measures of standard deviation?

Admittedly, there are at least two ways to forecast future demand for a new technology: (1) take some existing market with a known measure of demand (e.g., number of customers, units consumed, dollars in revenue), estimate an annual growth rate, and apply the rule of compounding; and (2) recognize that the post-new technology market may be very different from today's market, develop different scenarios for the markets in the future, and size demand by working bottom-up from a fundamental understanding of the drivers of demand. In a world where even "Silicon Valley veterans argue that people routinely overestimate what can be done with new technology in three years, yet underestimate what can be done in 10 years" (Plambeck, 2016), my word of caution for new-technology marketers is to beware of the first approach and dive into the second.

Doing so will not be easy. Any sizing of future demand in terms of sale dollars must necessarily be a product of at least two numbers: price and quantity. The marketer will choose price at some future point of time given his/her objectives, the prevalent market context, and any operating constraints. As for the quantity, it will be a function of the price and the distribution of willingness to pay among a heterogeneous population. The distribution is not static but dynamic as the marketer adopts different marketing strategies and tactics, the technology diffuses in the marketplace, new problem solutions appear on the horizon, and the world changes.

Moriarty and Kosnik (1989) identified five sources of demand/market uncertainty: (1) What needs might be met by the new technology? (2) How will needs change in the future? (3) Will the market adopt industry standards? (4) How fast will the innovation spread? (5) How large is the potential market? These five sources of uncertainty are not independent of each other. There is a logical structure linking heterogeneous customer needs to some aggregate