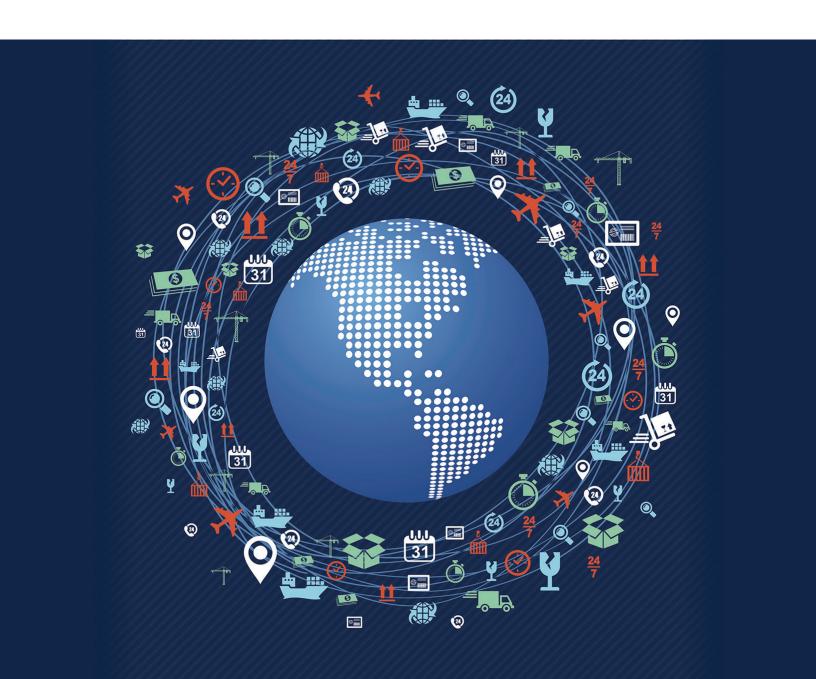Knowledge@Wharton – Wipro
Future of Industry: Transforming Product Ecosystems

Navigating the White-water World of New Product Development

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Navigating the White-water World of New Product Development

Developing new products today involves a chain of daunting new challenges. They include shorter product cycles, unforeseen competition, mass standardization and more narrowly focused customization. This is disrupting business models across industries, says G. K. Prasanna, a senior vice president at Wipro Ltd. To thrive in this new world, companies must build "innovation prowess," says George Day, a Wharton marketing professor. The two suggest solutions to innovation challenges in this white paper, part of a Future of Industry series produced by Knowledge@ Wharton and sponsored by Wipro.

New product development today thrusts companies into a "white-water" world of market turbulence wrought by shorter product cycles, competition from out of the blue, and the need for both narrowly focused customization and mass standardization, says G. K. Prasanna, a senior vice president at Wipro Ltd.

When the number one camera company is a mobile phone company, what does it mean for the camera industry? Should carmakers like Ford and Toyota be worried more about competition among themselves or from Google's driverless car project? And how might Calico, another Google project aimed at life extension, impact hospitals, insurers and others in the life sciences industry? asks Prasanna, who is also head of global infrastructure and product engineering services for the technology services provider based in Bangalore, India.

George Day, a marketing professor at Wharton and co-director of its Mack

Institute for Innovation Management, believes companies that want to innovate successfully today must build "innovation prowess." That means taking a disciplined "outside-in" approach to setting strategy, or looking at customer needs in the outside market first. Put another way, it means looking at the world through customers' eyes rather than first looking within the company to decide which product — or product extension — should be built in order to best use existing resources. The latter approach — an "inside out" view — leaves companies flatfooted in responding to fast-changing market needs, Day says.

A key part of understanding those customer needs is to develop the ability to spot early warning signals about new competition or technologies aimed at meeting those needs. Day's advice for new product developers: "Be continuously on red alert. The problems arise when you are surprised."

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— George Day

Spotting Early Warning Signals

Companies need not grope in the dark about impending competition. "The reality is we always have early warning signals of changes in technology and emerging competitors — the question is: Do we act on them?" Day asks. Often companies don't, sometimes because the signals simply are "weak." They tend to be "a little ambiguous and come with a lot of noise" or information clutter.

Day says companies must be "vigilant about the weak signals of new competitors, changes in technology and new markets opening up, and must share them widely through the company." That last point is particularly important. Even when weak signals do end up getting picked up, too often the word does not get out. In research covering several companies, Day found that every time a company failed to see a competitor coming from an adjacent market or a new technology, many people within the company already knew about it as a threat. "But the senior officers, the decision makers, did not know about it and people down below didn't know the senior people didn't know about it." He found that "there are a lot of organizational impediments to staying vigilant" and that companies with an ability to pick up the signals on time "have lots of degrees of freedom in dealing with them."

Day offers the example of a prominent medical device maker. The company, is "very concerned" about the possibility of a drug that may replace its pacemaker (an electrical component that regulates heart beats) and is closely watching that space. Once that threat gets closer to reality, it could respond in several ways: Make investments in related areas, formulate competing products or simply monitor the situation.

Major Product Development Trends

Prasanna sees five major trends defining new product development strategies today.

First, relatively inexpensive technology now allows powerful processing and ubiquitous computing.

Second, companies — and investors — with deep pockets are willing to finance big, long-term bets on new products. "Companies like Apple, Google or Samsung can take moon-shots. But smaller companies do not have that luxury and must find other ways to innovate.

Third, companies approach markets from both ends — a global market with standardized products and a market of even one individual with highly customized products. So, a new smartphone launch now is very different than in the recent past. It is now typically a global event versus the regional market-by-market release of recent years. In another example, "emission norms are different across countries. A car that works in China cannot be released in Europe, India or Japan."

Fourth, companies often must design products with varying specifications that suit the needs of different markets. "The Indian customer doesn't expect a trimmed down version or a less powerful version than the rest of the world, but twice the features at half the cost," says Prasanna. One favorite example of a product designed for emerging markets is Procter & Gamble's Gillette Guard brand of razors, launched in India in 2010. The *Associated Press* reported that Gillette found that many Indian men used low-tech, double-edged, T-shaped razors that caused many skin cuts. Indian men also had thicker hair with higher density than

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Americans. While American men wanted smoother shaves, Indian men were more concerned about avoiding cuts. Gillette's Guard razor had one blade to emphasize safety over smoothness, compared with two to five blades found on many U.S. razors. It also designed the Guard for easy gripping, provided a hole at its base so that users could hang it, and a small comb by the blade to deal with thicker hair. It lowered manufacturing costs by reducing the number of parts from 25 in the Mach3 to just four in the Guard. The result: Gillette's market share for razors and blades in India rose from 39.3% in 2007 to more than 49% in 2013, according to research firm Euromonitor.

Finally, companies today must rethink what is core to their organizations and outsource the rest, Prasanna notes. Shorter product life cycles and the need to ship products faster to the market means they have to do "product development which is rapid, iterative and close-to-consumer — it is almost continuous R&D."

Strategies for the New Environment

For companies to innovate effectively, Prasanna advocates "standardization at the core that is also modular to allow for variants to suit different markets." Companies should consider an R&D model of rapid prototyping with on-going gradual changes to replace the traditional approach that took months to develop model blueprints. Earlier, a supplier's engineers had to visit customer locations to modify equipment to suit specific requirements, but technology today allows incremental changes remotely, he adds.

Such customization on the fly now happens even with large industrial equipment like earthmovers. Until recently, getting different power capacities in earthmoving equipment required separate pieces of equipment, each with a single power capacity. But today's earthmovers can be remotely reconfigured to provide more power for short bursts of time. "For example, I could send a code to give an earthmover three times the [existing] power for the next three days," Prasanna says. "I can bill for it and collect the payment. Pay-per-use for earthmovers as a service is now possible — it is not science fiction."

He adds that "the only way to manage such fast-changing markets is through a systems integration approach rather than a develop-everything-from-scratch model." Companies need to monitor customer equipment usage or regulatory requirements, for example, to be proactive. In the past, service was based on customer complaints or a customer "yelling for help," Prasanna notes.

"Offerings that create superior customer value are often found at the intersection of technology advances and customer needs," says Day. He cites an example from cardiac surgery, where there was "an enormous need" for an arterial stent that could open arteries and not cause problems years after insertion. In 2012 Abbott Laboratories launched a plastic stent that dissolves into the bloodstream within a couple of years after implantation. "This stent is a huge boon to customers and a source of organic growth for Abbott."

Another recent example: Banks looking to penetrate rural India with automated teller machines (ATMs) face several obstacles, especially erratic or non-existent power supplies. A U.S. maker of ATMs

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has partnered with an Indian technology firm to build a rugged, energy efficient solar-powered ATM that works without air conditioning. "It was built at half the cost and twice the reliability parameters of existing machines," says Prasanna.

Day further cites Cisco as a company that has consciously embraced open innovation platforms. In his 2013 book *Innovation Prowess* he noted that Cisco has many engineers working on extending and improving its current products, or developing the next generation. They often work in open networks with external partners to access new technologies or market concepts. "It may otherwise take too long to build the internal capabilities," he explains. For breakthrough or disruptive innovations that are beyond the company's capabilities, Cisco has created an internal incubator that directly reports to the CEO. The group's budget is "carefully protected in good times and bad." On average, about four out of nine of Cisco's internally incubated innovations succeed.

Costs of Innovation

Prasanna notes that, contrary to what one might expect, the cost of innovation generally has not risen in today's business environment. This is true despite the relentless demands for shorter product life cycles and the like noted earlier, greater speed-to-market, extreme customization and rising standardization in basic modules. In fact, hardware and software are increasingly commoditized and thus cheaper. That can help support an incremental approach to innovation.

Prasanna's ideas on "incremental R&D that is close the customer" in some ways dovetail with Days' view, which is to avoid going out on a limb with a large innovation without a full understanding of the market. It is cheaper overall to invest first in spotting and tracking "early warning signals" than it is to launch risky projects without adequate market intelligence. "Investing in the front end – sometimes called the fuzzy front end of the growth process – to seek out the best opportunities and developing them is still a low cost area," he says. "You lose a lot of money when you bring risky projects to market and they fail, because the cost of commercialization can be 20 times as much as the front-end investment in screening opportunities... If you do it right, it should materially improve the return on your innovation investments."

Innovators with a finger on the market pulse eventually bag satisfied customers and new markets. Amazon Web Services, which offers customers access to its cloud network, came about because Amazon.com founder Jeff Bezos had a "working backward" mentality, says Day. "Rather than ask what we are good at and what else we can do with that skill, you ask, who are our customers? What do they need? Growth comes from solutions based on an outside-in insight into how to solve a customer's problems."

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