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BY LAURA W. GELLER

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Whether we praise its genius or dispute its validity, it's hard to deny the influence of Clayton Christensen's theory of disruptive innovation. In explaining the kinds of technological breakthroughs that enable upstarts to challenge industry incumbents, the Harvard Business School professor's theory changed the way many organizations develop new products and services.

But what happens when the pace of an industry's change takes off? This is the situation in which many incumbents now find themselves, says Howard Yu, a professor of strategic management and innovation at IMD Switzerland. As he told *strategy+business* in a recent interview, supply chains are more fluid and business models more agile in the Internet age. And that has implications for both new entrants and established firms. Yu, who earned his DBA (doctor of business administration) degree at Harvard Business School — where he studied under Christensen — believes that disruptive innovation as a theory is as significant today as it was when it was introduced in the mid-1990s. The theory just needs to change with the times.

Yu began his career in the banking industry in his native

Hong Kong. His academic research focuses on understanding what drives sustained growth, and what holds some companies back. He investigates innovation in a variety of industries to identify trends, as well as the emerging technologies that enable them. And he advocates for a more open approach to innovation that encourages leaders to see their problems from someone else's perspective. Yu is also a prolific writer; his columns have appeared in *Forbes*, *Fortune*, and the *South China Morning Post*, among other publications. In 2015, he was selected by Poets & Quants as one of the top 40 b-school professors under 40.

S+B: Why do you believe that the theory of disruptive innovation needs a refresh?

YU: The classic examples coming out of Christensen's disruptive framework were from technologically intensive, knowledge-intensive, and manufacturing-intensive sectors: the evolution of hard drive disk storage systems, or mini mills disrupting integrated steel mills. Today the pace of change has accelerated to an unprecedented speed. It took the minicomputer about two decades to displace the mainframe. But when we look at the speed with which new entrants such as Airbnb or Netflix displace incumbents, we are talking

about five to 10 years at most.

Historically, for a new entrant to topple an incumbent, it needed to build up the scale of its operation. It needed to be vertically integrated and asset heavy. For Toyota and Honda to displace the Big Three in the U.S., they needed to build factories around the world and expand their manufacturing prowess.

But then came the rise of ubiquitous connectivity — everyone can connect to the Internet via smartphones — and of machines that exchange information under the umbrella of the Internet of Things. Such developments have driven down the transaction costs between organizations. The global supply chain has become frictionless, and many in-house activities can now be outsourced. As a result, companies can rely less on intra-organization coordination. In short, they don't need to match an incumbent's internal assets to have the equivalent size and scale in a global market. And with the rise of smart machines, a lot of the know-how residing in the human brain is getting encoded and automated. This also helps disruptors to move faster.

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Howard Yu

S+B: What does this mean for incumbents?

YU: New entrants are in a growth phase, and therefore investors are looking for growth prospects; it's less about profitability. This means the startup can invest in building up future capabilities. Nowadays, these can include data analytics, artificial intelligence, or virtual reality.

But incumbents are tied up with existing assets. They need to worry about depreciation rates. They must battle organizational inertia. And they need to satisfy investor expectations in terms of return on investment. Incumbents are often framed as value stocks, which means they are mandated to churn out shareholder returns on a steady basis. If not managed properly, all the profit ends up in shareholders' pockets rather than being used to upgrade machinery and factories or develop new capabilities.

Combined, these factors create a huge disadvantage for the incumbent, particularly in the face of disruptive innovation. Which is why, I suppose, historically the incumbent tends to fail more. If we're looking at the S&P 500, a company's average life span on that index dropped from 67 years in the 1920s to 15 years today, and the average tenure of a CEO in corporate America has also shrunk over the last 20 or 30 years.

S+B: Are there any advantages?

YU: It's not all bad news for incumbents. There are industries in which they have been successful over the long run. Incumbent pharmaceutical companies, for example, still command an advantage. By the end of the 19th century, circa 1880, the first wave of drugs arrived when chemists dabbling in dyes for the

textile industry discovered medicinal benefits. With the advent of the microscope, fairly rapidly the industry moved from a purely chemistry-based discipline into cellular biology; people began to explore antibiotics. Then came the understanding of human DNA, and with that, the rise of computational biology and genomics, and the industry moved into bioengineering.

In order for people at a drug company to move from chemistry to biology, they need to have mastered chemistry first. And when they move to computational biology, the same thing happens — they need to understand the fundamental discipline of biology to move to a more advanced level. These shifts give the

Managers need to know what type of industry dynamic they're facing. Is there a fundamental shift in the discipline? If there is, they need to stay ahead of the curve. If they find themselves in an industry where the underlying knowledge is stagnant, then they need to proactively look for knowledge as the new source of innovation. Viewed in this light, the importance of electric vehicles and driverless cars cannot be overstated.

S+B: Let's say you are an advantaged incumbent. What should you be doing right now?

YU: As we see the pace of change increase, it's important that companies focus on building a growth

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incumbent an advantage. And of course, drug discovery is not just R&D. The entire value chain is extremely complex: clinical trials, FDA approvals, marketing, distribution, and so on. Deep experience and prior knowledge matter a great deal in these areas.

Now, contrast the industry dynamic seen in pharma with that of the auto industry, which, until recently, had been based on mechanical engineering and a bit of electrical engineering. If the underlying knowledge doesn't change, a copycat one day will catch up with the know-how of the early pioneer. And as a result, the early pioneer will get displaced.

prospect. Without a growth prospect, your market capitalization can decline despite the fact that you are able to deliver income growth, pay dividends, and so on.

On the other side of the coin, Amazon makes very little money, but its stock price continues to climb because it has a story to tell — it's able to generate and realize continuous growth over the long run. Of course, not everyone can become Amazon. But you have to be able to play a hybrid role between delivering today and building the growth prospect for the future.

S+B: How can companies identify their best growth prospects?

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YU: It's critical for organizations to experiment. If they don't, sooner or later they will run into a crisis. They'll end up having to bet the house money on a single initiative. Some people would call that a burning platform, and sometimes it works out. But oftentimes it doesn't.

Instead, companies should focus on experimentation, and then see which idea ultimately generates a big win. This demands that the organization have the ability to form new business units along the way, because when we're talking about commercializing disruption, the last thing you want is to ask your mainstream business to try a radical idea.

At the same time, you need to have the discipline to prune. When you experiment, there will be failures along the way, and large, complex organizations often find it difficult to let go of projects. Politically, it's very hard for executives to declare failure and walk away. Projects drag on, consuming resources. But if an organization truly embraces the spirit of experimentation, the implication is that executives have to call a failure early enough to cut their losses. And that requires a cultural shift.

If organizations are serious about maintaining competitive advantage, they [also] need to open up their innovation funnel. Many intractable technical problems become intractable because you stare at the problem with the same framework year after year. What you need in those situations is a fresh lens, and nothing is more effective than finding an external party to work with you through those problems. +

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