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BY TIM LASETER AND JEFF BENNETT



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By linking customers and capabilities, companies can generate the momentum for sustainable growth.

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**M**any growth opportunities look like bottle rockets. They start with an impressive flash but end with an explosion. Most often, this is caused by business leaders' tendency to chase after the biggest customer segments or the ones with the highest margins—typically the same segments that everyone else chases. Other leaders get lost in their enthusiasm for a new product or in their desire to pursue the next market fad. They fail to consider whether they are attempting to solve a customer problem, and how much the solution is worth. Such strategies may result in fireworks, but they don't create a business of increasing momentum that provides both the stability and

the energy reserve to drive sustainable growth—in other words, one with a solid flywheel.

Companies that pursue a flywheel-business model focus on building the kind of long-term capabilities that allow them to prevail against rivals and capture new opportunities for growth. This gives them the profits they need to invest more in capabilities, and the insights to do so wisely. Along the way, they target the customers or customer segments that will help them develop these capabilities. It is similar to the flywheel concept from high school physics, typically demonstrated by a heavy disc that is difficult to start up, but that spins easily with limited effort once it reaches full speed. Over time, a simple innovative idea becomes a well-oiled machine, which trans-

lates into a predictable and profitable business.

Two case studies—Johnson Controls Inc.'s Automotive Experience group and Pulte Homes—show how company leaders embraced the flywheel concept to unlock strategic growth opportunities.

## Collaborate with Suppliers

Revenues at Johnson Controls Inc. (JCI) in 2012 were US\$42 billion, nearly half of which came from the largest of its three global business units, the Automotive Experience group. But this group is relatively new. For most of its 110-plus-year history, JCI developed control systems for the regulation of temperature in buildings, gradually expanding in the 1960s to centralized systems integrating control of temperature, fire alarms, lighting, and security. In the late 1970s and early '80s, it expanded even further from its core building controls business.

The Automotive Experience group began in the early 1980s as the Automotive Seating group. At that time, the automotive industry was embracing outsourcing to eliminate the burden of United Auto Workers (UAW) wages. From 1982 to 1984, leading seat frame and foam manufacturer Hoover Universal Inc. had built six seat assembly facilities to serve nearby customer vehicle assembly plants. JCI recognized the outsourcing trend and acquired the Automotive Seating group from Hoover, along with the Ferro Manufacturing Corporation, a seat mechanisms manufacturer, and continued to add plants capable of providing full seat systems to the Detroit Three.

Realizing that wage arbitrage offered no competitive advantage—any competitor could also hire

non-UAW laborers—JCI sought to build a sustainable flywheel business. Although the term *lean* had not yet consumed the psyche of the automotive industry, former Hoover plant manager John Daly, the newly appointed vice chairman of JCI, recognized its potential. He challenged his managers to embrace Japanese manufacturing methods and targeted the Toyota Motor Corporation as a customer that could help the company achieve its goal.

In October 1985, Daly informed his Georgetown, Ky., plant workers that a team from Toyota would be visiting in three weeks. Although the plant was viewed as JCI's best in terms of internal housekeeping—an important consideration in Japanese manufacturing—it followed U.S. manufacturing performance standards, which did not match Japan's. Die changes took four to eight hours, so an average production run lasted 20 days to amortize the setup cost. Inventory levels exceeded a month of supply, and equipment ran only 40 percent of the time. Despite making nascent efforts at statistical process control, the company remained focused on volume, leading to substantial rework.

In anticipation of the Toyota visit, the Georgetown plant manager sought to temporarily cut inventory by nearly 70 percent, to a mere 10-day supply. He rented nearby warehouse space and hauled away any inventory he thought he could function without until after the plant tour. Later, he visited a seat supplier in Japan and learned that even 10 days was excessive by Toyota standards: The supplier held so little inventory that it did not even require forklifts to move materials around.

Perhaps Toyota saw a diamond in the rough, or maybe JCI just got

lucky—but shortly after the JCI plant visit, Toyota announced that it would build an assembly plant in Georgetown. Over the coming year, Toyota visited JCI regularly, and the Georgetown plant attempted to showcase new improvements every time. Plant leaders started by creating a welding cell staffed by cross-trained workers. Next they attacked die change times, reducing them to half an hour on their own and eventually to a mere 17 minutes with the help of a Toyota *kaizen* expert. By the time Toyota production began ramping up in 1988, the dedicated Toyota seat assembly area within the Georgetown plant operated with a mere 7.5 days of inventory, and by 1989 at full scale it held less than a day's worth.

Over the next four years, Georgetown was the only Toyota supplier among the corporation's entire U.S. supply base to receive an award every year and was selected as one of four “showcase suppliers”

The company then sought to become a full partner in design through delivery. Chrysler appeared to be the logical customer to fuel this second rotation of the flywheel. Although it had acquired the American Motors Corporation—and the indomitable Jeep brand—in 1987, Chrysler remained subscale in comparison to its U.S. competitors, and was looking to outsource engineering as well as manufacturing. In 1989, JCI jumped at the chance to take responsibility for the entire seat system in Chrysler's new Neon model. The innovative compact car designed under Lee Iacocca's guiding hand proved to be a huge commercial success for Chrysler—and for JCI, which now had the momentum to build its design capability.

JCI's next step was to establish deeper relationships with the Detroit Three and other automotive manufacturers by creating dedicated “customer business teams.” These new cross-functional groups sought

## The Neon was a huge success for Chrysler—and for JCI, which could now build its design capability.

to demonstrate the potential of the Toyota production system to other U.S. companies. Equally important, the lessons of Georgetown had spread across other JCI Automotive Seating group plants—including the additional dozen seat plants serving vehicle manufacturers in the United States. At this moment, JCI had completed the first turn of the flywheel; it had developed the capabilities to be a world-class seating manufacturer in the emerging “just-in-time” environment.

to expand their scope of responsibilities for their respective automotive customers. For example, by 1992, JCI had more than 500 product engineers—having started with only a handful at the time of their acquisitions in the 1980s. While the individual teams focused on serving the specific needs of their respective OEMs, a common R&D group sought to leverage the company's growing expertise across vehicle programs by designing materials and components that could be incorpo-

rated into many different designs.

In 1994, JCI opened a new research and development center capable of doing its own prototype testing, expanding its design capabilities even further. Independent of the OEMs, the company also began examining car customer views regarding seating. Through sophisticated conjoint analysis, JCI developed deep consumer insight into preferences among features, such as motorized versus manual adjustments and seat heaters. Rather than simply accepting design guidance from the customer's vehicle program manager, the customer business teams came armed with data to help them make the inevitable design trade-offs that influenced the entire car. The second revolution of the flywheel was complete.

The third rotation began with JCI's acquisition of Prince Automotive (which made auto interiors) in 1996. Now the company could leverage its growing capabilities across a larger proportion of the vehicle. It provided instrument display clusters, dashboards, sound-cushioning headliners, and trim, in addition to the safety and comfort-critical seat system. Having gained control of all the key aesthetics of a car's interior, JCI opened a new technology center in 1998 complete with an "idea factory" and "comfort lab." It expanded its conjoint analysis to consider trade-offs among extra cupholders and dashboard features. JCI could now help a program manager make the right decisions throughout the car interior.

JCI continued to increase the momentum of its flywheel by expanding its product and geographic scope. In 1998, it added to its portfolio an automotive interior part producer, the Becker Group, with

70 percent of its revenues in Europe, and the Italy-based Commerfin SpA, a maker of door systems. Taking another page out of the Japanese playbook, in 1999 JCI launched a *keiretsu*-like partnership with Genetex, Jabil, and Microchip Technology to develop integrated electronics for car interiors. And in 2000, it expanded into Japan by acquiring Nissan's stake in Japanese seat

affordable prices through modular design and prebuilt components. In 1959, Pulte shared his vision for the future in the plans for Concord Green in Bloomfield Township, Mich., the company's first subdivision project. He priced the homes at \$29,000—well more than double the \$12,000 median price in Michigan at a time when median family income ran less than \$6,000—and

## Pulte created a flywheel business by offering high quality at affordable prices through modular design.

manufacturer Ikeda Bussan. By 2005, JCI had renamed the business unit the Automotive Experience group. It was now a global flywheel business with annual revenues of nearly \$19 billion.

### Create Scale in New Markets

In 1950, unable to afford an architect, a startup contractor named Bill Pulte used a plan from the *Detroit Times*' Home of the Week section to build his first house—which he sold for \$10,000. By today's standards, that may sound cheap, but the median home price in Michigan that year was only \$7,500. Over the next decade, his company, which is today called PulteGroup Inc. (of which Pulte Homes is a subsidiary), operated like every other builder in the country. It built individual, custom-designed homes for a particular price niche in a local market—in Pulte's case, the high-end home market of the Detroit suburbs.

But Pulte recognized an opportunity to create a flywheel business of national scale by offering his high-quality craftsmanship at more

tapped the aspirational dreams of a growing upper middle class.

Pulte created a superior alternative to the then dominant models of suburbia. From experience, he understood that the custom model incurred additional costs for the buyer and uncertainty for the seller beyond the true value of the finished product. He also saw the flaws of the mass-produced subdivision model pioneered by Abraham Levitt and his sons, William and Alfred. Launched in 1947 to target soldiers returning from World War II, the Levitts' original planned community in New York consisted of 2,000 rental homes employing a common, single-floor house plan. The homes could be built at the astonishing rate of 30 per day. By 1949, they had expanded the quality of the homes and introduced a new "ranch-style" design for sale at \$7,990, well below the statewide median of \$10,152. It was offered in five models defined by only slight differences in window placement and exterior colors. By 1951, what had become known as Levittown encompassed more than

17,000 homes—organized in huge subdivisions full of nearly identical “boxes.”

At Concord Green, Pulte sought to achieve the scale economies of the low-end, mass-production approach while providing the variety demanded by the more discerning upper-middle-income customer. His modular designs eliminated the need for expensive architects but, unlike the Levitts’ homes, provided generous variation in design throughout the subdivision. The company also built design tools to allow homebuyers to customize where it mattered most, in the interior. Customers could choose from a wide range of paint colors, flooring, countertops, and lighting and plumbing fixtures. The unique capabilities Pulte developed for the Concord Green project powered the first rotation of Pulte’s flywheel, enabling the company to reach an underserved market.

After receiving an overwhelming response to the concept, Pulte expanded to other markets: Washington, DC, in 1960, Chicago in 1961, and Atlanta in 1968. In this second turn of the flywheel, he broke the paradigm of construction as a local business. Under the old model, relevant scale occurred at the local level, through builders’ ability to get better pricing and scheduling preferences with local subcontractors and suppliers. The new paradigm of modular designs and selective customization applied across markets, making national scale in home building meaningful.

Pulte’s national expansion enabled him to invest in improving his company’s capabilities in developing design tools and customer understanding—building more houses with more options while increasing scale by using national building

material suppliers, not just local distributors. He continued to innovate during the 1970s, turning his focus to the baby boomer market. For example, Pulte’s in-house architectural team introduced the “quadrominium,” a single structure made up of four two-bedroom units with separate entrances and garages priced at a mere \$20,000 per unit (only slightly above the median home price in 1970), targeting first-time buyers with kids. These new capabilities provided the momentum for the third rotation of the flywheel, as Pulte built additional national scale across a wider range of price points and markets.

Bill Pulte also recognized a potential disadvantage his business model had in comparison with that of entrenched local builders, who could ensure quality through personal relationships with subcontractors for electrical work, plumbing, and the like. To offset this disadvantage, in 1980 the company created “Pulte University” near its headquarters in Bloomfield Hills, Mich., and began training construction workers from around the country. Over time, the university was expanded to include high-performing managers as well. By the end of the 1980s, Pulte was selling homes in 17 markets in 11 states at prices ranging from \$50,000 to \$600,000.

Continuing to bear in mind the now middle-aged baby boomers, in the 1990s Pulte developed communities in Arizona, California, Florida, Michigan, New Jersey, and Virginia, targeting “active adults” age 55 and older. (A merger in 2001 with Del Webb Corporation, a builder of retirement communities, solidified this market.) The company entered the Fortune 500 in 1999 and won recognition from J.D. Pow-

er & Associates for its high customer satisfaction, praise it continued to garner for five straight years. Along the way, *Businessweek* named it one of the 50 top-performing companies and *Money* magazine declared it a 30-year “super stock.”

Today Pulte operates in more than 65 markets in 29 states and the District of Columbia, generating \$4.8 billion in annual revenue—roughly a third of its peak revenues in 2005 before the housing crash. Despite being hit hard by the collapse of the bubble, Pulte survived, while other builders did not, by continuing to look for new markets and honing its design tools. In 2009, the company acquired Centex Corporation, a leader in the entry-level home market. And in 2011, Pulte drew on consumer research to introduce its trademarked “Life-Tested” designs, which offer innovative features to meet the needs of modern families. That same year, Pulte ranked as the country’s largest home builder (in terms of revenue), and one poised to grow during the housing market recovery.

### The Perpetual Motion Machine

Both JCI and Pulte created sustainable, multibillion-dollar businesses that have proven resilient despite the misfortunes of the automotive and construction industries. They built their flywheels in different ways, but still provide common lessons for other companies.

First, both recognized the stagnation inherent in the status quo, and sought to create a step change in customer value by questioning conventional wisdom or practices. JCI sought to become more than a simple contract manufacturer leveraging nonunion wage rates, and Pulte sought to break the trade-off

between customization and cost that constrained other homebuilders.

Second, both companies identified key capabilities that would enable them to compete successfully, and targeted a customer or customer segment that could help them further develop those capabilities. Importantly, they targeted neither the largest customer segment nor the customer that could pay the most per unit. Rather, they sought out an underserved market that would help them learn and refine their alternative business model. In some cases, they added capabilities and market access through M&A: Both companies realized that a well-functioning flywheel is not only an engine for organic growth, but can also provide the strategic logic for acquisitions.

Third, JCI and Pulte both had a “big-picture vision” for their company’s growth, and simultaneously understood the need to work with a customer to learn the myriad small details that no amount of planning or conceptual thinking could uncover. Toyota helped teach JCI how to implement lean manufacturing, and Concord Green provided the opportunity for Pulte to interact with hundreds of customers to build the design tools needed to change the customization–cost paradigm.

Finally, for both companies, the entire picture might not have been clear from the beginning. But each had a line of sight to the next flywheel revolution—that sense that this could be bigger than a single-customer initiative. They leveraged their growth to fund further investment ahead of the competition. JCI used its scale to invest in consumer research and expand its interior portfolio, whereas Pulte used its consumer knowledge to capture purchasing scale and enhance its design tools.

Each nurtured specific competitive advantages to add momentum to its flywheel.

These four characteristics—step change in value, clear target segment, scale in new capabilities, and line of sight to the next revolution—are also found in other familiar flywheel businesses. Consider Walmart, which spent its early years targeting towns that then dominant Kmart had concluded were too small. The company recognized the possibility of a step change in value in towns where the existing alternatives were high-priced local stores with limited merchandise or a suburban mall a dozen miles away. By growing for more than a decade under the radar screen, Walmart achieved the scale to develop the IT systems and logistics network for which the company is now famous. Did Sam Walton foresee Walmart’s becoming the largest company in the world (by revenue)? Probably not, but he certainly did sense that his “everyday low price” model and the efficient supply chain behind it offered innovations to better serve millions of people in the type of middle American towns that he understood so well.

There is great power in linking customers and capabilities this way to create a flywheel effect. But it is important to remember that flywheels can be deceptive, leading to false confidence and hubris. We’re reminded of an article in a rural newspaper of our youth featuring the supposed inventor of a perpetual motion machine. Made of an intricate collection of hand cranks, gears, and chains connected within a menagerie of dozens of old oil drums, the device clearly powered a massive flywheel that would continue to spin the cranks for a long

time once the operator had used the gearing to gradually build it up to top speed. Inevitably, the machine stopped as gravity and friction took their inescapable toll. But the inventor was undeterred, closing the interview with conviction: “I think I just need a couple more barrels.”

Flywheel business models do not achieve perpetual motion, but instead require continued tending to maintain the momentum. Times change, and flywheels are by definition hard to adapt and difficult to control—leaving a business vulnerable to the entry of a disruptive technology. In times like these, it can be tempting to revert to old habits, pursuing bottle rockets. Our advice: Don’t even try to course correct. Even companies with well-oiled machines should continually look for the next flywheel business, always seeking step-function changes by linking a new set of capabilities and customers. The original flywheel inevitably winds down, but companies that have planned ahead will have a new one up and running to take its place. +

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#### Tim Laseter

[laseter1@darden.virginia.edu](mailto:laseter1@darden.virginia.edu)

is a professor of practice at the University of Virginia’s Darden School and other leading business schools. He is the author or coauthor of four books, including *The Portable MBA* (Wiley, 2010). Formerly a partner with Booz & Company, he has more than 25 years of business strategy experience.

#### Jeff Bennett

[jeffb@amphoraconsulting.com](mailto:jeffb@amphoraconsulting.com)

is the founder and managing partner of Amphora Consulting. Formerly a partner with Booz & Company, he is an expert at helping companies think strategically about growth opportunities. He has facilitated discussions on strategy and organization at university executive education programs and at more than three dozen leading corporations.

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