

Reframing Your Business Equation by Tim Laseter and M. Eric Johnson

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Reframing Your Business Equation

Companies and industries are often driven by implicit formulas. Questioning their validity can lead to breakthroughs.

by **Tim Laseter and M. Eric Johnson**

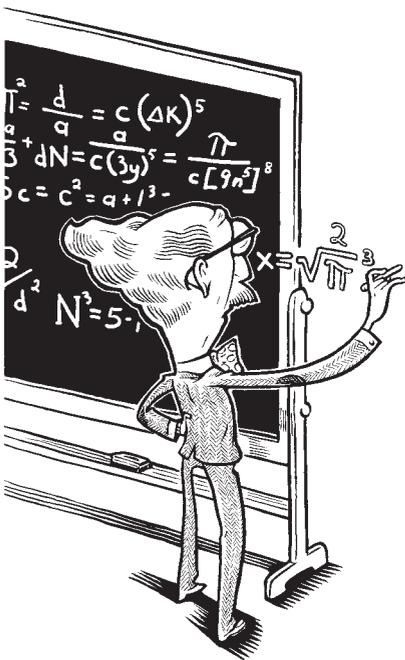
Business is, and always has been, a numbers game. The Phoenicians invented the number zero for “accounting” purposes and laid the foundation for the ongoing quest to quantify business, as embodied by Frederick Taylor (the American mechanical engineer regarded as the father of scientific management), the Whiz Kids (who revolutionized management science after World War II), and today’s oft-livified MBAs. Most general managers will argue that the unquantifiable “soft stuff” presents the most daunting business challenges, but when it comes to thinking about operations strategically, there is no substitute for hard mathematics.

Operations strategy fundamentally demands trade-offs. Accordingly, equations of one sort or another often come to dominate the thinking of managers seeking to optimize the resources at their disposal to achieve the best bottom-line results. Sometimes these equations are formalized and reflect explicit trade-off decisions, as is the case with the economic order quantity (EOQ) formula, which optimizes setup cost

and inventory carrying cost. But more often, managers operate with an implicit set of formulas that may be derived loosely from formal thinking but are in practice based more on trial and error. These heuristics often go unchallenged as they shape the managerial decisions that drive entire industries down a common path. Common, that is, until someone challenges the underlying assumptions and the rote thinking that results from them.

For example, when the Toyota Motor Corporation introduced its new paradigm for what became known as lean manufacturing in the mid-20th century, it might have seemed that it was dismissing the old logic of the EOQ and the mass production mind-set that it had engendered. But a deeper look shows that Toyota actually reframed the EOQ paradigm rather than dismissed it, because the logic of the equation still holds. True breakthrough operating strategies like Toyota’s, in fact, usually result from a reframing of the accepted wisdom.

To drive your own breakthrough strategies, you must first understand the implicit equations that influence management think-



ing in your industry. Once you define them, you can, like Toyota, reframe the equation to produce a new model of competition. By examining a variety of case examples, we have identified a basic method you can use if you dare to challenge conventional wisdom.

From Mass Production to Lean

The EOQ formula dates back to the Industrial Revolution and a 1913 article by Ford Whitman Harris, a self-trained engineer at Westinghouse Electric Company, in *Factory: The Magazine of Management*, a relic of another era. The article showed how to balance the fixed cost of ordering or producing a batch of goods with the cost of carrying the inventory between order periods. Graphically displayed with cost on the vertical axis and “lot size” on the horizontal axis, the elegantly simple solution occurs at the intersection of the upward sloping straight line (for inventory carrying cost) and the downward sloping curved line (which reflects the decreasing “setup” or “one-time ordering” costs spread over the batch size). The formula allowed a manufacturing manager to find the optimal lot size given the input parameters of per-unit carrying cost and per-batch fixed costs.

Today, many practitioners think that the EOQ embodies a way of thinking that’s no longer relevant. In reality, however, the trade-off between inventory carrying cost and setup cost remains. Taiichi Ohno, father of the Toyota production system, knew that — as does anyone with a deep understanding of “factory physics.” Ohno’s innovation was to reframe the equation to solve for setup time rather than lot size.

Inspired by American grocery

stores where consumers “pulled” products from a shelf that was continuously replenished, Ohno concluded that the optimal lot size was one unit. So, instead of trying to find the lot size that balanced setup cost and inventory carrying cost, Ohno sought to drive down setup cost to a low enough level to justify his ideal of a single unit for the lot size. To achieve his vision, Ohno turned to his industrial engineer, Shigeo Shingo, and challenged him to find a way to reduce a stamping press setup time of 12 hours to less than 10 minutes. Shingo and his team succeeded — and, as they say, the rest is history.

To put it in mathematical terms, Ohno solved for a different variable. He did not ignore the equation, but instead decided that what others assumed to be a given could in fact be changed. By reframing the prevailing equation of mass production, he broke the existing paradigm, and, in the process, created a breakthrough operating strategy that revolutionized the automobile industry.

Solving for Customers

Companies love to benchmark themselves against industry competitors, but no two firms are ever directly comparable. To compensate, industries tend to develop equations and associated metrics that adjust for these differences. For example, passenger airlines fly different-sized planes over different routes that cover different distances. But, regardless of those specifics, utilization, or “load factor” — which, on a passenger airline, means the percentage of seats filled — drives the economics. An empty seat represents unused capacity that can never be recaptured.

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As a result, airlines talk in terms of revenue passenger miles (RPMs), a metric that derives from the available seat miles (ASMs) multiplied by the load factor. ASM measures the number of available seats per plane multiplied by the miles per flight. So a 50-seat regional jet flying 300 miles with an 80 percent load factor (i.e., with 40 paying passengers) will produce 15,000 ASMs and 12,000 RPMs. Alternatively, a 300-seat, wide-body plane traveling 1,000 miles with a 50 percent load factor offers 300,000 ASMs and generates 150,000 RPMs per trip. From a profitability standpoint, the price charged per RPM determines the revenue per flight against a highly predictable cost per flight based on jet fuel, equipment cost, and crew cost.

Focusing on this equation, traditional airlines have priced their

were sorted and matched with customers from other cities onto other large planes that could be filled only by the combined demand of all the feeder flights. Such pooling of the demand in and out of the hub kept utilization up and costs down.

When Southwest Airlines Company started up at Dallas Love Field in 1967, founders Rollin King and Herb Kelleher didn't challenge the fundamental logic of the airline equation: They, too, recognized the need to manage the load factor to be profitable. But they focused on different levers seeking to achieving the same objective with a more customer-centric attitude. Southwest offered direct flights between cities and used price as the lever to encourage more demand. The low prices attracted customers who would normally have taken a car or even a bus rather than a plane.

the issue. The focus on "flown miles" failed to capture the fact that routing a passenger through a hub adds needless miles to the passenger's trip. A direct flight between Washington, D.C., and Jackson, Miss., would require only one takeoff and landing to cover the 868 miles. But routing that traveler through an Atlanta hub adds another 260 miles plus an additional takeoff and landing. Because these extra miles are in the denominator of the accepted industry equation for both RPMs and cost per ASM, the hub-and-spoke airlines fooled themselves into thinking their model was more efficient.

Southwest's consumer orientation helped the company avoid the blind spot in the industry equation. A hub-and-spoke model works well for freight — Walmart uses the same logic for its cross-docks to fill truckloads of goods as it routes them from suppliers to stores. Unlike the traditional majors, however, Southwest understood that its customers should not be treated like freight. And by starting with an important variable that its rivals had overlooked — the convenience of its customers — Southwest reframed the industry equation and transformed air travel.

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seats to generate revenues to cover the cost per ASM, and evolved to a hub-and-spoke routing system to maximize the load factor. Their reasoning was simple and logical. Larger planes offered economies of scale to lower the cost of an available seat mile, and the hub-and-spoke system allowed the large planes to cost-effectively serve smaller cities. Their passengers, destined for a variety of locations, thus found themselves on a single plane routed to a hub airport such as Atlanta, Chicago, Dallas, Pittsburgh, or Minneapolis. There the travelers

Southwest also sought to amortize the high cost of the planes through quick turnarounds that kept them in the air earning revenue passenger miles rather than on the ground accruing costs.

As Southwest grew by adding more and more destinations, it continued to stick with its point-to-point model with aggressive pricing rather than using the hub-and-spoke approach. The big airlines failed to fully appreciate the power of Southwest's model because the industry equation under which they were operating obfuscated part of

Accuracy, not Efficiency

The Progressive Corporation offers another example of the power of reframing industry equations by starting with the customer. Unlike most businesses, which seek to make an operating profit, the insurance industry has traditionally accepted a model wherein claims and expenses exceed premiums, but the difference is covered by the return on the investment of premiums. Insurers work to keep expenses as low as

possible, but ultimately make their profits by delaying the payment of claims to maximize the investment return. Progressive challenged this industry paradigm in 1990 with the introduction of its “immediate response” claims service. Embodied by the white SUVs driven by claims representatives equipped with laptop computers, this program paid claims in the field, often at the scene of the accident.

This innovation has been but one of many under the leadership of Peter Lewis, CEO since 1965 and son of the founder. Lewis has inculcated a customer-first philosophy that pushes the company to differentiated service levels unique within the industry. The service mind-set does not ignore the expense side of the equation. But rather than hold the claims to earn additional returns investing the premiums, Progressive realized that claims representatives could do a better job estimating costs by observing the car and accident in the field. These more accurate cost estimates, coupled with the willingness of customers to settle for a claims check in the field to avoid the hassle of the typical claims process, reduced the level of payouts and simultaneously increased customer satisfaction. Furthermore, the early payment typically prevents lawyers from getting between Progressive and its customers. When they do, it’s mostly the lawyers who benefit.

Other insurance providers centralized their claims representatives into a pooled resource to minimize idle time. Their paradigm led them to focus on minimizing this expensive labor cost; Progressive worried little about utilization and instead focused on speed and accuracy. Progressive cares about

expenses as much as its competitors do, but recognized that the real leverage came from more accurate claims settlements, not lower operating expenses.

Incremental to Step Function

Looking beyond individual companies, we can also find that entire functions or disciplines become defined by equations that need to be reframed. Consider the world of information technology (IT), which

a British naval historian. Commenting on the British government bureaucracy in a 1955 article in the *Economist*, Parkinson observed that “work expands so as to fill the time available for its completion,” and later IT observers have commented that data expands to fill the space available for storage. Swiss computer scientist Niklaus Wirth coined yet another law integrating Moore’s and Parkinson’s observations with the unfortunate conclusion that

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has pursued continuous expansion of computing capacity as defined by Moore’s Law. When Gordon Moore, cofounder of the Intel Corporation, noted in 1965 that the number of transistors on a computer chip had doubled every 18 months since the invention of the integrated circuit in 1958, he was simply making an observation of an empirical pattern. But that observation became a “law” that, ever since, has driven the industry toward a goal of continuous expansion of computing capacity. It even led to analogous “laws” such as Kryder’s Law, which has encouraged a similar pattern for the cost of data storage.

Riding this ongoing cost curve, most corporate CIOs have continuously expanded corporate processing and storage capacity, and have then added increasingly complex applications to consume the available resources. This behavior offers a modern example of Parkinson’s Law, coined by C. Northcote Parkinson,

“software is getting slower more rapidly than hardware becomes faster.”

The solution to this incrementalism, perhaps, may be found in a complete reframing of the IT paradigm to embrace the growing power of the Internet and the step-function possibilities of “cloud computing” as practiced by technology leaders such as Amazon and Google. This new construct moves away from the cost curve of individual integrated circuits, or even storage devices, to a paradigm based on the scale and utilization advantages of distributed and shared IT resources, which are available to users with limited knowledge of the inner workings of the infrastructure.

Consider the case of Bechtel Group Inc. For more than 100 years, the giant construction firm delivered one massive global project after another. As IT became available, it was put to work, and over the years the IT infrastructure that supported the firm became ever

larger and more complex. CIO Geir Ramleth realized that even though Bechtel had been successful at continually lowering IT costs, many new technology firms like Google and Amazon were operating on a different cost curve — and as a result were not shackled with the same levels of complexity. Furthermore, Bechtel employees worldwide had come to expect the simple user interfaces offered by these leaders and others, such as YouTube and Facebook, which put internal, homegrown applications to shame.

Ramleth convinced his team that the cost and flexibility benefits of the new approach were so great that it would be worth abandoning the costly legacy systems that the team had developed and supported for years. When the team saw he was serious, they went to work rebuilding the applications that enabled engineering and communication across the globe in a service model, like that used by www.Salesforce.com, where users can employ a familiar Web interface to quickly engage only the needed applications. With development funded by the immediate cost savings, the new network significantly lowered the company's cost structure — fortunately for Bechtel, just as the current business downturn deepened.

From large to small, firms can radically reduce costs and simplify their services by reframing the traditional IT cost equation. Abandoning the incremental model of legacy applications and embracing new models like “software as a service,” companies can fundamentally shift the cost curve and convert a high-fixed-cost structure into one with lower variable costs more in tune with user needs.

Changing Your Equation

As these examples illustrate, reframing your business equation offers the potential for breakthrough operating strategies. The first step is understanding the equations that drive your industry. Since most such equations are implicit, you will need to probe to uncover them. How? Start with the key metrics used to describe performance in your industry.

Next, think about your customers and whether your industry equation fully captures their needs. Finally, couple this customer insight with the equation metaphor. What variables might be added to or subtracted from your equation? Could you solve for a variable previously assumed to be a given, as Toyota did? What if you pushed a service metric to a new extreme, as Progressive did? Would the old “optimal” balance still hold true?

Stop and think about your business equation. Can you reframe it to create a breakthrough strategy that will differentiate you from competitors? It worked, after all, for Toyota, Southwest, and Progressive. It is also working in the IT industry, as evidenced by industry leaders Amazon and Google, as well as for more traditional companies like Bechtel. The only way to find out if it will work for you is to try. +

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