Harvard Business Review
ANALYTIC SERVICES

White Paper

EXPERIMENTATION

The What and How of Digital Competitiveness

Sponsored by

Optimizely

SPONSOR PERSPECTIVE

CARL TSUKAHARA

CHIEF MARKETING OFFICER

OPTIMIZELY

The value of experiences is increasing. Consumer behavior has fundamentally changed, becoming progressively digital and mobile-centric. Unsurprisingly, technology and content have taken center stage and are fundamental to how brands connect and enhance the customer experience. Simply using historical data to make decisions about new digital experiences has diminishing returns in a world where customer expectations and behaviors are changing more rapidly. Brands must build and deploy experiences that are forward-thinking and differentiated and can directly drive improvements in measurable business objectives, customer loyalty, and conversion.

Critical to this is the concept of digital experimentation, or more simply, the concept of rapidly innovating, testing, and learning which digital product features, campaigns, or commerce experiences will predictably drive the desired business outcome. Experimentation guides the proper product and marketing decisions by providing statistical evidence and highly reliable outcome forecasting that eliminate the guesswork in digital decision making.

Leading companies apply digital experimentation to get—and stay—ahead of the competition. European media giant Sky notes that frequent testing is necessary to keep up with constantly evolving customer expectations. Data gleaned from frequent iteration has also guided executive decision making on omnichannel innovation at HP, a cultural shift from reliance on experience and intuition. The experimentation program at Gap Inc. has helped them address strategic questions throughout their brand portfolio and grow their online business, while the *Wall Street Journal* is boosting subscription renewals through testing.

Done correctly, the experimentation examples outlined in this paper can have a massive, cumulative effect on the business performance of any traditional or emerging company. To take this a step further, this discipline is no longer a "nice to have"— it's a competitive "must have." Through large-scale experimentation programs, giants such as Amazon and Netflix have out-innovated and out-executed all competition in the digital domain. *Harvard Business Review* previously outlined the essential need for digital experimentation in their 2017 article "The Surprising Power of Online Experiments."

The aforementioned companies have achieved this state of digital competence and excellence through continued focus and investment in their experimentation programs. We recommend that in order to achieve similar results, every organization must consider how to:

- Set up and define the core business outcomes desired by your overall digital programs or transformation initiatives.
- Apply experimentation at pace to the full life cycle of a digital experience, implementing rapid ideation, testing, and learning at every stage.
- Utilize an enterprise-caliber experimentation software platform that enables massive scale and helps grow digital maturity.
- Embed this skill set in the development and deployment of products, commerce, and campaign initiatives across both the product and marketing teams.
- Engage with the proper partners that can help companies implement technology components, strategies, and organizational structure to evolve or expand this evolution to an experimentation-led culture.

Organizations big or small must look to experimentation to drive continuous iteration and innovation across all areas of their digital business. To keep pace with accelerating digital transformation, companies must act now to reap the handsome rewards that hundreds, even thousands, of incremental improvements can bring to the bottom line.

To learn more about how Optimizely can help you achieve digital leadership, please visit www.optimizely.com.

EXPERIMENTATION

The What and How of Digital Competitiveness

Why experimentation is more than testing

INTRODUCTION

Many organizations are scrambling to boost their analytics capabilities and digitally transform their businesses. They are also under intense pressure to improve their innovation acumen in the quest to find the next breakthrough idea before anyone else does.

But these aren't the only paths to digital competitiveness. They can even cause companies to miss the boat. Analytics, for example, focuses on past history, and even the most sophisticated predictive capabilities can miss market changes happening right now. Although breakthrough ideas are powerful, they are exceptionally difficult to come up with and bring to market. Enter enterprise-wide experimentation programs—where companies test and learn how the market will react to new product features, marketing messages, and user experiences and gather statistical evidence to make decisions.

Experimentation is emerging as the next major digital capability that will separate business winners from losers. When done at scale, an enterprise-wide experimentation program can increase performance up to fivefold in revenue, share of wallet, prospect conversion, risk mitigation, or product deployment efficiency. Even small improvements can add up quickly and beat competitors to the punch.

Some companies have been at it for a long time. Microsoft, Amazon, and Facebook, for example, conduct 10,000 or more experiments annually, according to Stefan Thomke, a professor at Harvard Business School and an expert on experimentation and optimization. However, digital experimentation isn't the domain of only digitally native companies. A recent *MIT Sloan Management Review*[1] study found that digitally maturing entities across all industries are more likely than their less-mature peers to experiment at the enterprise level. Enterprise-wide experimentation is, in fact, a mark of digital maturity. FIGURE 1

As products, services, and customer experiences move online, businesses have broad new vistas in which to experiment with millions of customers. And they can do it quickly and frequently. Moreover, this capability can identify the most current market changes in near-real time—a major challenge for most companies.

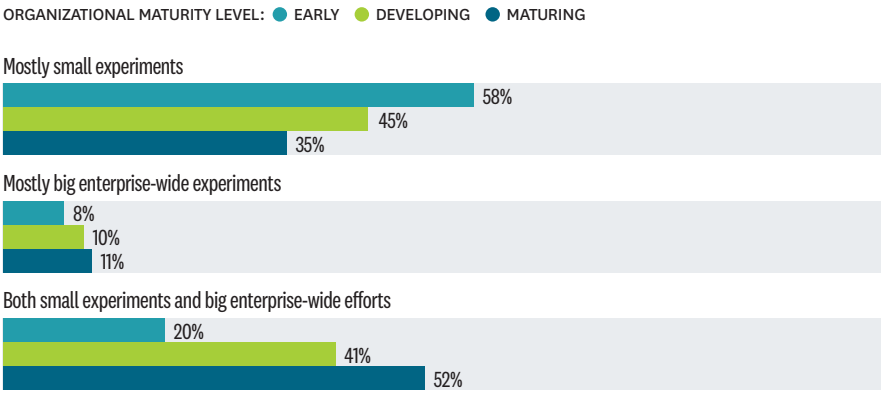
ENTERPRISE-WIDE EXPERIMENTATION:

Test and learn how the market will react to new product features, marketing messages, and user experiences and gather statistical evidence to make decisions.

FIGURE 1

IMPLEMENTATION OF EXPERIMENTS

When my organization implements digital initiatives, they tend to start as:



Charts do not equal 100% due to "do not know" responses.

SOURCE: ACHIEVING DIGITAL MATURITY, MIT SLOAN MANAGEMENT REVIEW RESEARCH REPORT, JULY 13, 2017

Enterprise-wide experimentation also bolsters innovation by reaching out across the organization to generate as many ideas as possible. As employees see their ideas put to the test and produce revenue, the momentum builds. This original research report, based on interviews with executives and other subject matter experts, delves into the rise of experimentation as the next major digital corporate capability and how companies are making it work.

Why Experiment in Overdrive?

Testing an idea—building a prototype, running direct mail tests, conducting focus groups and user tests—has been standard procedure for decades. But in recent years, enterprise-wide experimentation has burgeoned into a core capability that drives digital competitiveness. With the pervasive digitalization of business, companies can quickly and accurately test their web site experiences, back-end operational effectiveness, product features, offers, and marketing messages.

Rita Gunther McGrath, a professor at Columbia University's business school and creator of Discovery-Driven Planning, stresses that the speed of business and technology's ability to eliminate or reduce friction in the market is forcing companies to experiment aggressively and quickly. "The typical cycles of design, developing requirements, and creating technical specifications just takes too long," she says. "The gradual disappearance of so many frictions in business is driving much of the intense speed." As an example, she points to audio books, which are becoming more popular than the written versions. Before the Internet, people had to carry around a device with cassettes or disks. Now they can stream books in seconds anywhere.

Ryan McManus, investor, startup advisor, board director, and previously founder of Accenture's digital strategy transformation business—points to several other seminal market changes that call for enterprise-wide experimentation programs. First, products are becoming quickly commoditized. To keep their customers, businesses have to constantly improve digital products and experiences. As Jeff Bezos, founder of Amazon, Inc., said in a recent earnings call with investors, "One thing I love about customers is that they are divinely discontent. Their expectations are never static—they go up. It's human nature."[2]

Waning customer loyalty adds to the pressure as clientele are easily swayed to opt for expensive products or go for a better deal, including products enhanced with new digital capabilities. Customer expectations are advancing at breakneck speeds, and most companies have inadequate sensors to spot changes in time to react. "What was right a year ago when you were planning is not necessarily right today," says Abdul Mullick, head of digital transformation at European media and telecommunications company Sky.

The rise of approaches such as agile is another harbinger of the growing importance of experimentation. "Many companies are moving toward an agile enterprise and changing the whole way that they think about making changes to everything they do," says Paul Wilmott, a senior partner at McKinsey. "They are moving away from traditional project timelines toward the speed that agile provides. And that is arguably all about experimentation."

"What was right a year ago when you were planning is **not necessarily right today**," says Abdul Mullick, head of digital transformation at Sky.

The Impact at Scale

The number of companies where enterprise-wide experimentation is having a significant impact on performance is steadily climbing. Businesses are using it to develop rapid-fire improvements in everything from digital product features and commerce to overall business outcomes, including revenue, prospect conversion rates, and profitability.

Microsoft's Bing search engine, for example, added an eye-opening $50 million in annual revenue by experimenting with different ad sizes. Advertisers wanted larger ads. But these take up more web real estate and can also decrease user satisfaction. So the company ran experiments testing larger ad sizes while not increasing the amount of space devoted to advertising. The result of showing fewer but larger ads: hefty contributions to annual revenue.

Amazon added tens of millions of dollars annually to its bottom line by experimenting with the placement of credit card offers on its web site. Through a series of experiments, Amazon found that many more customers take up a credit card offer if it is on the shopping cart page versus the home page.

Since it began a formal experimentation program in 2015, Dow Jones has been able to boost the new order conversion rate for the *Wall Street Journal* by 64% through online tests. According to Peter Gray, who heads the experimentation program for subscriptions and memberships, the revenue impact has been in the millions.

Experimentation programs can also address thorny strategic questions. Gap Inc.—which owns Gap, Banana Republic, Old Navy, Athleta, and Intermix—was mired in a common debate: Can the company encourage customers to shop across all its brands from each web site without cannibalizing sales? Noam Paransky, senior vice president of digital, found out that it could be quite profitable. "We experimented with the prominence of the brand logos across the header of our website and found that by just making them 5% larger, the website drove significantly more referral traffic to all the sites," he says. "We know that customers who shop more than one of our brands have 10 times the value of a 'one and done' customer, and that multiplier increases significantly over their lifetime." Focus on new experiences online has had strong results; fourth-quarter online sales alone leapt by 30% compared to the previous year.

Results such as the above don't come from a few experiments here and there. According to Thomke, companies with robust experimentation programs get better hit rates—Microsoft averages about 30%, according to Thomke—while companies that are limiting themselves to a handful of experiments face very small odds of success. These companies also face even greater odds of being trounced by a competitor with a more aggressive experimentation program.

"CEOs need to **coach company leaders and inspire them** to encourage new ideas and experiments and assure that results are promptly turned into action," says Professor Rita Gunther-McGrath, Columbia University.

Yahoo! and Google are prime examples, according to Thomke. Yahoo! wanted to challenge Google's leading position in search. Google had a formal experimentation program, and Yahoo! established one as well. Although Yahoo! developed some compelling innovations, Google simply outran them. Google simply outran its competitor.

The Power of Incremental Improvement

Companies that are successful with enterprise-wide experimentation conduct experiments on a very large scale. Global entities with established programs may conduct 10,000 or more experiments a year. But even nascent programs run several hundred. The results of these experiments are often small. But because of their sheer volume, they can lead to dramatic performance improvements.

Experts often complain that companies are locked into incremental improvements that don't move the needle. But not all companies need to or should rely on blockbuster new ideas.

As an example, one expert describes a company that conducts 1,000 experiments per year. If an idea meets muster every three days and provides as little as a 1% annual improvement, the company will double its performance in only one year. And it will also have a powerful view of the market that can help it repeatedly move the needle.

What Does Good Look Like?

Enterprise-wide experimentation programs do more than collect reliable and accurate data for decisions. By-products of the effort include overcoming debates about the accuracy of data and improving the organization's innovation culture.

Ending Data Debates

One of the biggest challenges companies face in using data for decisions and innovation is the frequent disagreement about what the numbers mean and what's behind them. Experimentation can supply a healthy stream of very clear and reliable market data if experiments are conducted properly and tied directly to measurable business outcomes.

Some experts lament that much experimentation in business and other fields does not consist of controlled experiments. The usual process takes data, looks for correlations between variables, and surmises that correlations indicate that one variable caused change in another. Sometimes the number of correlations is overwhelming and convincing, such as the relationship between smoking and various diseases. But more often than not, correlations can be misleading.

For example, medical science has suffered embarrassment based on uncontrolled studies—basically observational studies of an entire population over time—that made inaccurate assumptions about causality. For example, eating eggs was once frowned upon because there was a correlation between egg consumption and high cholesterol. But scientists later discovered that avoiding eggs had little or no positive effect on cholesterol levels. If the body's cholesterol goes too low, it manufactures more to reach a basic level.

There are also plenty of examples in business. A major retailer, for example, wanted to test the impact of a new store design. So it tried the new ideas in a number of locations, and the results were strong. But when the company rolled out the new design to more of its stores, the results were much lower. The retailer failed to account for different variables affecting different locations: competitors opening new stores nearby, factories or other major employers moving, and the corresponding impact on shopping.

Controlled experiments eliminate the problems of not knowing all the variables at play and confusion about what the numbers mean. They divide a test population into two different groups. One is given the new idea. The other group, which has the same characteristics as the first, is not shown or given the change. Thus, the results can be nearly definitive, since the experiment measures any change in behavior among identical groups.

A New Take on Creating a Culture of Innovation

Although discovery is the main objective, an enterprise-wide experimentation program also changes the culture and senior executive involvement in innovation. The data from experimentation replaces position in the corporate hierarchy as the basis for decisions. In addition, the need to feed the experimentation program with a steady flow of compelling ideas brings practically everyone in the organization into the innovation fold.

The CEO should step center stage to drive the effort. It is his or her responsibility to champion experimentation, and the CEO should frequently ask about what experiments are being conducted and champion the successes. CEOs also need to build buy-in on the part of other senior executives whose roles in the organization will change. "Executive leadership devolves from its traditional role," says McGrath. "They no longer make all the decisions. The data assumes that role. CEOs need to coach company leaders and inspire them to encourage new ideas and experiments and assure that results are promptly turned into action."

Sometimes experimentation will be warmly received by executives if experiments are conducted with rigor and the surrounding data is reliable. "Before we launched our global experimentation program, executives had very little data and had to rely on their own preferences and sense of intuition," says Herriot Stobo, director of omnichannel innovation and solutions at HP Inc. "They were actually happy to have definitive data and were ultimately very open to changing direction based on what our customers were telling us."

Pontus Siren, a partner at the innovation consultancy Innosight, points out that many executives may be comfortable using data but have little experience in creating it. "An experiment is an effort to create unique data that other companies don't have," he says. "Business leaders have to create the data, which is a very different exercise. They need to understand the basics of experimentation and how to act on the results."

"AN EXPERIMENT IS AN EFFORT TO CREATE UNIQUE DATA THAT OTHER COMPANIES DON'T HAVE," SAYS PONTUS SIREN, A PARTNER AT THE INNOVATION CONSULTANCY INNOSIGHT.

To feed the enterprise-wide experimentation program, organizations need to harness new ideas from across the enterprise. Experiments generate near-real–time insights into market changes, which spur the creation of even more new innovations, especially as people see their ideas being taken seriously. At Sky, for example, all ideas are put to the test unless they would be impractical to implement or run afoul of regulations.

Experimentation programs need analytics professionals. In addition to designing experiments, they can help the CEO and other executives build momentum by demonstrating to the company what good experimentation looks like and the results it can deliver. Enterprise-wide experimentation often starts as a centralized unit, with analytics professionals working with marketers, usability specialists, product managers, and business unit strategists. They can then grow into a center of excellence to make experimentation a part of every business unit and function.

By and large, the skills of middle managers don't need to change that much. But these managers must become deeply familiar with technology and understand the basic discipline of experimentation and analytics. That allows them to work effectively with analytics professionals or use platforms that provide self-guiding tools and templates. "Managers often enter experimentation programs sleepwalking," says Mullick. "That can result in oceans of poorly constructed experiments, which will affect the results."

A platform to manage multiple experiments across the enterprise is critical, says McManus. Enterprises need to know exactly what experiments are being run, how they are managed, criteria for continuing with or disengaging from experiments, and how other changes in the enterprise affect the innovation portfolio. Without that knowledge, variables could change without the experimenter realizing it, which will produce "useless data," says McManus. Platforms can also include tutorials and templates for managers to conduct some of their own experiments, which can be monitored on the platform.

Tying experimentation into overall corporate goals and measures is also critical according to Gap Inc.'s Paransky. For Gap Inc., enterprise-wide experimentation is the vehicle that drives the company's digital transformation. "Experimentation is embedded in almost everything we do as a company," he says. "We have enterprise goals around digital transformation that cascade through the organization. Testing and learning drive our digital evolution and transformation."

They are also the anchor of the company's continuous learning process. "We're constantly using experimentation to drive our continuous improvement," he says. "The key is that we're focusing on the biggest wins, the biggest levers in terms of what we're experimenting with."

"Experimentation is embedded in almost everything we do as a company. We have enterprise goals around digital transformation that cascade through the organization. **Testing and learning drive our digital evolution** and transformation," says Noam Paransky, senior vice president of digital, Gap Inc.

Experimentation also plays a seminal role in helping organizations spot and keep pace with radical change in their markets. According to a 2018 *MIT Sloan Management Review* report,[3] many companies simply throw money at technology disruption in the quest for the next big idea. Experimentation hones market knowledge and also provides key insights for the success of existing businesses.

Finally, organizations that are most successful in leveraging enterprise-wide experimentation programs have conquered much of the fear of failure that plagues many company cultures. The sheer volume of experiments makes it easy to show how each idea leads to another and reaches a positive outcome. The team looking after Sky's web-based self-serve platform, Sky.com, leverages the volume of tests it does and its high success rate to create a "safe zone," where failures are celebrated and the stigma of coming up with an idea that doesn't pan out is significantly lessened.

Getting the Ball Rolling

Despite the power of enterprise-wide experimentation as the primary competitive tool in a digital age, most companies seem to struggle to get out of the starting gate. To get the ball rolling, McGrath suggests that companies focus on three core capabilities.

Ability to create ideas: Businesses need people who can come up with ideas. These individuals should come from all parts of the company, especially those on the front line.

Incubation: Companies need sophisticated experimentation capabilities and the ability to act on data.

Acceleration: Many ideas will have operational implications for everything from customer care to regulatory compliance. Businesses need to be adept at adjusting their operation quickly and effectively.

EXPERIMENTATION ALSO PLAYS A SEMINAL ROLE IN HELPING ORGANIZATIONS SPOT AND KEEP PACE WITH RADICAL CHANGE IN THEIR MARKETS.

Top Down or Bottom Up

CEOs and senior executives often drive experimentation programs. Dow Jones, Gap Inc., and HP Inc. started by creating a centralized unit with senior managers, fostering collaboration between the unit and the rest of the organization. Sky started with a center of excellence and is planning to federate the experimentation program. Executives are making sure that managers understand the fundamentals. They have also installed a platform that will provide "self-serve" capabilities for basic experiments.

McGrath points out that bottom-up efforts can also be successful. She cites an air company where the chief innovation officer built the experimentation program from the ground up and under wraps. Senior executives began noticing that they were receiving proposals with a similar format and based on experimentation data. The quality of the proposals prompted the C-Suite to find out how they were being created, and then it launched an experimentation program across the enterprise.

ENTERPRISE-WIDE EXPERIMENTATION CAN TURN INCREMENTAL IMPROVEMENTS INTO DRAMATIC GROWTH.

Conclusion

Controlled experiments are rising as the primary core capability of digital competitiveness. Analytics are important and foundational, but they are based on the past and may not accurately identify what is changing at this very moment. Customer research can be valuable but needs to be validated.

Dow Jones, for example, posed a simple research question on the home page of the *Wall Street Journal* asking if readers wanted a print-only offer or a package that also included online access. To the company's astonishment, the vast majority selected print only. But then Dow Jones ran an actual test and found that four times as many customers opted for the print and digital package instead of print alone. "Research can be very powerful directionally," says Dow Jones' Gray. "But your entire premise or your interpretation of the research could be in fact quite inaccurate."

Although managing by data changes the role of executives and managers, companies are achieving broad buy-in and creating innovative cultures. As the results pour in, they build credibility, and new ideas add to the company's fortunes.

Amazon's Jeff Bezos once extolled the importance of experimentation with an analogy to baseball. In baseball, an "at bat" can score four runs at the most (runners on all bases). "In business, every once in a while you can score 1,000 runs. This long-tailed distribution of returns is why it's important to be bold. Big winners pay for many experiments."[4]

ENDNOTES

1 "Achieving Digital Maturity," *MIT Sloan Management Review* research report, July 13, 2017
2 Amazon 2017 letter to shareholders, April 18, 2018
3 "Coming of Age Digitally," *MIT Sloan Management Review* research report, June 5, 2018
4 Sonia Thompson, "Jeff Bezos Credits Amazon's Success to This One Thing. Too Bad Most Companies Aren't Willing to Do It," *Inc.*, August 1, 2017

Harvard Business Review
ANALYTIC SERVICES

hbr.org/hbr-analytic-services

CONTACT US

hbranalyticservices@hbr.org