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Everything You Need to Know About A/B & MULTIVARIATE TESTING

A Digital Marketing Primer

Section 1

The ABCs of CXO

Hyper-Competitive Landscape: Why You Need CXO

Marketing is as demanding as ever. In most if not all sectors, the competition is abundant and fierce. In the U.S., there are more than 100,000 e-commerce retailers—a 13.5% increase from last year.[1] Since 1999, the number of American consumers who use travel sites to book trips has risen from 15 million to 70 million.[2] Online news is booming, too, with investors flocking to capitalize on an economic bubble.[3]

With so many sectors growing in scope and profitability, customers see tons of digital content. Every day, website and application users receive more offers, information, and ideas than they can meaningfully interact with. Companies must therefore distinguish themselves from competitors by delivering good customer experiences—content that intrigues, engages, and is useful, vivid, and memorable.

Customer experience optimization (CXO) helps content reach this potential. CXO is an essential technique in modern marketing, in which businesses give individual customers unique experiences based on their goals, needs, beliefs, interests, and demographics. With greater customer insight, companies can tailor-make content that drives visitors deeper into the sales funnel. Research shows when customers feel personally understood, they're more likely to convert.[4] Optimized content, then, is so valuable because it encourages prospects to become purchasers, and purchasers to become advocates.

Segments & Roadmaps: How To Start CXO

In order to implement CXO, digital marketing teams must first lay groundwork in the form of audience **segmentation** and campaign **roadmapping**. Businesses segment to place customers into preference- or demographic-based groups, which streamlines and codifies how companies engage with people at various positions in the sales funnel. Groups can be simple—for example, everyone who lives in Chicago—or complex: everyone who lives in Chicago, is 25 to 34 years of age, and has previously searched for the term "winter jacket."

Roadmaps are also key to CXO success, enabling businesses to establish goals, KPIs, target audiences, and methodologies before starting an optimization campaign, which maximizes resource efficiency. Optimization campaigns are comprised of optimization tests, which can be **A/B tests** or **multivariate tests (MVT)**. With both A/B and multivariate testing, companies try to discover the best web, mobile, and application experience for each customer segment—that is, the experience most likely to yield the most conversions.

These tests yield findings that explain and contextualize current customer behavior. They also help organizations sharpen how they move customers through the funnel, be the final goal account creation, purchase, email sign-up, or anything else. The more data companies already have on sector and customer trends, the more well-informed their tests can be; the more well-informed their tests, the more likely the tests are to give high-quality results.

A/B & MVT: How To Test For CXO

The bedrock of CXO is A/B and multivariate testing, which enable marketers to experiment with their content by creating and delivering different experiences. Both forms of testing help companies improve optimization by testing the efficacy of branding, site redesign, pricing strategy, personalized offers, and more.

These two forms of testing are similar in some ways: Both can target multiple segment groups at once, and both compare different experiences in real time. Both can also test for multiple success metrics at the same time, and do this by splitting traffic between versions. Careful attention must be paid to ensuring each version gets enough traffic to yield statistically significant data.

> We'll explore the similarities between these two forms of testing in greater detail in the next two sections, as well as shed light on their significant differences.

Section 2

Just What Is **A/B Testing?**

The Fundamentals

A/B testing is a form of optimization testing in which two versions of an experience are compared against each other: Version A, the **control**, and Version B, the **challenger**. A/B testing is also called **'split testing,'** because it splits visitor traffic between the two versions. (Multivariate testing also splits traffic, but it usually is not called 'split testing' in the optimization community.) Traffic can be split by any percentage and does not have to be 50-50.

The goal of A/B testing is tied to its two most common use cases. Businesses often use it to compare **highly similar** customer experiences, in which Versions A and B are almost identical save a single element, and **very different** experiences, in which a wide range of changes have been made to Version B. Both uses can give great insight into customer behavior.

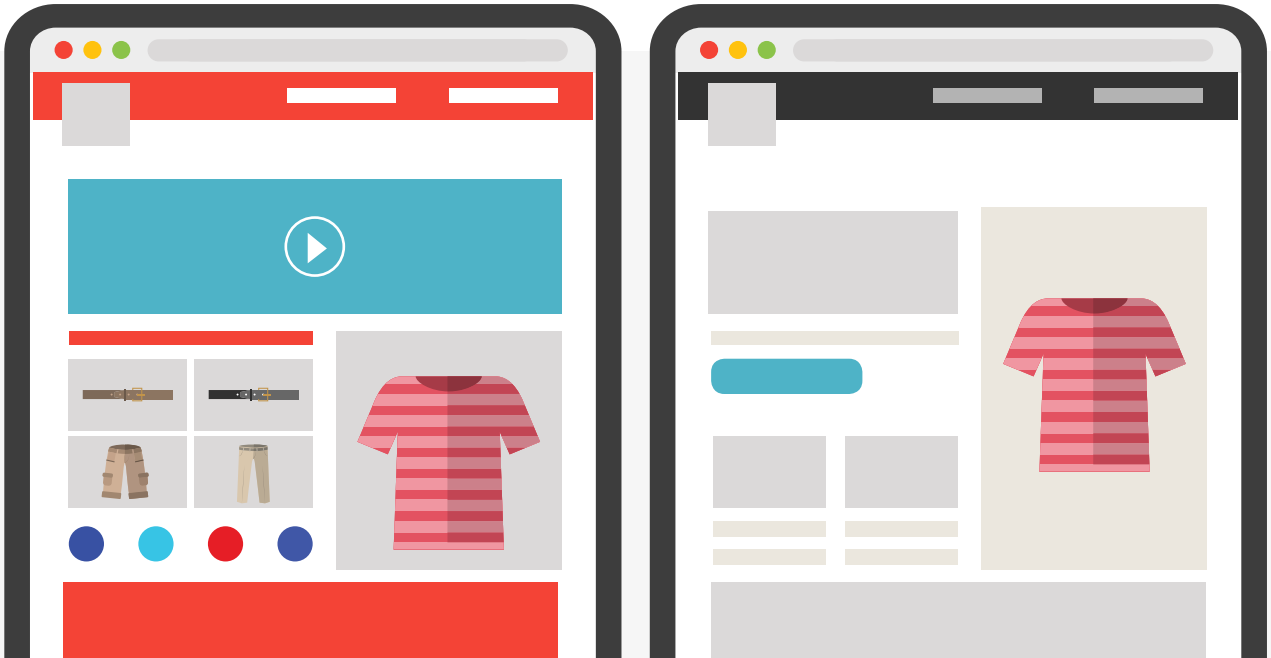
Marketers who use A/B testing to compare highly similar versions learn how the one element that changed from Version A to Version B directly affects conversion rate. Marketers who use it to analyze two very different experiences are often struggling to choose between two different CXO philosophies, so testing two extremes helps them quickly find a good starting point.

A (Hypothetical) Retail **Case Study**

As an example, let's explore the optimization efforts of a fictional mid-sized retailer, Merrimack Clothes, which wants to learn if its home page drives more people through the checkout funnel with a complex visual layout or a simple one. Its complex layout, which has been built but not implemented, bursts with images, video, copy, and social buttons, and also has an intricate color scheme. Its simple layout, which is live, has fewer elements and more muted colors.

These are two drastically different ideas, and Merrimack's higher-ups can't decide between them. Some of its executives think, 'If ain't broke, don't fix it,' remembering that Merrimack became a notable New Hampshire chain on the strength of its simple design. Others point to how complex their competitors' layouts are, as well as Merrimack's recent stagnant growth, and say it's time for a change. By testing simple Version A head-on against complex Version B, Merrimack will gain much-needed clarity on its CXO future—no matter which version wins.

But what if the retailer is a little hesitant about its first foray into optimization testing? In this case, it can employ the other use of A/B testing: a comparison between two extremely similar experiences except for a single element. Its current site doesn't have video, for example, and video would be a new feature added with a complex layout. Merrimack can test the waters (no pun intended) by installing a section on its home page for video content: one-minute testimonials about the high quality of its clothes, for example. This will enable the company to quickly determine if the presence of video, as an individual element, positively or negatively impacts conversion rate.



Section 2 (Cont.)

Simplicity With a **Price**

All the advantages and disadvantages of running an A/B test are grounded in its simplicity: two versions enter the ring, only one leaves (unless there's a tie). Compared to multivariate testing, in which at least four (and often more) versions are analyzed, A/B testing often demands fewer resources and less expertise of the companies that use it. This helps testers start optimization campaigns faster and with fewer barriers. Also, because only two versions have to receive enough traffic to yield statistically significant results, an A/B test typically doesn't need as much website or application traffic to generate valid, valuable data results.

However, the simplicity of A/B testing does come with a price. Its biggest disadvantage is its tendency to produce results that are less actionable, nuanced, and specific than those produced by multivariate testing. This is because A/B testing does not let marketers examine the individual elements that come together to form Version A and Version B. In A/B testing, the two experiences are compared to each other as whole packages: No individual element in Version A or B can be compared to another element in Version A or B, which blurs how the elements work together and impact each other.

This is a problem for marketers if they use A/B testing to compare very similar or very different experiences. Even if only one element is changed from Version A to B, testers have a limited understanding of that element in general, since they've only seen it in two experiences. The challenge is even greater for marketers who run A/B tests to compare highly dissimilar experiences: The more different the challenger version is from the control, the less companies can know for sure what caused any change in conversion rate between the two versions.

In 2011 [Google] ran more than **7,000 A/B tests** on its search algorithm. Amazon.com, Netflix, and eBay are also A/B addicts, constantly testing potential site changes on live (and unsuspecting) users.

Brian Christian
Wired Magazine

Section 3

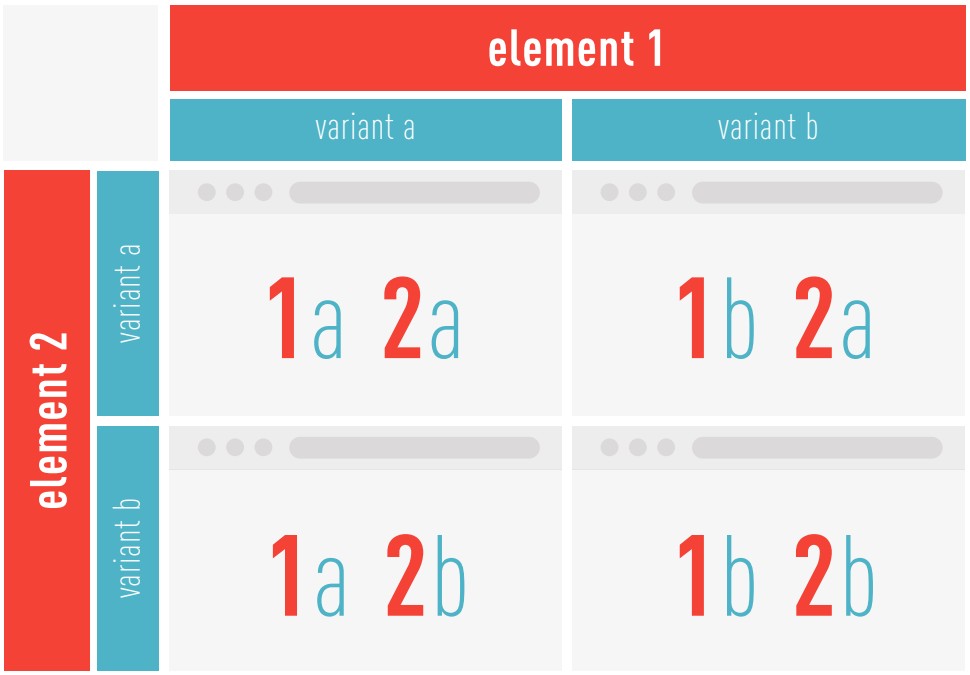
Illuminating MVT

Number of Variants Times Number of Variants

Unlike A/B testing, multivariate testing evaluates at least four versions of a customer experience. This is because MVT must compare at least two **elements** against each other, and each element must have at least two **variants**.

Companies can calculate the number of experiences a multivariate test will yield by multiplying the number of variants for each element. For example, a website test with three possible headers, five color palettes, and two calls-to-action will have 30 different versions to deliver its visitors (3 x 5 x 2).

MVT often analyzes more than its minimum of four versions, as there's no limit to how many elements a test can contain or how many variants each element can have. However, marketers must carefully consider time and traffic. A website or app needs enough visitors to split between each possible version; otherwise, it won't produce statistically significant results. Also, the more elements and variants a test compares, the longer it has to run. For this reason, using MVT may require greater optimization expertise.



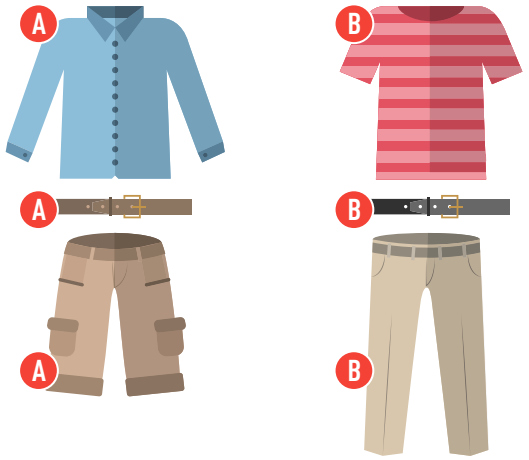
Getting Granular

Although the most obvious difference between A/B and multivariate testing is the number of options companies can compare, that isn't the most important difference between the methods. The most important difference is the level of detail with which MVT lets people investigate the experiences they build and test.

While A/B testing keeps things high-level, MVT dives into the granular dissimilarities between each customer experience. This enables marketers to discover and explore the individual impact each element and each variant has on conversion rate. MVT helps companies move from macroscope to microscopic in customer experience analysis. Instead of forcing testers to make educated guesses about why a version was successful or not (which must occur when versions can only be tested as wholes), MVT lets people zero in on the elements, variants, and combinations that work.

In short: A/B is simpler but yields simpler results. MVT can be more difficult to launch but provides more detailed customer insight. An A/B test can streamline decision-making and point people in a right(-ish) direction if they're stuck between two CXO mindsets, but MVT illuminates the exact path that leads to the most conversions.

A/B Testing



MVT Testing

Our Example:

Shopping for the **Best Version**

Digital testing can be explained in a more brick-and-mortar context for easier unpacking.

Let's imagine there's a customer at Merrimack Clothes (lured to one of its offline locations by its high-quality website, no doubt) who wants to buy an outfit. More specifically, he wants to build an outfit from individual clothing items he sees in the store. He picks six items to try on: two shirts, two belts, and two pairs of pants, which altogether can yield eight different outfits if mixed-and-matched (2 x 2 x 2). The customer is pressed for time, though, so instead of judging all possible outfits, he makes two different outfits to choose between as wholes. Each outfit is composed of a shirt, belt, and pair of pants, and each outfit uses the shirt, belt, and pair of pants the other didn't use. Effectively, he's running an A/B test, and he's doing it to compare two highly dissimilar versions.

With this approach the customer can more easily pick a winner; he saves time and avoids analysis paralysis. This approach is also wise because outfits are generally best judged as the sum of their parts: Combining his favorite shirt with his favorite belt and his favorite pair of pants is not guaranteed to produce his favorite outfit—or even a good-looking outfit.

Time or thoroughness?

But there are cons to the customer's approach, too. First, even if he likes one of the outfits he assembled, it's possible he could make an even better one: There are six possible outfits he hasn't even seen, and while there's a chance he's already seen the one he'd like best, the odds of this are slim, at just 25% (two outfits seen of a possible eight). Secondly, while he may think an item looks good or bad in general—the red striped shirt was better on the mannequin, for example—he has a biased view of each item. He's only seen each piece of clothing one time in one context, when each item has four possible combinations it could be paired with.

Mixing-and-matching would be a good solution here, as it's equivalent to running a multivariate test: comparing each element with and against each other element to see what works as a cohesive whole, of all possible options. The customer could trade time and simplicity for more certainty he's made the best choice. However, this sort of deep dive is not always practical: If he'd had just one more of each kind of item, he'd have had 27 options to choose from. Likewise, testers must weigh the circumstances before choosing between A/B and multivariate testing.

Section 4

Two Methods, **Many Possibilities**

As sectors grow increasingly more competitive, companies must deliver experiences that resonate with customers on a personal level. Optimization testing enables businesses to do this with precision, confidence, and efficiency.

A/B and multivariate testing are two powerful forms of optimization testing, with unique specialties, uses, and capabilities. Both methods can produce insights that elevate business value, and both strengthen the sales funnel by sharpening personalization efforts through greater contextualization of customer data. Both methods help companies make big decisions and empower digital marketers to give better content in real time to all segments.

It's essential to understand the advantages and disadvantages each method brings to the testing table—and to use A/B and multivariate testing to improve conversions with the right amount of resources and expertise.

Get In **Touch**

> Each test you run is a **little lesson**, teaching you something about **the audience.**
>
> Jon Correll
> **CEO & Founder**, Conversion Voodoo

[1] Belicove, Mikal E. **"How Many U.S.-Based Online Retail Stores Are On The Internet?"** Forbes. Sept. 18,

[2] **WWW Metrics. "Growth of the Travel Industry Online."**

[3] Launder, William. **"News Websites Proliferate, Stretching Thin Ad Dollars."** The Wall Street Journal. Jan. 27,

[4] Demand Metric. **"A Guide to Marketing Genius: Content Marketing."**

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