

# E-COMMERCE TESTING GUIDE

# 2020/2021

- ► E-Commerce Testing Best Practices
- Understanding the different types of Testing and Device Coverage



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# 1. Purpose of This Guide

Over the past 12 years, we've tested hundreds of mobile applications and e-commerce websites for dozens of companies that sell millions of products every year around the world. In this guide, we share some of our knowledge about e-commerce testing and all the aspects you need to take into consideration prior to launching your e-commerce.

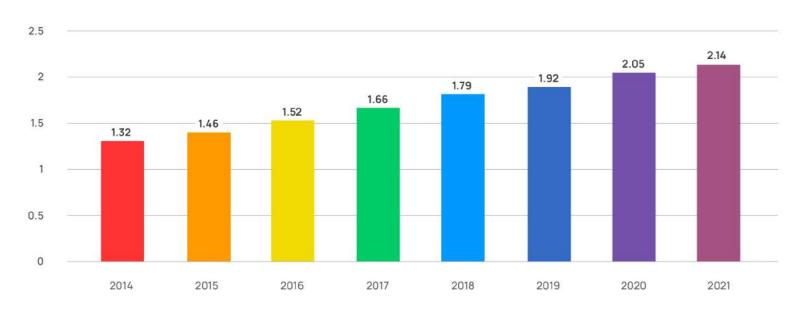
The success of a product consists of giving a positive user experience, an easy way to find and customize a product, and a functional and accessible website in a secure environment.

Through this guide, you will learn not only the basics about successfully testing for e-commerce but also introducing accessibility to your e-commerce site so it is prepared to launch for a global audience.



# 2. E-Commerce: The Shopping Revolution

#### Number of digital buyers worldwide from 2014 to 2021 (in billions)

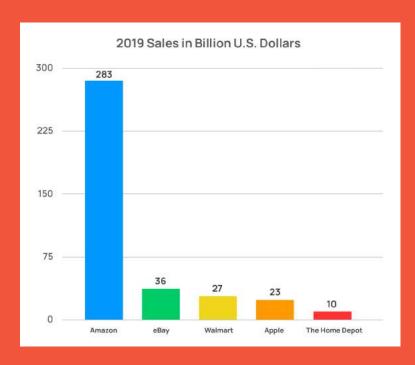


#### Preparing for the rise in e-commerce activity

By the end of 2020, the US is projected to spend \$338 billion in the e-commerce sector alone. 16% of the total retail sales in the US happen online. By the year 2021, worldwide retail e-commerce sales are estimated to reach \$4.9 trillion.

Cyber Monday total sales hit \$9.4 billion in 2019 - up nearly 19% from the year prior, according to Adobe Analytics.

According to Statista.com, in 2021 it's projected that there will be 2.14 billion digital buyers. It's important to look at your e-commerce projects as a part of the digital marketplace where those 2 billion+ buyers will be making purchases.



# ? Who are the 8 largest e-commerce companies in the world?

- 1. Amazon
- 5. Rakuten
- 2. Jingdong
- 6. B2W
- 3. Alibaba
- 7. Zalando
- 4. eBay
- 8. Groupon

## 2.1 The Large E-Commerce Players

Online sales via smartphones hit a new record of 33% of sales on Cyber Monday in 2019, for a total of \$3 billion and a jump of 46% compared to 2018 (Adobe).

GoDaddy, one of the leading web hosting platforms, has seen a significant increase in the use of their e-commerce products. They had a 48% increase in new paying subscribers between February and April 2020. In that same timeframe, the number of products ordered from its sites grew 141% (Schallom).

In 2020, Walmart's US e-commerce sales are expected to increase by 44.2% according to a report from emaketer.com.

Amazon remains the number one online e-commerce platform in the US with more \$280 billion in sales followed by eBay and Walmart.

More Americans already prefer online shopping than shopping in a physical store, with 51% percent clicking their way to making purchases. A total of 96% of Americans have made at least one online purchase in their life, with 80% doing so in the last month alone. (Osman)

#### 2.2 How COVID-19 Changed Users' Online Habits

Online shopping is seeing a boom due to COVID-19 as shopping habits have adapted. As this unprecedented pandemic is far from over, it's clear that e-commerce will remain important for the foreseeable future.

In May 2020 according to Adobe Analytics, digital sales were up 77.8% year over year to \$82.5 billion, tracking higher than holiday shopping levels on Black Friday and Cyber Monday. Online spending decreased by 11.3% from May to June this year, but online sales are still quite high. June saw a 76.2% year over year increase in online sales, hitting \$73.2 billion.

According to McKinsey and Company research conducted since March of this year, consumers are developing new online behaviors that might stick around long after the pandemic has ended. Some consumers are using new websites for the basics (14%) and adopting both curbside restaurant pick up (15%) and store pickup (19%). As consumers continue to utilize online shopping, e-commerce will remain an important aspect of daily life (Overby).



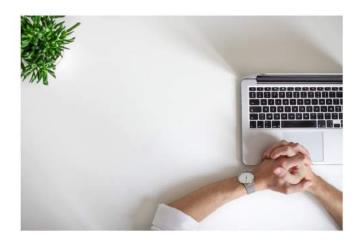
#### 2.3 Creating a Positive Experience for Returning Customers

When it comes to making a purchase, 64% of customers find customer experience more important than price.

According to the Guardian, by 2020, the quality of customer experience provided by a brand will be more important than price and product as a key differentiator. In addition, 74% of people are likely to switch brands if they find the purchasing process too cumbersome (Osman).

"...57% of customers will abandon your site if they have to wait 3 seconds..."





A total of 57% of customers will abandon your site if they have to wait 3 seconds or longer for a page to load. More detrimental, however, is search capability (Scacca). Once on your website, 60% of customers will leave your site if they can't find what they were looking for in the first place.

In the past, most companies would shape their strategy around the holidays, but now the approach needs to be different. Online retailers must have a stable platform that is able to scale and function well at all times. Being able to offer products and online experience to all the users, no matter what their platform is, is a requirement.

#### 3. Browsers and Devices Coverage

About 10 years ago, predictions were made that desktop users would fade away and most users would be on mobile devices. 10 years later, a significant number of users are still accessing e-commerce sites from a desktop browser (laptop or desktop) and what we call regular websites are still extremely popular.

In the following pages, we have gathered data compiled from the hundreds of projects we test every year and provide useful information when it comes to browser and device support.



**Operating System Adoption** 

Understand what are the most popular browsers in the US and Worldwide



iOS Stats

Find out what are the top iOS devices for testing



**Android** 

Navigate the fragmented world of Android devices and OS versions

#### 3.1 Operating System Adoption

One of the main challenges when you launch or maintain an e-commerce site or a mobile application is the OS and device coverage. Testing on the right amount of devices and the different operating systems is crucial if you want your customers to access your products.

#### Web browsers:

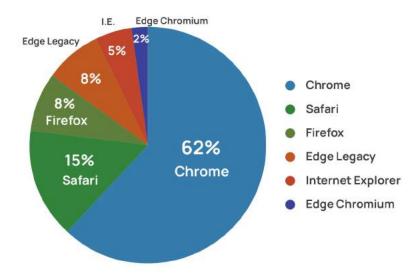
Gone are the days when Internet Explorer had different versions of IE 6, IE 7, IE 7+ and IE 8. The combination of different browser versions created real challenges of timing and effort for both development and QA teams.

In the past couple of years Microsoft has made it easier by only supporting IE 11 and Microsoft Edge.

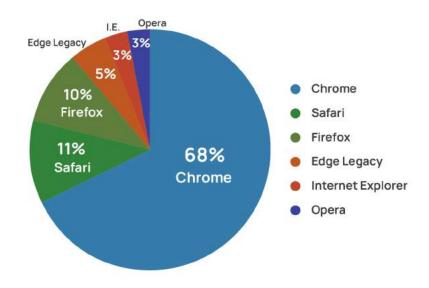
When you plan your browser coverage for desktop make sure to include the following ones:

- Windows Edge, Firefox, Chrome and Safari.
- Depending on your target audience you might want to include Opera.

Having an e-commerce website that is accessible on desktop browsers is crucial but it's also important to make sure this same website works as well on mobile. In 2021, 53.9% of commerce will be in the form of m-commerce (or mobile commerce). Online sales via smartphones hit a new record of 33% of sales on Cyber Monday in 2019, for a total of \$3 billion and a jump of 46% growth compared to 2018 (Adobe). In some cases, creating a version specifically for mobile devices through a web browser is a better option than just having a responsive website.



North America - Desktop Browsers Statistic



Worldwide - Desktop Browsers Statistic

#### Mobile & Tablet Browser Marketshare Worldwide

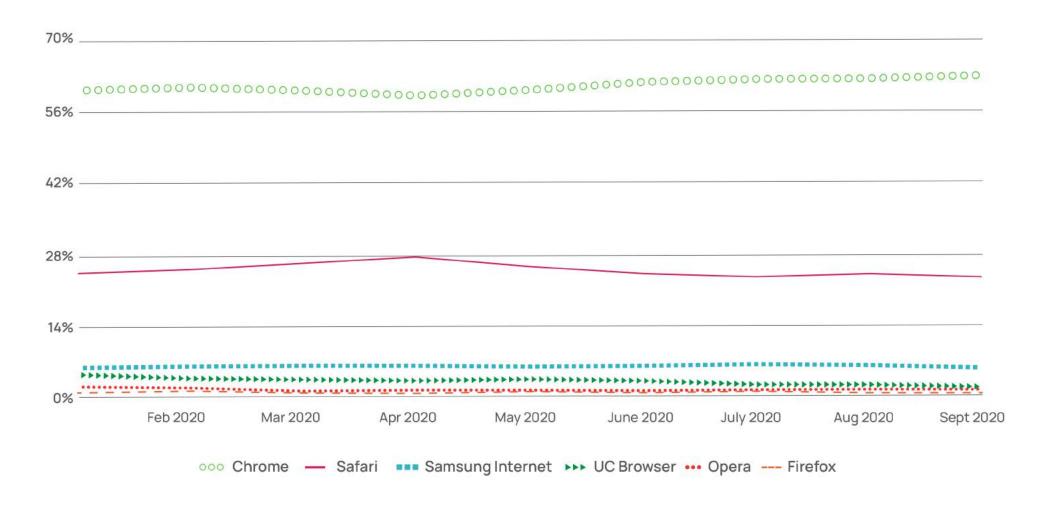
Google Chrome: Apple Safari: Samsung Internet:

63% 24% 6%

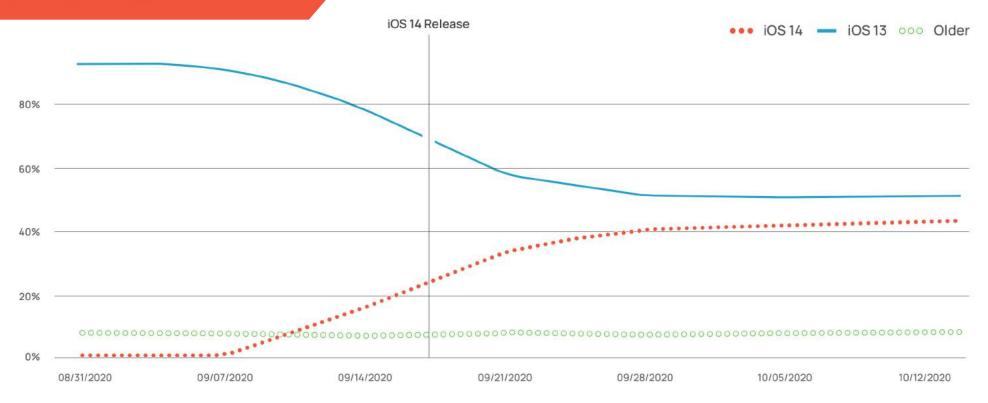
Opera: Firefox:

1.8% 0.5%

According to Statcounter, the most popular browsers on mobile devices in 2020 are Google Chrome in first position and Apple Safari in second position, followed by Samsung Internet browser and UC browser. Other browsers include Firefox and Opera.



### 3.2 iOS Adoption & Stats



Making sure your e-commerce works on all browsers is crucial especially on mobile devices. The variety and fragmentation of iOS and especially Android devices are real challenges for developers and testers. That's why it's important for you to understand who your customers are and to anticipate new operating systems, phones, or tablets coming out each year.

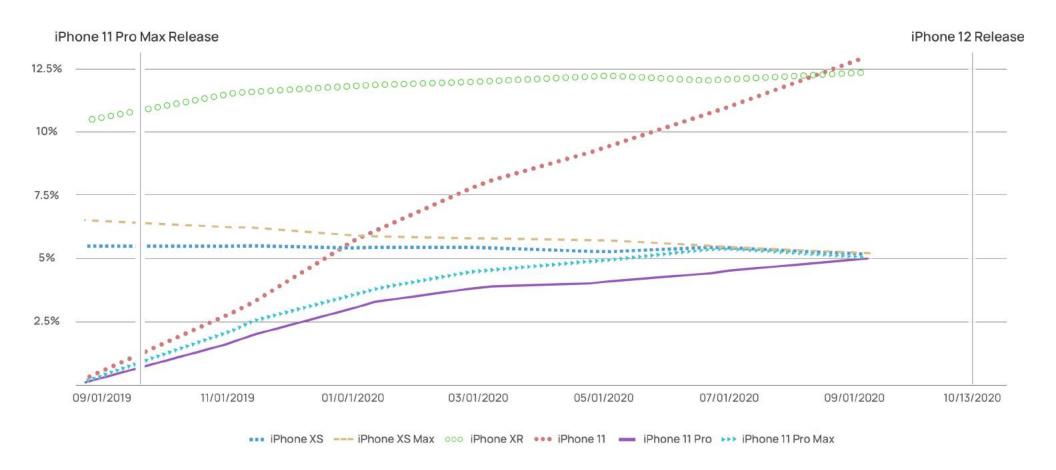
**2020 iOS 14 Adoption** - In September 2020, Apple officially released iOS 14. In general, iPhone and iPad users update their phones at a fast rate. In the first couple weeks of the release more than 40% of Apple users upgraded to iOS 14.

The same adoption rate was observed in 2019 when iOS 13 was released. Within 3 months after the release of the new OS version, 75% of its users updated their device from iOS 12 to iOS 13.

Understanding new OS features are important especially when it comes to Accessibility support. Based on statistics released by Apple in June 2020, 92% of all iPhones introduced since 2016 use iOS 13 and 81% of all iOS devices use iOS 13. By mid-2021 those numbers will change and reflect a majority of devices running iOS 14.

#### **Top iOS Devices**

Earlier this year we released some statistics about the top iOS devices in 2020. Based on information we gathered from various sources, the iPhone XR was the most popular iPhone in 2020. A few months later, the iPhone 11 surpassed the iPhone XR while larger screens such as iPhone 11 Pro Max or iPhone XS Max represent the most sold devices for Apple.



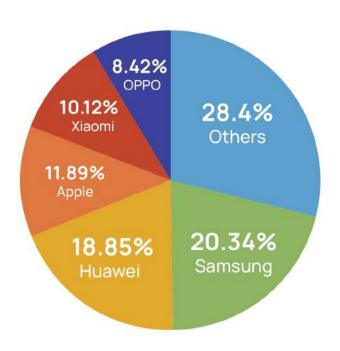
## Top 10 Models in Global Smartphone Shipments (2019 vs 2020)

According to AppleInsider, the iPhone 11 is the **most sold phone in 2020** with more than 19 million units sold as of summer of 2020. Android phones come in 2nd, 3rd and 4th position of the most sold smartphones in 2020 and the iPhone XR and iPhone 11 Pro Max come in 5th and 6th position. With the new iPhone 12 release we can expect those numbers to change during Q1 and Q2 of 2021. Meanwhile, the iPhone 11, iPhone XR and iPhone 11 Pro Max will continue to remain popular devices.

This means that you must consider testing across a variety of screen sizes for your app or website. Even if you trust your shopping app to work on iOS devices, the difference in the iOS versions and also the variety of screen sizes may affect the user experience

Meanwhile don't forget older devices - iOS 14 is still compatible with iPhone SE (1st Generation) and iPhone 6S and up.

|      | 2019              |       |      | 2020                   |       |
|------|-------------------|-------|------|------------------------|-------|
| Rank | Model             | Units | Rank | Model                  | Units |
| 1    | iPhone XR         | 46.3  | 1    | iPhone 11              | 19.5  |
| 2    | iPhone 11         | 37.3  | 2    | Samsung Galaxy A51     | 6.8   |
| 3    | Galaxy A10        | 30.3  | 3    | Xaomi Redmi Note 8     | 6.6   |
| 4    | Galaxy A50        | 24.2  | 4    | Xaomi Redmi Note 8 Pro | 6.1   |
| 5    | Galaxy A20        | 19.2  | 5    | iPhone XR              | 4.7   |
| 6    | iPhone 11 Pro Max | 17.6  | 6    | iPhone 11 Pro Max      | 4.2   |
| 7    | iPhone 8          | 17.4  | 7    | Samsung Galaxy A10s    | 3.9   |
| 8    | Redmi Note 7      | 16.4  | 8    | iPhone 11 Pro          | 3.8   |
| 9    | iPhone 11 Pro     | 15.5  | 9    | Samsung Galaxy S20+ 5G | 3.5   |
| 10   | Galaxy J2 Core    | 15.2  | 10   | Samsung Galaxy A30s    | 3.4   |







Over the years, the Android fragmentation has always been a challenge. Although the operating system itself is stable across its different versions, Android still has about 8 to 9 different OS versions used worldwide.

In September 2020, Google released Android 11 and dessert names were discontinued with Android 10.

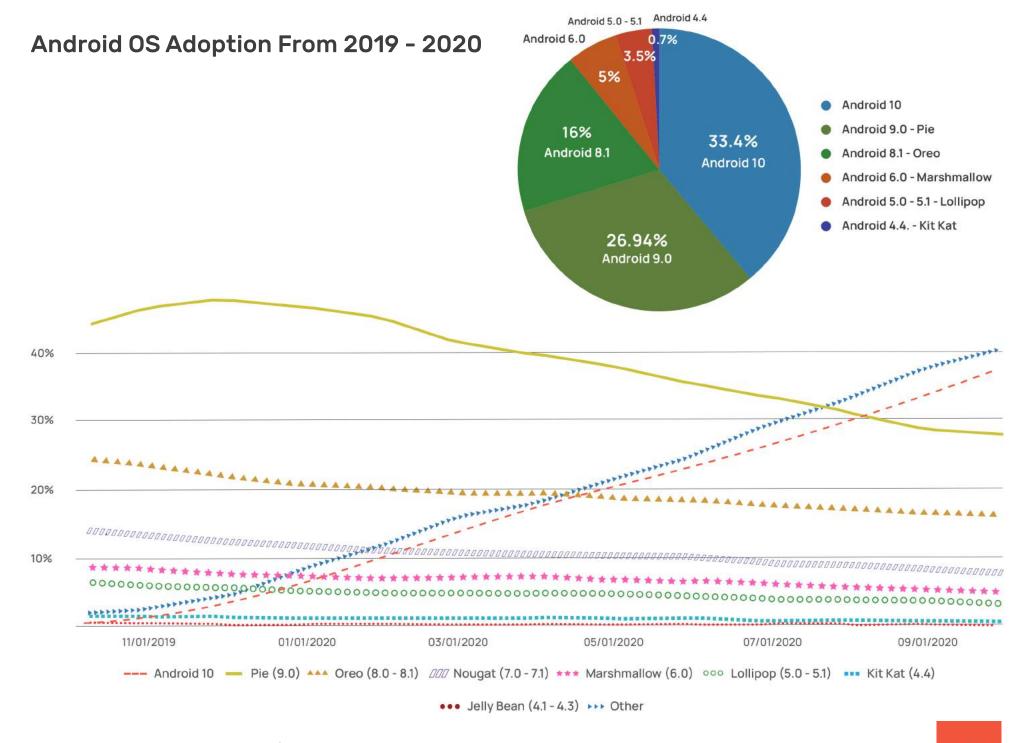
According to Google, Android 10 was installed on more than 100 million devices within 5 months after it was released in September 2019. Since then Google has stopped sharing official statistics on their developer website so getting accurate statistics on the percentage of users per operating system is more challenging. However based on information provided by a another website's statistics, it shows that Android 9 and Android 10 represent more than half of the OS versions in use. Android Oreo and Marshmallow come in 3rd and 4th position with respectively 10% and 7.5% of devices.

#### **Android OS Adoption & Stats Continued**

Although Xiaomi phones may not be as popular in the North American market, they are among the top 5 manufacturers in the world with millions of users in Asia and Europe. The 5 companies in the table below represent approximately 75% of phones shipped throughout the world.

Top 5 Smartphone Companies, Worldwide Shipments, Market Share, and Year-Over-Year Growth, Q2 2020 (shipments in millions of units)

| Company | 2Q20 Shipment<br>Volumes | 2Q20 Market<br>Share | 2Q19 Shipment<br>Volumes | 2Q19 Market<br>Share | Year-Over-Year<br>Change |
|---------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|
| Huawei  | 55.8                     | 20.0%                | 58.7                     | 17.7%                | -5.1%                    |
| Samsung | 54.2                     | 19.5%                | 76.2                     | 23.0%                | -28.9%                   |
| Apple   | 37.6                     | 13.5%                | 33.8                     | 10.2%                | 11.2%                    |
| Xiaomi  | 28.5                     | 10.2%                | 32.3                     | 9.7%                 | -11.8%                   |
| OPPO    | 24.0                     | 8.6%                 | 29.5                     | 8.9%                 | -18.8%                   |
| Others  | 78.4                     | 28.2%                | 101.0                    | 30.5%                | -22.3%                   |
| Total   | 278.4                    | 100.0%               | 331.5                    | 100.0%               | -16.0%                   |

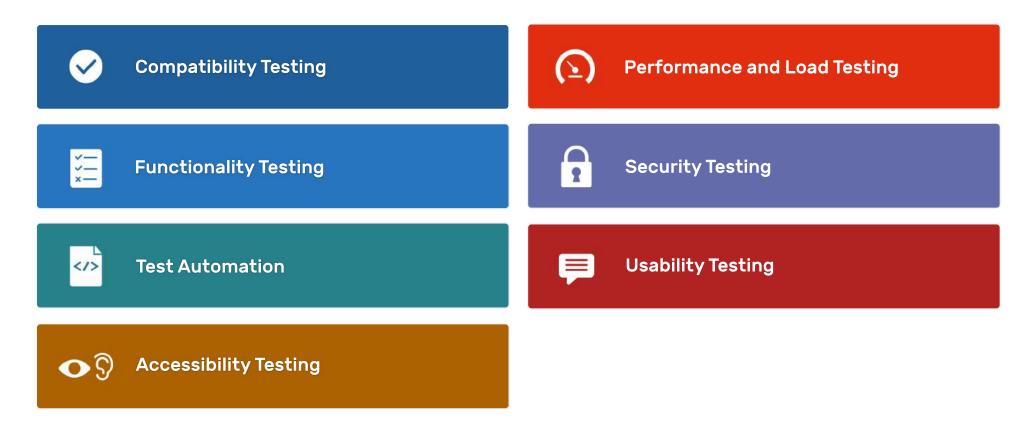


## 4. Getting Started With Test Planning

Different teams have different approaches for testing e-commerce.

Often, test planning combines **front-end testing** and **test automation**. The user will be directly impacted if some of the features are not working as expected on an e-commerce site: missing links, pricing issues, search not functional, payment issues, etc.

Here is a list of the different types of testing you should consider:



#### **4.1 Functionality Testing**

You can break down the different areas of an e-commerce as follows:









**Product:** 

**User account:** 

Cart:

Static pages:

Product Detail Page, Product Grid Page,

User Profile, Login/Logout, Forgot

Checkout, Guest, Registered User,

Company Information,

Search, Product Configuration

Password, Billing Information

Receipt, Wishlist

General static pages

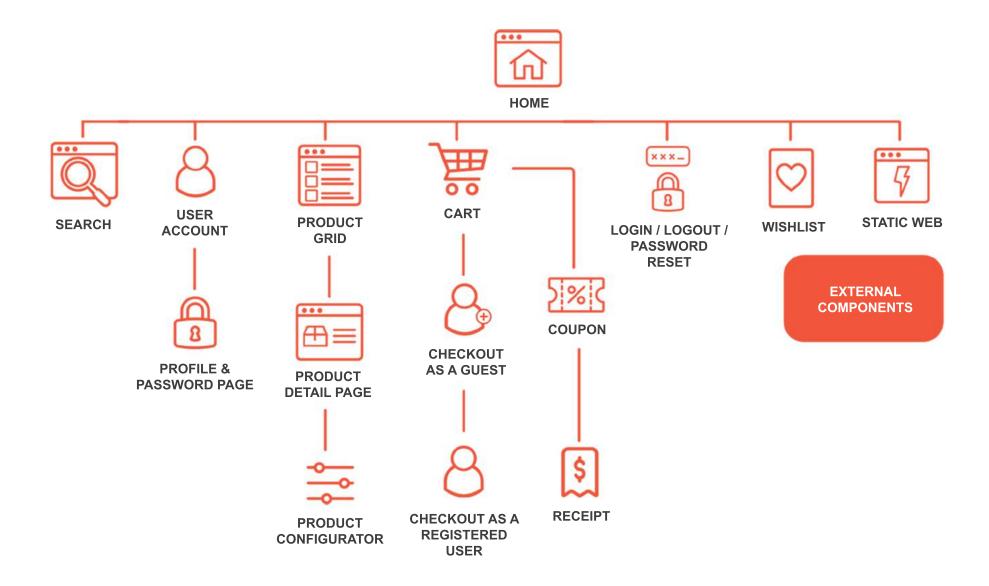
Before beginning manual testing, having a solid plan that can easily be shared with your team is the first step in a good QA process. Being able to describe to the rest of your team how testing will be executed by components and over what period of time will be essential for your team members.

Now that you know which browsers and devices to test, it is time to look at how you are planning to run your manual tests. Often browser compatibility and functionality testing are described as 2 different steps but they are in fact executed simultaneously. If you want to find functional bugs and be able to access those bugs before the customer does you must tailor your testing approach around the interactions each user will have on an e-commerce platform or more generally on any application.

Once you know the architecture and the different components on an e-commerce site that will need to be tested, break down those components and start thinking about the structure of your test cases. You can write test cases through different systems such as Jira or Pivotal Tracker but we recommend you use whatever tools work best for you.

For a lot of projects, spreadsheets will be sufficient if your team is only a small group of testers, however if you want a robust system in place investing in solutions such as **Xray**, **TestLodge** or **TestRail** will help organize the tests efficiently over time.

## **E-Commerce Site Components Visualized**



### 4.2 Compatibility Testing

Testing across multiple browsers and operating systems is necessary when you test an e-commerce website or any mobile application on iOS or Android. But understanding who your target audience is and the type of browsers and OS configuration they use will help improve the quality of the end product.

There are a couple of things you need to consider in the test planning phase:

- First you need to choose your tools appropriately. Pick a good solution to manage your test cases and also to track your bugs. Work with the product manager and developers to decide which custom fields and labels you should use in your bug tracking tools.
- Second you need to consider how you will approach browser testing. You can test on real devices with a few internal team members, go through a cloud-based solution or simply hire a testing partner.

No matter what you choose, making these decisions early in the process is important for the entire project life cycle, the quality of the testing and the communication with the rest of your team.



#### 4.3 Test Automation



In most cases, teams rely heavily on manual testing. Companies often see test automation as a complex solution and lack the resources with the proper skills to be successful. That said, automation can be extremely helpful in the long run.

If you are testing a new application functionality that changes frequently then you should avoid test automation. However if testing includes long regression test runs you should consider automating some of those tests.

Creating your test strategy will also be based on the size and the duration of the project. Even if you are working on a smaller website, planning is crucial for you and the rest of the team.

In order to understand how much and when tests should be automated, we need to understand when manual testing should be used. For certain scenarios and test types, there is no substitute for manual testing. Manual testing is too versatile, intuitive and responsive to be completely replaced by automated testing.

- ▶ Look and feel: Testing the user experience, the look and feel, or the usability of an app can only be done through manual testing.
- ▶ First test run and changing functionality: Manual testing can handle new and changed components much better than automation, since manual testing does not require refactoring.
- ➤ Complex Functionality: The return on investment in automating testing for complex scenarios and functionality may not be worth it, and so manual testing sometimes makes more sense.

#### Building a list of requirements before you automate

Before automating, it's important to build an exhaustive set of requirements or user stories with your team. This set will help determine what functionality features should be automated, and what should be left to manual testing.

#### 4.4 Accessibility Testing

15% of the total world population have a disability.
26% of the US population have a disability.

Have you ever looked at how accessible your application is? Imagine the disappointment of a customer who comes to your website, tries to select a product and is not able to. Imagine if that same customer finally selects a product but cannot checkout. Then multiply that customer by hundreds of thousands. Accessibility is not an option but a requirement. Section 255 of the Communications Act requires telecommunications products and services to be accessible to people with disabilities.

In the past couple of years, large corporations have made an effort to make their websites and e-commerce applications accessible.

Nevertheless, a large number of websites are still not accessible. This can be a legal issue for the brand selling their products and it also prevents them from selling products to millions of users around the world.

In the United States, more than 8 million people have difficulty seeing, more than 7 million experience difficulty hearing and close to 20 million people have a physical difficulty. Not being accessible will clearly reduce the number of users being able to access your website or to navigate your mobile application. In order to be compliant, organizations are encouraged to use the WCAG 2.1 guidelines and decide what conformance levels you want to follow (A, AA, AAA).

When it comes to being accessibile, it's important to understand that you want your e-commerce and/or mobile application to be:

**Perceivable** - Text Alternatives, Time-based Media, Adaptive, Distinguishable

Operable - Keyboard Accessible, Enough Time, Seizures and
Physical Reactions, Navigable, Input Modalities
Understandable - Readable, Predictable, Input Assistance
Robust - Compatible (website's content and back-end coding to be compatible with assistive technologies.)









Accessibility testing can be executed by testers who do not necessarily have a disability; however it is recommended to work with an Accessibility testing expert who experiences a disability first-hand. A tester with a disability can provide a lot more feedback around the usability of an application as well as execute the functional tests. In our experience, UX researchers and designers get quality feedback from testers with disabilities and can implement changes prior to launching a new app to the world.

#### 4.5 Performance and Load Testing

Imagine your website crashes on Black Friday when millions of shoppers are trying to access your products and purchase them online. This scenario happens every year to companies who are not ready to scale up traffic on their e-commerce. In 2011, Walmart shoppers found a website that was not functioning as expected: checkout pages were broken and so were shopping carts. At midnight on Black Friday it was Lego.com that experienced connection issues.

Even if your website does not have millions of users all year around or thousands of them at once, the speed and performance of your e-commerce is one of the most important things to consider when you are launching a new website. If a user experiences slow times they will eventually leave the page and not return. Just like a poorly rated application will most likely be uninstalled by the user of a mobile app.

Getting ready for higher traffic takes place early during the year and performance tests should happen regularly. Ignoring Performance Testing will potentially generate a huge loss in sales when an e-commerce experiences high traffic.

#### The main 3 criteria in Performance Testing are

- **Speed** (understanding the application response)
- Scalability (measuring the application bottlenecks)
- Stability (checking how stable the app is based on varying loads)

#### Including Performance Tests in your project cycle

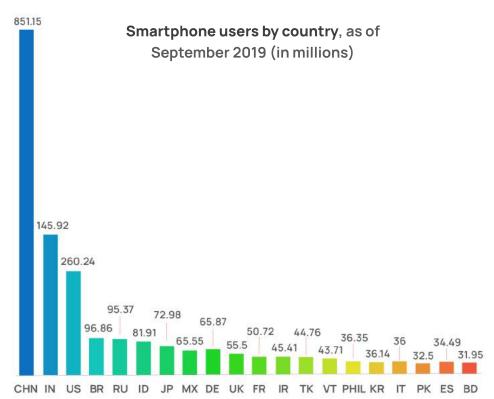
- 1. Early stage in development
- 2. Active development
- 3. Pre-production (try to match production traffic and analyze bottlenecks and fix code or DB)
- 4. Production (test in production to make sure your e-commerce can handle various loads for an extended period of time.)



One of the most common softwares used in performance testing is **Apache Jmeter.** This open source software has been designed to load test functional behavior and measure performance. It can be used to simulate various scenarios on a website and out performance date in spreadsheet, log file or graphs. You can also try other solutions from BlazeMeter, Loader.io or LoadNinja from Smartbear to test the performance of your e-commerce.

#### 4.6 Localization Testing

Nowadays many e-commerce sites try to reach customers in various locations around the globe. Making sure that your website is translated in a specific language is the first step towards going global but the quality of the translation is what matters the most. When it comes to Localization testing, it is critical to hire a native speaker and ensure they have the right language skill set. It is also important to make sure that the tester reviewing the functionality and the language of your e-commerce has a clear understanding of the target audience and the product.



In the past few years, multiple solutions have emerged for test location services. Building a team of testers in different locations or simply hiring a firm to do it can be time consuming and also rapidly increase the cost of testing. That is why exploring different solutions can save you time and money.

Each time you localize a website you will have to include dozens of test scenarios such as checking for regional specifications:

- Terminology and language style is consistent throughout the e-commerce
- Products and buttons are properly translated
- No offensive or inaccurate language is used throughout the website
- Accents are displaying properly and not as corrupted characters
- Checking that the input fields support special characters
- Making sure the currency conversions and taxes are applied correctly
- Phone number and contact info are accessible in a specific market
- Help or user guide are translated

When it comes to testing and loading an application in a specific location for a specific language, VPN solutions are often helpful. Loading a VPN will easily trigger any location in the world from your local machine so you can spoof your location and trigger a specific language or message on the app you are testing.

When it comes to iOS and Android operating systems, Interface Builder and XCode offer a solution to switch locations. Android also offers apps such as Fake GPS location.

#### 4.7 Security Testing

Security for an e-commerce can be compromised in various ways which can lead to financial loss, stolen intellectual property, unauthorized identity information, and even cryptocurrency mining. Buyers are more aware of their privacy and expect to be protected. Consumers have a better understanding of how valuable their data is. Safeguarding their information for their protection is not only ethically responsible but also vital for protecting the integrity of the company.

Security risks can happen in a variety of ways. It's important for companies to identify risks and loopholes. These loopholes can create opportunities for the product to crash, leaving data vulnerable and transactions incomplete.

Testing not only protects the consumer but is also proven to improve the efficiency of the product and reduce lag time.

#### **Types of Security Risks**



**Password Cracking** 



Identity Spoofing



Denial of Service



SQL Injection



**URL** Manipulation



Unauthorized Data Access



Data Manipulation



Cross Site Scripting

#### Types of Security Testing

Security Scanning - This type of automated and manual testing scans the network and/or application for vulnerabilities. A report can then be generated to describe ways to avoid such vulnerabilities.

**Ethical Hacking -** In ethical hacking, authorized personnel hack the product through various weak points in an attempt to gain unauthorized access. Automated processes can also be used during this time to expose even more weaknesses in the system.

**Vulnerability Testing -** By using a software program, vulnerability testing scans IP addresses for vulnerabilities. The program then prints out a report of all the vulnerabilities.

**Risk Assessment -** Like the name suggests, this testing assesses the risks based on a low, medium, and high risk classification.

Security Auditing - Also known as Security Review, this methodical testing is a form of enterprise IT infrastructure testing. Before starting this type of testing your team must come up with a scope of analysis.

Penetration Testing - A subcategory of Ethical Hacking, this type of testing looks for vulnerabilities that are susceptible to hackers in emerging locations. This form of testing could be automated or completed manually.

Posture Assessment - This form of testing encompasses Security Scanning, Ethical Hacking, and Risk Assessments and looks at the overall posture the company has against security risks.





Usability is one area that takes a creative approach to using company research and statistics on the intended buyer's trends. This is the closest a company can get to observing an accurate customer experience. E-commerce platforms that have taken the time to complete usability testing can find more success due to proactively looking at their intended user's experience. It takes into consideration who will be using the site, how to attract specific markets through a homepage or a feature, how they will utilize the site, or even push that intended audience toward the desired result—making a purchase. "For instance, too many ads, poor copy, too big or too small fonts, buttons that don't work, and other issues can dramatically affect usability" (Grybniak). Positioning each page to the anticipated user by providing market-focused content and features, gives the retailer the opportunity to present to their customers an individual and customizable experience catered to their interests of the e-commerce platform.

One aspect of e-commerce usability testing that deserves a considerable amount of time is the homepage. First impressions go a long way and, in most instances, it's the company's first opportunity to help guide their customer throughout the platform.

**Usability Testing** is a thought-out form of testing that can take a considerable amount of time depending on the specificity of testing that is desired. If multiple focus groups are compiled, then development teams must consider the time needed to put together those focus groups and administer the testing.

In addition to putting together groups, the team must also build test scenarios to give their participants to emulate anticipated user experiences. After compiling data, the development team will need to regroup to determine how they will fix or enhance the platform based on responses from usability testing.

Although usability testing can be done at various stages of platform release, it's most valuable for usability testing to be completed before the platform launch. It is recommended that this type of testing is given a significant amount of time before launch to assemble the intended demographics for testing scenarios and to create the best test plan for emulating actual user experiences.

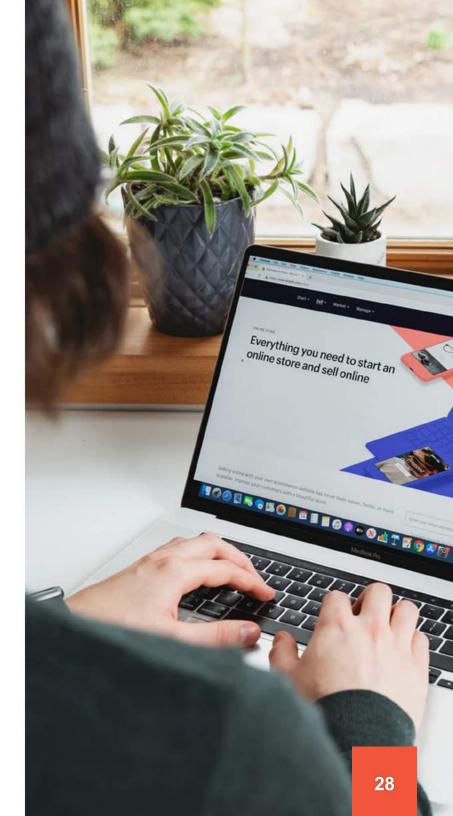
#### 5. Conclusion

We hope that this guide gives you a better understanding about testing various types of e-commerce. Since 2008, our team has helped hundreds of companies test their e-commerce websites and mobile applications.

There are multiple solutions and combinations you can choose from when it comes to e-commerce testing. No matter which solution you choose, make sure you have a solid understanding of the scope of work and draft a Quality Assurance test plan as early as you can in the process. Understanding the browser coverage, the QA process and the challenges of localization are key to a successful launch of a website globally.

Another important aspect of the quality of an e-commerce will come from its accessibility to all the users, no matter their physical condition or location. Building applications that are accessible for everyone is a requirement.

Ultimately, choosing the right testing partner for test automation, manual testing and accessibility testing will help you have a successful launch and strong conversion rate.



# Contact Us



Send us more details about your project and schedule a call with our team today.

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#### Sources

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