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Three Pillars of Quality for **eCommerce Software**

Functional, Usability, & Security Testing

A handbook for eCommerce entrepreneurs, software developers, and anyone else interested in customer satisfaction and increased conversion rates

Executive **Summary**

Jeff Bezos, Amazon

We see our customers as invited guests to a party, and we are the hosts. It's our job every day to make every important aspect of the customer experience a little bit better.

HAVE YOU EVER

been frustrated by complicated site navigations and a boring user interface?

refused to buy a product online because detailed product information was missing?

abandoned your online shopping cart because you didn't trust the store with your credit card information?

WE HAVE EITHER.

In today's world of fierce market competition, independent testing of eCommerce products is no longer a competitive advantage but a cost of entry. Businesses need to invest in their reputation and customer loyalty.

In fact, for every 100 potential customers, 43 will leave without purchasing because the checkout process is too long or they don't trust the website, according to a 2021 Baymard Institute report

The QATestLab team has accomplished over 3000 projects globally and solved numerous enterprise QA challenges. This handbook is based on our expertise in eCommerce solutions and deep understanding of customer experience. We aim to:

- Provide you a solid foundation for understanding the core aspects of eCommerce software testing and its impact on conversion rates and customer retention.

- Guide eCommerce entrepreneurs and developers to reimagine their approach to QA and develop the right strategy to succeed in this competitive battlefield.

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INTRODUCTION

The new reality of **Retail**

We look back at 2020 as the moment that changed everything. As lockdowns became the new normal, businesses and consumers increasingly "went digital", providing and purchasing more goods and services online – thus, raising significantly e-commerce's share of global retail trade.

What you should do in 2021:

Unlock the future of retail with new digital experiences

The tech trends shaping eCommerce in 2021 are:

- Shift to mobile

- eWallet functionality

- Hassle-free checkouts

- Implementation of AI and chatbots into customer communications

- Customization and personalized product recommendations

- Image and voice search

- AR and VR for interactive online shopping

- Integrated eCommerce CRM systems

- Progressive web apps (PWAs) designed to help shoppers quickly complete tasks

- Selling directly through social media pages

Margo Hays, Principal of Digital Strategy, TSG
We're seeing this rapid shift and it's not just eCommerce. It's everything. Our consumers are demanding speed and efficiency, no matter what you're doing.

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What is
Independent Software Testing

Software testing is the process of evaluating and verifying that software does what it is supposed to do. Even a simple application can be subject to a large variety of tests.

It is crucial to test eCommerce solutions as it helps to prevent bugs, improve UX, secure payments – and, above all, increase conversions. The positive experience of interacting with a high-quality product keeps users loyal.

The roles and duties of developers and testers are complementary yet not interchangeable. The ability of the latter to assess the software from a user perspective is necessary for developing a commercially successful solution.

22%
of IT budgets is usually allocated to QA activities.

57%
of business owners entrust driving software quality at their enterprises to dedicated QA teams.

74%
of organizations believe that QA contributes to business growth and business outcomes.

47%
of enterprises started to focus more on customer experience validation and usability testing to meet the challenges caused by COVID-19.

61%
of product teams had to rethink software quality to retain and expand their customer base.

*according to the World Quality Report 2020-21 and the 2021 State of Software Quality report.

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Independent software testing is a one-stop-shop for a comprehensive product assessment.

This is how it helps you make the most of the investment in quality:

Software testing with a service provider means access to the resources (QA engineers with industry-specific expertise and a large inventory of devices) with less management effort.

An independent service provider can either undertake all required testing activities or strengthen the in-house QA team providing the necessary support and suggestions for process optimization.

Engagement models are flexible to meet the testing needs of large and small-scale projects.

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Business challenges that Independent Software Testing can solve

The top four reasons why businesses are proactively managing and investing in software quality assurance are:

Better product quality

Minimized costs of bug fixing

Increased conversion and customer retention rate
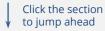
Improved reputation and brand image

Now think of your current QA strategy, a part it plays in the SDLC (software development lifecycle), and customer feedback on your portfolio of products.

1 What challenges do you face in planning and implementing the required testing activities?

2 Are there issues in your solution that customers keep reporting?

3 Have you ever considered independent testing as a cost-effective solution to your quality challenges?

My requirements keep on changing.	An independent QA team will use an agile roadmap for test planning, develop risk mitigation strategies, and create a continuous and open feedback loop.
I can't find and retain testers.	Independent testing means access to a talent pool of QA engineers with eCommerce-specific experience whenever you need it.
We release fast and testing can't keep up.	Tests that would take hours to run manually can be performed much faster if automated. It means more tests in less time and earlier time-to-market.

eCommerce
Software Testing Strategy

When it comes to eCommerce, a high-quality product is defined primarily by robust functionality, a high level of usability, and tamper resistance.

Perfection is attainable – there is a testing technique for each of these aspects.

FUNCTIONAL testing simulates the way customers will use the system and identify problems - such as missing functionality or integration issues - that could ruin the user experience.

USABILITY testing makes sure each of the store components is directing users to the objective – making the purchase.

SECURITY testing helps to validate security across all layers of the software and protect sensitive customer data.

When to test your eCommerce solution:

- Before releasing new functionality into a live production environment;
- Whenever significant changes are made to the product;
- Retest the system periodically;
- Integrate QA and testing into the product development lifecycle.

Larry Page, Google
Always deliver more than expected.

THREE PILLARS

of quality for

eCommerce software

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What is
Functional Testing?

In functional testing, you check that your software does what it's supposed to. It's a form of black-box testing because you are only interested in what it does, not how it does it. It can happen at any stage in the development cycle once you have a working code to test. The product is evaluated from a user's perspective.

10 facts about Functional Testing

1

ensures that software works according to specifications and in line with user expectations.

2

uses business requirements and the associated software design specifications as the validation yardstick. If the business requirement says the software should do "x," it validates "x" as the expected result.

3

is generally black-box.

4

is vital because if any functionality is broken, the whole product is broken.

5

does not cover the performance and reliability of the application.

6

is about what the user sees and experiences, but is not the same as user acceptance testing.

7

can happen at any stage in the development cycle.

8

is conducted according to carefully designed test data with known expected outcomes that come from the requirements/design.

9

requires close collaboration between the product team (who understand what the application should do) and the QA team.

10

can be done manually or automated.

The functional testing checklist for eCommerce software

Home Page	Header (Logo, My Account, Mini Cart, Wishlist (for logged-in users)	✓
	Footer (Return/Refund Policy, Shipping Policy, Privacy Policy, Terms of Service, Contact Us Button, Subscription Button, Social Media Links)	✓
	Navigation Menu	✓
	Banners and Product Carousel Navigation	✓

Search	Search Functionality	✓
	Add to Cart Button	✓

Product Details Page	Add to Cart Button	✓
	Wishlist Functionality	✓
	Product Reviews Functionality	✓

Product Listing Page	Pagination	✓
	Sort By Functionality	✓
	Filter Functionality	✓
	Add to Cart Button	✓

Shopping Cart	Proceed to Checkout Button	✓
	Product Quantity Change Functionality	✓

Checkout	Shipping Method	⊘
	Order Placement Functionality (PayPal, Credit Card, Google Pay, etc.)	⊘
	Discount Setting	⊘
	Tax Setting	⊘
	Order Success Page	⊘
	Continue Shopping Button	⊘
	Order Status Tracking	⊘

Admin Check	Email Notifications	⊘
	Content Changing	⊘
	Google Analytics	⊘
	Successful and Failed Transactions	⊘
	Order Refund and Cancellation	⊘
	Fulfilled and Partially Fulfilled Orders	⊘

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Case study

How seamless integration with a website search & navigation extension was secured for a Magento-based eStore

THE CHALLENGE

There are plenty of eCommerce plugins and extensions in the market. But all of them need to be correctly integrated to guarantee the desired result.

Our team of QA experts was appointed to test the integration of a Magento-based store with an extension for website search & navigation, including its powerful behavioral tracking functionality that automatically elevates high-engagement products.

THE SOLUTION

Our proposed solution was designed to:

- **Verify that the integrated component works properly** – with a test suite that meets functional requirements and ensures nothing is left untested.

- **Ensure the correct data transfer from the store to the extension** – with advanced testing tools.

- **Secure the maximum coverage even if the required documentation was not available** – with our expertise and experience gained from testing similar products.

THE RESULT

Smooth integration of a new extension that made the shopping experience more pleasant for customers and unlocked in-depth & actionable insights data for the product owner.

Our team prepared numerous test cases for mobile and web testing; negative scenarios were also covered. Functional testing was conducted on iOS and Android devices for the mobile application and on Mac OS and Windows for the web client.

Data synchronization between the platform and the extension was thoroughly tested, while detected issues were reported to the product team.

What is
Usability Testing?

Usability testing is a method to measure how intuitive a website is and how easy it is for users to reach their goals. Testers with eCommerce-specific expertise pay attention to all the little things that could have an impact on the overall customer experience.

Usability testing should start early in the development process and occur repeatedly throughout the design cycle, not just when the product is completed. The earlier issues are identified, the less expensive fixes will be further down the SDLC.

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10 facts
about Usability Testing

1

is a process of testing various aspects of the user experience to determine the best way for a product and its elements to interact with its audience.

2

also makes sure that all buttons, fields, labels, and other items on the screen work as specified and respond correctly to the user input.

3

assesses the product according to the following criteria: ease of use, consistency and logic, accessibility, and compatibility.

4

should be an integral part of the entire product development process as small changes made at any stage of the development can have a big impact on the UI.

5

requires relevant experience so the tester knows well the UI best practices (like what is the right location of the elements and how they should change when the users interact with them).

6

needs to be conducted whenever new features have been added to the product.

7

will be more effective if based on client feedback that you can collect using automated tools, like an automatic record of screen activities, heat maps, and user questionnaires.

8

can be partially performed with the help of browser extensions.

9

can be automated with UI/UX testing tools.

10

brings between $2 and $100 for every $1 invested, according to the research.

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The usability testing checklist for eCommerce software

Entry Criteria	What is the focus of the website?	✓
	What is the purpose of a usability audit?	✓
	What is the target audience of the website?	✓
	Analyze the target audience with Google Analytics (geographic location, preferred devices, interests)	✓
	Analyze customer support requests to detect the issues users face	✓
	Create user stories	✓

Technical Aspects	Cross-browser compatibility	✓
	The website works well with different screen resolutions	✓
	Mobile compatibility	✓
	Page load speed	✓
	The most visible elements reflect the purpose of the website (use a click map)	✓

Homepage	There is a clear company/service description on the homepage	✓
	The user can make a targeted action (order, application, etc.) directly from the homepage	✓
	All important content is highlighted	✓
	The company logo is visible and of good quality	✓
	It takes no more than 5 seconds to understand the focus of the website and its main structure by observing the homepage	✓
	Information about the company, its history, mission, and product portfolio is provided	✓
	Contact information, including email, phone number, skype, etc. is available	✓
	The text placed over the background image is readable	✓

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Overall Usability	Required website attributes (payment information, shipping, copyright, Terms of Use, Privacy Policy)	✓
	Website navigation (navigation clarity, links to the homepage from other pages, correct functioning, and display of dropdown menus)	✓
	Website content (headings are relevant, content corresponds to sections, unobtrusive advertising)	✓

| Design | General design structure (consistency, balanced color scheme, correct background display on all pages, text readability, uniformity of indents, column widths, and text size) | ✓ |
| | Page elements styling (header, main menu, second-level menu, breadcrumb navigation, footer, content, banners) | ✓ |

| Content Elements Design | Links, lists, tables, checkboxes, radio buttons, drop-down menus, buttons, images, sliders, videos, frames, authorization forms | ✓ |

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Case study

How conversion rate got boosted in a B2C eCommerce solution after critical usability issues were detected

THE CHALLENGE

The pitfall of assessing usability is that this aspect is rather subjective. Only testers experienced in eCommerce understand and can accurately reproduce real patterns of user interaction with an online store.

Aiming for a flawless shopping experience, our Customer, owner of a B2C eCommerce solution (website + mobile application) specialized in the ready-to-wear apparel, decided to go for a professionally conducted testing to refresh the product – and it boosted conversion rates.
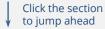
THE SOLUTION

Our proposed solution was designed to:

- **Cover the key areas of the solution** – with a surefire combo of functional, GUI, and usability testing.

- **Provide an unbiased look and eCommerce-specific expertise to the evaluation of customer experience** – testing was conducted according to pre-written checklists that incorporated our experience with various similar products.

- **Make sure the fixes did not affect the existing functionality** – by testing every version of the website and application.

THE RESULT

As a result of the testing activities we conducted, the Customer received tangible data about users' behaviors, actions, and problems – and recommendations for optimization that later led to the significant boost of conversion rate.

After our team detected critical usability bugs, major product improvements were made, such as the inability to sign in using Facebook, issues with the checkout process, and application crashes. There were also localization problems found and reported that negatively affected the overall solution usability.

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What is

Security Testing?

Security testing identifies risks, threats, and vulnerabilities in software. QA engineers assess various elements of security, such as confidentiality, integrity, continuity, and authenticity on various layers across databases, networks, infrastructure, and access points like mobile. After detecting vulnerabilities, developers can plugin these gaps to make your commerce data secure.

10 facts
about Security testing

1

involves an active analysis of the application for any weaknesses, technical flaws, or vulnerabilities.

2

is vital for eCommerce solutions as they deal with users' financial data.

3

should be included in every phase of SDLC to prevent security bugs from appearing in the production.

4

allows you to address issues faster and at a lower cost if conducted in the early stages.

5

requires creative thinking to determine what unexpected data may cause an application to fail.

6

is based on risk cases for each security requirement. Risk cases are like use cases that layout various scenarios of security failure.

7

allows for a holistic approach to product security.

8

requires accurate product documentation. The architecture, data-flow diagrams, use cases, etc. should be available for review.

9

provides data that will be presented to the product owner, together with an assessment of the impact, and a proposal for mitigation.

10

can be automated.

The security testing checklist for eCommerce software

Web Application Security Risks	Injections	✓
	Broken Authentication	✓
	Sensitive Data Exposure	✓
	XML External Entities (XXE)	✓
	Broken Access Control	✓
	Security Misconfiguration	✓
	Cross-Site Scripting (XSS)	✓
	Insecure Deserialization	✓
	Using Components with Known Vulnerabilities	✓
	Insufficient Logging & Monitoring	✓

Mobile Application Security Risks	Insecure Data Storage	✓
	Insecure Communication	✓
	Insecure Authentication	✓
	Insufficient Cryptography	✓
	Insecure Authorization	✓
	Client-Side Injection	✓
	Cross Site Request Forgery	✓
	Unintended Data Leakage	✓

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Case study

How an eCommerce platform team conducts security audits without having security QA experts on staff or investing in expensive infrastructure

THE CHALLENGE

With the growth of online shopping, eCommerce software owners must be fully aware of cybersecurity risks leading to financial and reputational losses.

Faced with the lack of skills and tools for conducting security testing in-house, the Customer decided to appoint the QATestLab dedicated security team to analyze the platform for any potential vulnerabilities.

THE SOLUTION

Our proposed solution was designed to:

- **Evaluate the system security level** – with a simulated cyberattack that allowed us to identify vulnerabilities and control weaknesses.

- **Cover the major eCommerce security vulnerabilities** – with our industry-specific expertise and methodology rooted in guidance from OWASP.

- **Identify issues related to gaining unauthorized access to system and user data** – with security scanners and other specialized tools for security testing.

THE RESULT

The platform won customers' trust by securing their transactions and shielding their records.

Once the testing process had been completed, our team provided a detailed report listing all detected and potential threats ranked in descending order of severity and recommendations on how to protect confidential information about customers stored in the system.

Are you
READY?

What is the process for testing your eCommerce software

Through years of experience, and hundreds of eCommerce testing projects, we've developed an efficient process that helps us to deliver the best results.

Here's what you can expect from us:

1 We'll take your initial request. It usually involves a call to chat about your project and objectives.

2 We'll define the functionality to be tested and draw up a preliminary list of required testing activities.

3 We'll send you a fixed quote. This includes the scope and timeline of testing activities, so there'll be no hidden costs as long as the project scope stays the same.

4 We'll sign the contract and NDA. Our team is committed to keeping your information confidential.

5 We'll set up the testing process following the customer's development methodology and business processes.
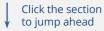
6 We'll guarantee smooth communication and timely reporting throughout the whole process of our collaboration.

7 We'll provide you with detailed information regarding the test results, a detailed list of defects and the degree of their severity, and recommendations for product improvements.

Let's talk about your solution

If you'd like to find out some more about what we do or see some relevant case studies, please do get in touch with the QATestLab team.

We'd be delighted to discuss your eCommerce solution.

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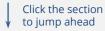
About QATestLab

QATestLab is a one-stop-shop for all your testing needs:

- Get a comprehensive risk-based quality assessment of the eCommerce solution;
- Test functionality to confirm it works as intended;
- Check the accuracy of integration with other services and platforms;
- Detect security vulnerabilities
- Verify seamless connection to a payment system;
- Improve the UI and UX to increase customer engagement.

More at qatestlab.com

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