



## A GUIDE TO AUTOMATED MOBILE APP TESTING

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According to Statista, there are an estimated 2.1 million apps on the App Store and about 3.1 million on the Google Play Store today. Irrespective of the nature of your business, you are probably competing against hundreds if not thousands of competitor apps. With so many competing apps trying to grab customers' eyeballs, what do you think will happen if your app freezes or crashes even once? We'll tell you what will happen - 21% of customers will not give it a second chance. Now let's consider a worse scenario. Your app crashes again. A whopping 84% of customers will bid adieu and look for other similar apps! Now that's got to hurt.



MILLION APPS ON  
THE APP STORE



MILLION ON THE  
GOOGLE PLAY STORE

So how do you ensure this nightmarish scenario doesn't turn real? The answer lies in rigorous and automated mobile app testing. Now software testing has been around for ages, but mobile app testing is a newer phenomenon and has only actually gathered steam in the last 5-7 years or so. And what's even newer is mobile app testing automation. Most mobile app testing procedures are performed manually, which has its fair share of drawbacks, such as higher costs, time-inefficiency, human error, etc. Automation helps resolve all these manual testing pain points.

This article will provide an overview of the most pertinent subjects related to mobile app testing automation, such as its benefits, types, challenges, etc. Use this guide to design and implement a solid mobile app testing strategy that mitigates risk, minimizes escaped defects, and facilitates the release of high-quality apps faster than ever.

## MANUAL TESTING V/S AUTOMATED TESTING

Software developers and test engineers strive hard to deliver a defect-free application but bugs, performance issues, etc. always creep in, even after the use of top-of-the-line manual testing processes.

# BUT

## WHY DOES THAT HAPPEN AND HOW CAN AUTOMATION HELP RESOLVE IT?

Manual testing, as the name suggests, is performed by dedicated testing personnel who go through the application screens and try various usages and input combinations. The developers then compare the results to the application's expected behavior. Manual testing is prone to human errors of overlooking crucial documentation, missing critical features, or making biased and subjective judgements.

On the other hand, testing automation facilitates playback of pre-recorded and predefined actions, which make it a lot more efficient. Automated tests allow you to compare the test results to the expected app behavior and then report the success or failure of the manual tests to test engineers. And once automated tests are created, it is easy to repeat and extend them to execute tasks that manual testing can't.

Automated testing doesn't eliminate the need for manual testing; instead, they work in conjunction to improve the quality and efficiency of the app development process and ensure that a near fail-proof product is released. But with that being said, you can't expect to release a successful mobile app without automated testing.

## INTRODUCTION TO MOBILE AUTOMATION TESTING

Before we go into more complex subjects, here's a quick overview of what mobile app testing automation is:

Mobile app testing automation refers to the process of running comprehensive, rigorous tests against a mobile app, using a range of mobile automation testing tools to make sure that the app is up to standard and ready for launch. It involves testing the application on common parameters such as functionality, performance, usability, accessibility, etc. as well as mobile-specific issues such as memory leakage, location, installation, etc. The ultimate objective of this process is to release a flawless, bug-free app on the App Store and/or Play Store.



Mobile app testing is a complicated process, even more so than web testing; plethora of screen resolutions, operating systems, variety of connection types, etc. all come into the picture. Mobile apps tend to have more users than websites and hence need to work on a wider range of devices. Besides, they have more functionalities than web apps, all of which, of course, need to be tested. And just the sheer volume of tests can prove to be daunting for testing & development teams. So the key to keeping pace with the ever-evolving mobile market is through automated testing.

## WHY IS TEST AUTOMATION NEEDED?

Mobile app testing automation offers a plethora of benefits to both businesses and developers alike. Here are the most prominent of these benefits:

## AUTOMATION TESTING SAVES TIME AND MONEY

Arguably the most important benefit of automated testing is that it reduces time spent on testing at the development stage and thus shortens the development life cycle. It is necessary to repeat tests during development stages to improve the application quality. Repeating these tests manually is extremely time consuming and requires massive manpower.

With automation tools, analysts can run a far greater number of tests, over and over again as needed, in a much shorter amount of time and at a lower cost! Here's an example to help you understand just how quick and efficient automation testing is - Usually, you can expect 1 manual tester to test about 50 scenarios in a regular 8-hour work day. With automation testing, about 1000 tests could be completed in less than a day.

The time saved on running repetitive tests translates directly into cost savings. Additionally, when you need to add new features or update the app, the previous test cases can be used as for continued regression testing, which is far less expensive than starting from scratch.



1 MANUAL TESTER



AUTOMATION TESTING

## INCREASED TEST COVERAGE

Test automation enhances the depth and scope of testing, which has a direct positive impact on the app quality. Automated testing executes tasks that manual testers struggle with, like validating memory and file contents. Test automation accomplishes thousands of highly complex, varying test cases in every test run and provides coverage that manual testing can't.

## **FASTER APP DEPLOYMENT**

Irrespective of whether you are executing the first launch of the app or just performing routine updates, you want to deploy it as soon as possible and reduce the app down-time. Automated testing accelerates the app development process, delivering a handsome ROI, and facilitating faster app deployment.

## **CONTINUOUS EXECUTION**

People get tired, machines don't. You can run automated tests 24/7. Also, you don't need personnel around to supervise the tests. You can simply schedule the tests through automated scripts and the results will be sent via an email post execution.



## **ACCURACY AND RELIABILITY**

Test automation performs essential, repetitive tests with far greater precision than manual testing and always records detailed results. Automation is reliable, accurate, and consistent.

## **BOON FOR TESTERS AND DEVELOPERS**

Automated testing performs monotonous and repetitive tasks that are usually reserved for manual testers. When you implement automated testing, it frees up valuable man hours and allows your testers and developers to focus on more complex and core function tasks and systems.

## MOBILE APP TESTING CHECKLIST

Here's a brief mobile app testing checklist that highlights some of the most important parameters and situations that tests could be run against to reinforce the product quality.

### ACCESSIBILITY TESTING

- ✓ Text color contrast
- ✓ Screen magnification
- ✓ Dynamic font size
- ✓ Screen reader compatibility

### FUNCTIONAL TESTING

- ✓ Resuming the app after an interruption
- ✓ Rejecting calls with the app running
- ✓ Entering and exiting the app
- ✓ Memory used by the app

### PERFORMANCE TESTING

- ✓ Your app under typical levels of traffic
- ✓ The time to install and uninstall the app
- ✓ Your app with stress/load levels of traffic
- ✓ The time to launch the app

### SECURITY TESTING

- ✓ Two-factor authentication
- ✓ Fingerprint and face ID
- ✓ Proper storage of app data and private information
- ✓ Proper encryption of information stored locally on the device

### USABILITY/UX TESTING

- ✓ Testing the mobile menu of the app
- ✓ Testing the app when changing the screen orientation
- ✓ Testing the navigation of the app
- ✓ Testing visual feedback for user interactions

### COMPATIBILITY TESTING

- ✓ Screen size
- ✓ Device-specific features
- ✓ Screen resolution
- ✓ OS-specific features



## HOW DOES TESTING AUTOMATION HELP IMPROVE THE APP?

Automated mobile app testing elevates a mobile app on various parameters, such as:

### APP FUNCTIONALITY:

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Functionality testing ensures that the app functions as expected and mentioned in the design document for a variety of specifications.

### APP PERFORMANCE:

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Performance test automation helps to assess factors such as app responsiveness, app scalability and readiness, and how it will perform with varying user loads.

### APP SECURITY:

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Security testing reinforces data integrity, resolves storage security issues, and verifies the security of activity logs.

### APP USABILITY:

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Users prefer apps that are easy to use. App usability automation testing ensures that users can satisfactorily perform the intended tasks on the mobile application.

### APP ACCESSIBILITY:

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Mobile apps must be accessible to the differently abled population and designed such that they can use the app like the rest of the population. Accessibility test automation ensures that specific accessibility regulations, that need to be adhered to in order to ensure standardized accessibility to all users, are followed.

### APP COMPATIBILITY:

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Compatibility testing ensures that apps work effectively across various browsers, operating systems and devices.

## CHALLENGES IN AUTOMATION TESTING

Like with every automated process, automation testing also has a few shortcomings. Let's have a look at them.

# 01

## SELECTING AN APPROPRIATE AUTOMATION TESTING APPROACH

Testers need to identify a suitable test automation approach. And to do that, they must find answers to questions such as - How to minimize the effort in test script and test suite implementation? How to generate high utility test reports? Do the automation test suites have a longer lifetime? Answering these questions helps them head towards the right direction.

In agile development, the app often changes through and within development cycles, which makes it important to design and implement automation test suites that help identify these changes correctly and keep the system up-to-date. This, however, is a cumbersome and tedious maintenance effort. In such a scenario, the perfect solution would be to put in place a test automation solution that can diagnose these issues and then update & re-validate the test automatically with no human intervention.

# 02

## CHOOSING THE RIGHT AUTOMATION TOOLS

QA teams struggle to choose the perfect set of automation tools because - a) their preferred tools don't provide 100% test coverage, b) the tool cost exceeds their test budget, c) They simply don't have the experience and expertise to use a specific tool to its full potential.

Here's how these issues could be resolved - a) Look for solutions that cover critical areas for your team. b) Prepare a cost/benefit analysis and present it to the executive team. Explain how expenses and losses due to bugs could be avoided with the right automation tools. c) Entail the services of consultants who can teach your team how to master the specific automation tool.

Compare different testing and automation frameworks to zero in on the perfect set of automation tools for your specific requirements.

# 03

## KNOWING WHEN TO BEGIN AND STOP TESTING

One of the biggest challenges with automated testing is identifying when to begin or stop the test. Why? Because initiating automated tests at the wrong stage of the product life cycle could hamper the expected release timelines. The best course of action here would be to start with manual testing. When you adopt this route, engineers would be able to determine if and when the system is stable enough and ready for automated testing. This will also generate a better workflow as the team would be aware of all the timelines that need to be adhered to.

The challenges discussed here may seem to be daunting but the suggested solutions demonstrate that with the right set of tools, skillset, and infrastructure, it isn't too difficult to overcome them.

## FINAL THOUGHTS

Test automation is rapidly picking up pace and finding more and more takers in the modern mobile app development cycle. Businesses and developers have started realizing that using automation testing with manual is far more efficient and effective than manual testing everything. As we look further down the road, automation testing will only gain more popularity, as it increases productivity, improves app quality, enhances testing coverage, saves time and money, supports various applications, and provides greater consistency. The ultimate goal for enterprises is to have more people download their app and keep it on their device for as long as possible. And that will only happen if the application is bug-free, functionality-rich, performs well under various loads, is accessible to all, and compatible with a range of devices. Mobile testing automation will go a long way towards realizing that goal

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