

The State of Mobile App Delivery, Test Automation & AI in 2024

How Dev and QA teams are using AI in software testing today.



Introduction

Businesses that develop mobile apps face more pressure than ever to deliver application updates and enhancements with accelerated mobile release cycles. Yet, budget constraints and limited availability of development and Quality Assurance (QA) staff cause a majority of organizations to struggle to meet software delivery goals because they can't complete adequate tests with sufficient device coverage as quickly as they develop new code.

Fortunately, a new breed of software testing tools – those that leverage AI to accelerate testing processes – offers a means of addressing these dual challenges. The data shows that with AI, businesses can test more code, and automate and execute more test cases across more devices, without investing in additional staff. In turn, they can release software updates to end-users faster, ultimately leading to benefits such as higher revenue and increased user adoption and engagement. Although some development and QA teams express reservations about certain aspects of AI in the software testing process, a majority of organizations report that they are already using AI to accelerate processes like updating scripts and analyzing test results, and see opportunities for expanding their use of AI further.

Drawing on data from the Kobiton Mobile Development & Testing Survey, this report details these trends, quantifying how developers and QA teams are using AI in the context of software testing today.

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Slow Software Delivery:

A costly problem



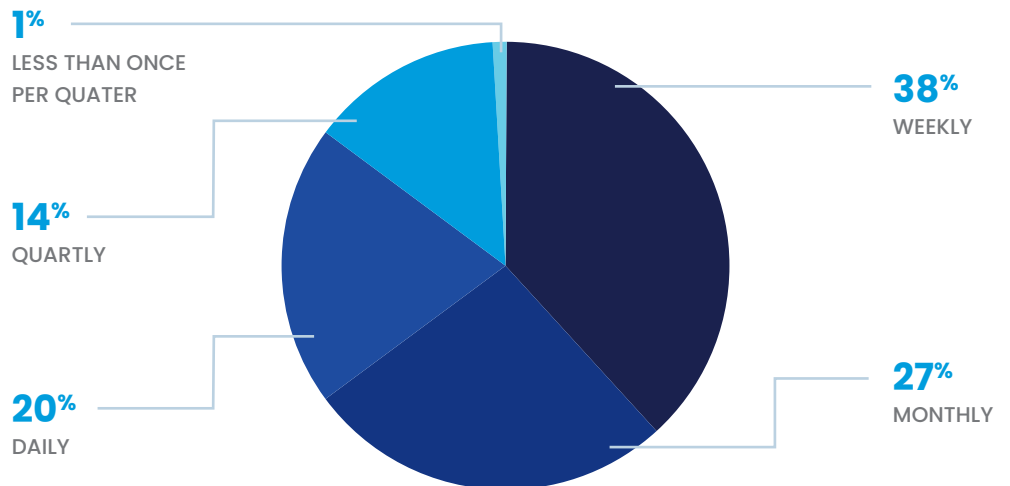
Survey data shows that rapid software delivery cycles have become the norm in the context of mobile development – which is no surprise, given the pervasive influence of DevOps across all corners of the software development landscape. DevOps encourages teams to push out application updates on a regular basis using an approach called **continuous delivery**, which emphasizes highly automated and repeatable software delivery practices.

However, despite the widespread adoption of DevOps practices in mobile development among survey respondents, the software delivery pipelines at many organizations do not move as fast as they need to to maximize revenue and customer engagement.

Continuous Delivery is Widespread in Mobile Development

A majority of mobile development teams have now embraced accelerated delivery cycles, with 58 percent reporting that they release updates at least once per week. 20 percent release as often as once each day.

How often do you release updates to your mobile app?



Delays Hamper the Mobile Development Process

However, the data shows that many teams want to move even faster, yet are hampered by software delivery processes that take longer than they should. 47 percent of respondents said they faced inefficient **development and QA processes**, and 40 percent struggle with a lack of adequate development and QA staff members to sustain their software delivery goals.

In addition, half of respondents reported that limited financial resources for development and QA initiatives slow down delivery.



Slow Software Delivery Directly Harms the Business

The impact of these challenges extends beyond causing teams to move more slowly than they would like. It also has profound implications for the business as a whole. One-third of organizations say that they lose revenue due to slow mobile software release cycles, and 40 percent report diminished rates of customer satisfaction.

40%

Diminished customer satisfaction

33%

Missed revenue opportunities

26%

Dev organization staff churn

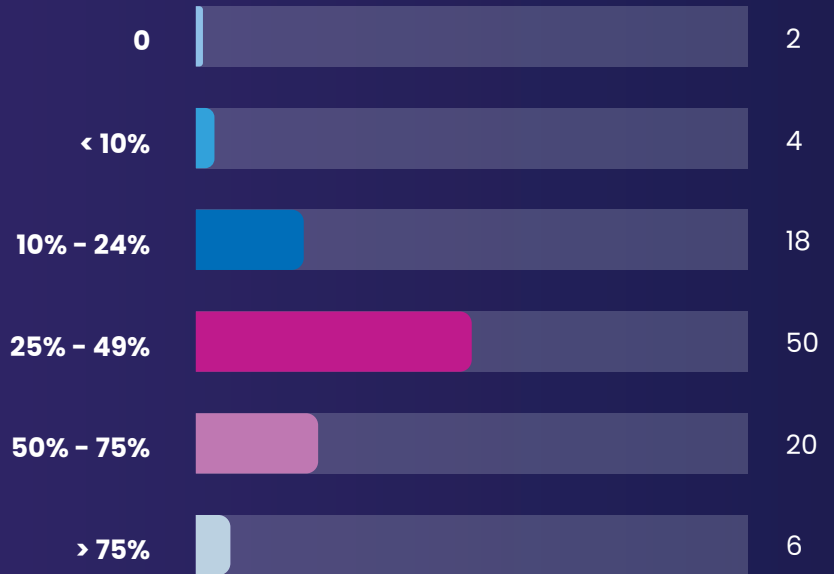
1%

Other

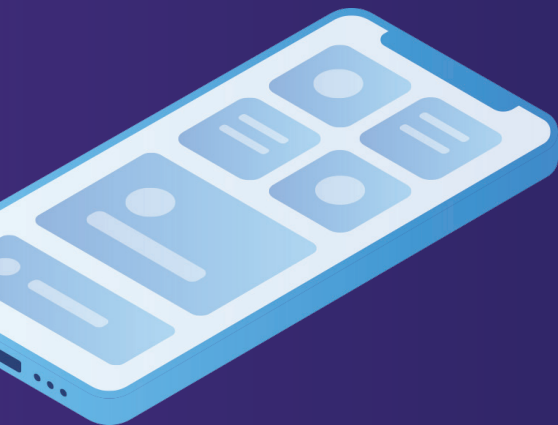
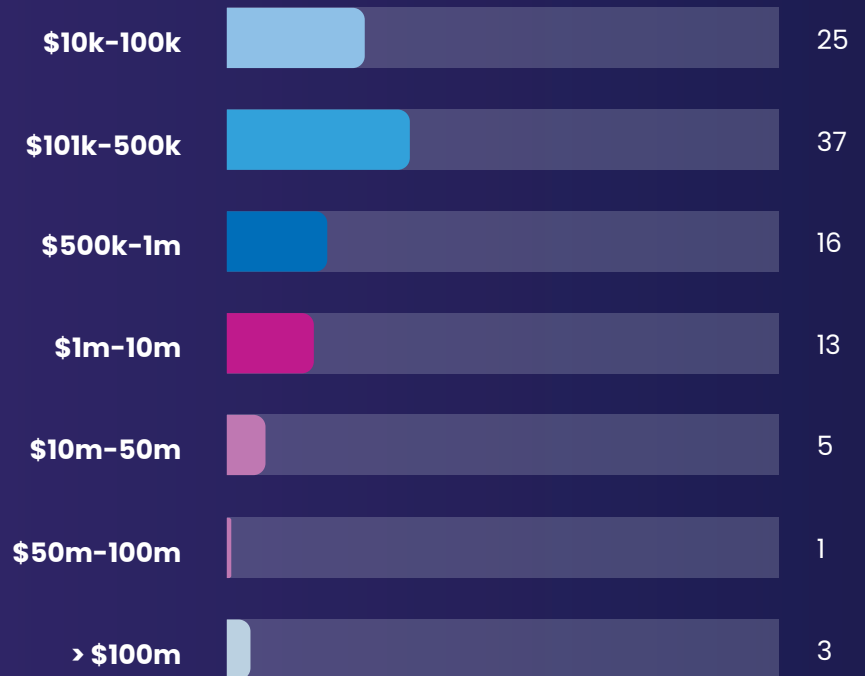


Given that more than three-quarters of businesses surveyed depend on mobile apps for at least 25 percent of their total revenue, slow mobile development has clear consequences for their bottom line. According to survey data, one-third of companies lose more than \$500,000 annually as a result of slow release times.

What percentage of your company's revenue is earned through mobile?



Estimate how much revenue is missed annually due to slow release times.



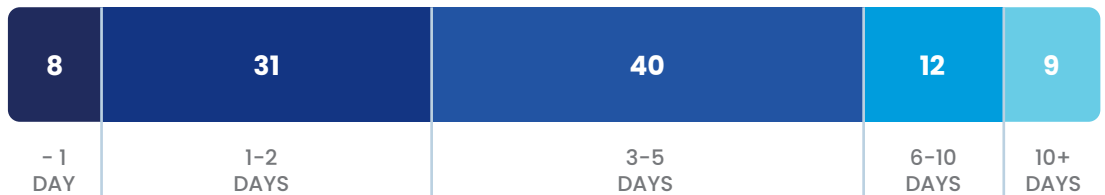
The Role of Automation in Accelerating Mobile Software Delivery

QA professionals view the automation of software testing as the key to speeding mobile software delivery cycles and mitigating the challenges described above. However, challenges in implementing and maintaining automated tests continue to limit the extent to which teams take advantage of automated testing.

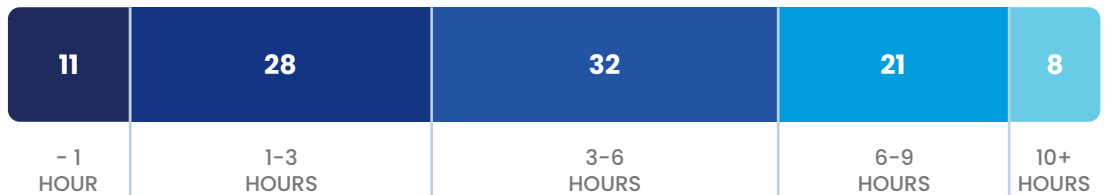
The Benefits of Test Automation

By allowing QA engineers to run tests faster, **test automation** delivers dramatic speed boosts for software. Manual tests take a majority of organizations at least 3-5 days to execute, while they can complete automated tests in just hours.

How long does it take to execute your manual test cases before every release?



On average, how long does it take to run automated tests for daily builds?

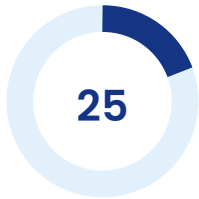


In This Respect...

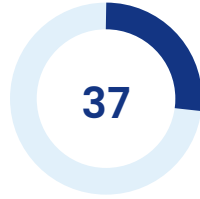
Automated tests help ensure that QA and development teams are able to meet their goals of releasing updates as often as every day.

This translates to faster release cycles and faster time to market, with more than half of respondents reporting that test automation has decreased their time-to-market by at least 25 percent.

What is the most positive business outcome since implementing automation testing?



Our time to market has decreased by less than 25%



Our time to market has decreased by 25%-50%



Our time to market has decreased more than 50%

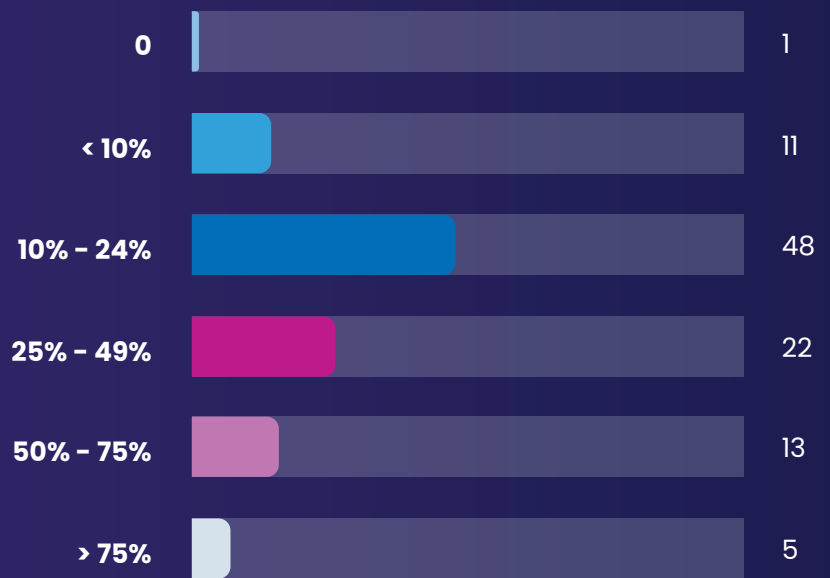


Manual testers have been able to start writing automation scripts

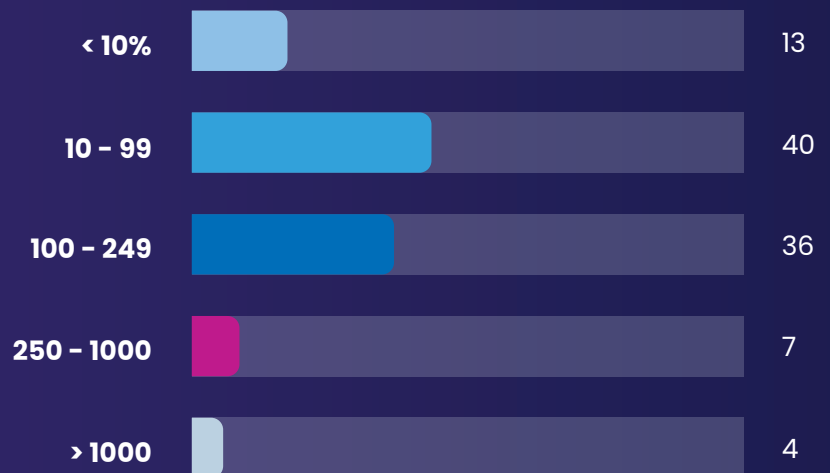


A majority of survey respondents have automated less than 24 percent of their tests. In addition, 47 percent reported that they execute at least 100 manual test cases for application release.

What percentage of your mobile test cases are automated today?



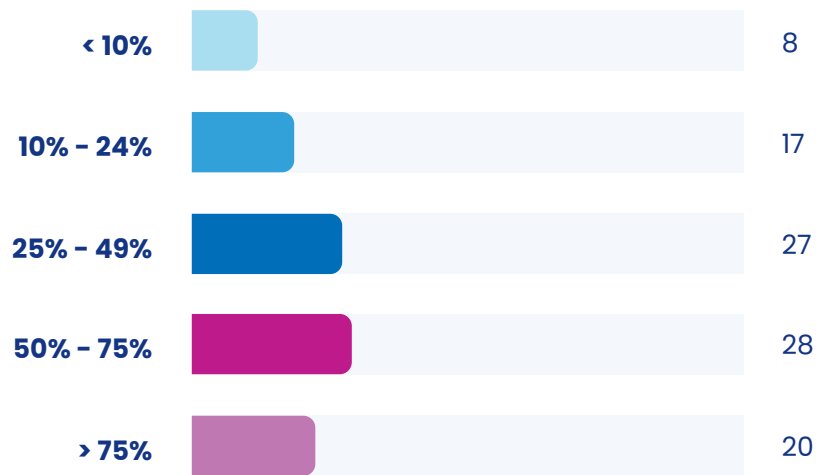
Approximately how many manual test cases are you executing with each app release?



However...

About half of organizations said that they would ideally automate 50 percent or more of their tests.

What percentage of mobile test cases would you like to have automated?



Challenges to Test Automation

Respondents cited a variety of barriers that offer insight into why they are not making more extensive use of test automation, despite their clear desire to do so.

Time-Consuming Test Development

One challenge is writing tests. More than half of respondents indicated that writing a single test case requires at least 9 hours of work. 8 percent said it takes 40 hours or more.

Strategies teams are using to expand mobile test automation coverage.



Script Maintenance

Maintaining tests is another key challenge. When applications change, QA engineers often must update tests to reflect the changes. While 15 percent of organizations are able to make these updates in less than a day, most teams take much longer. 47 percent of respondents said it takes them at least 3 days—and in some cases multiple weeks—to update automation scripts.

If mobile automation is in place, how long does it take to update automation scripts for a new app release?

15%

- 1 day

38%

1-3 days

28%

3-7 days

13%

1-2 weeks

4%

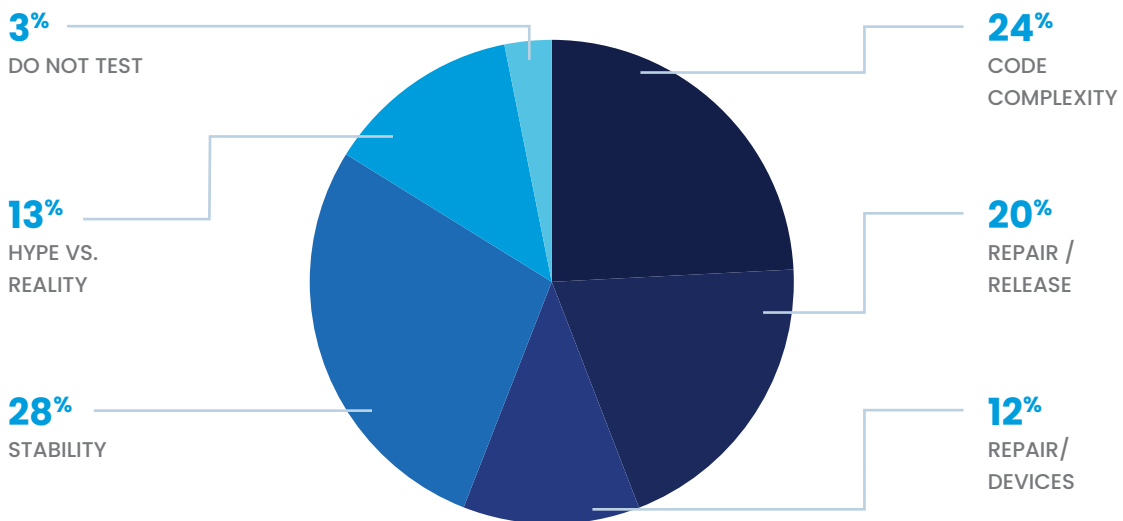
2-4 weeks

2%

+4 weeks

Code Complexity and Stability Challenges

Complex codebases and code instability risks appear to exacerbate the test automation challenges described above. 28 percent of respondents said that stability is their top barrier in the context of test automation, while 24 percent cited code complexity concerns.



The Mobile Testing Environment

In mobile automation testing, the strategic use of emulators, simulators, and real devices allows development teams to balance efficiency, accuracy, and authenticity throughout the testing process. Emulators replicate both hardware and software on a computer for comprehensive testing during early development.

Simulators mimic software aspects, notably in iOS through Xcode, enabling quick testing iterations without physical devices. **Real Devices**, actual smartphones or tablets, provide authentic testing, essential for real-world performance and user experience insights.

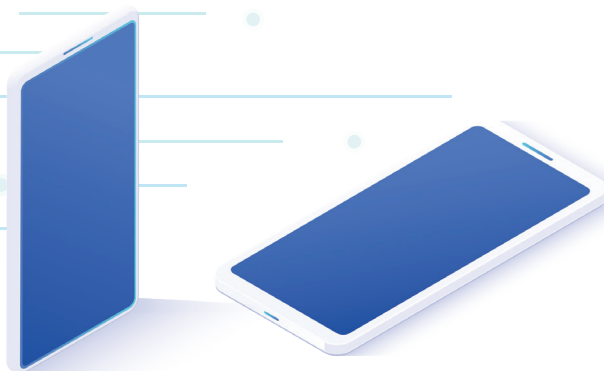
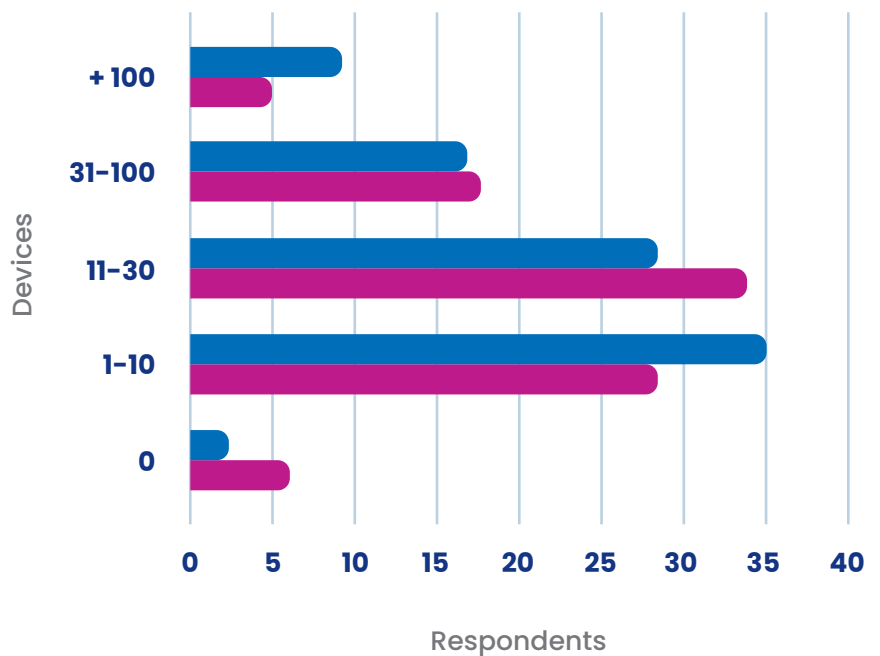


Testing on Real Devices vs. Emulators and Simulators

Balancing the use of real devices, emulators, and simulators in mobile testing poses a dynamic challenge for companies. Our findings indicate that real devices have higher adoption rates in the extremes—with over 100 devices for extensive coverage in larger organizations and in the 1-10 device range for smaller teams. This mixed approach allows companies to benefit from the realism of testing on actual devices while also leveraging the cost efficiency of emulators and simulators.

How many mobile devices does your team use in the test execution cycle?

- REAL DEVICES (smartphones / tablets)
- VIRTUAL DEVICES (emulators / simulators)

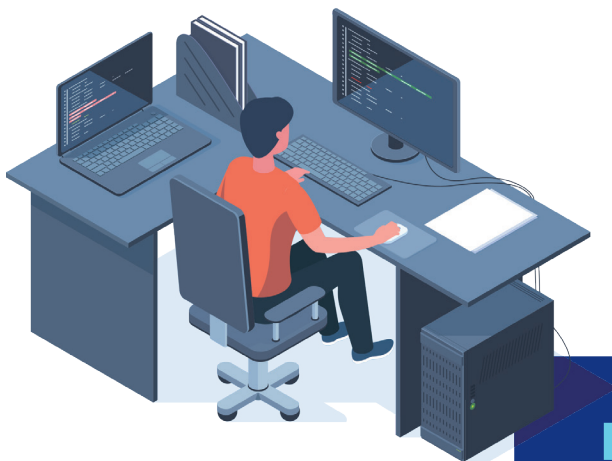


The Role of AI in Enhancing Test Automation

Increasingly, businesses are turning to AI as a means of taking greater advantage of test automation so that they can in turn reap more of the benefits that automated testing stands to offer.

Excitement About AI

Although respondents expressed some concern about how AI could negatively impact careers and software quality, a significant number of teams said they are excited about AI's potential to increase software development productivity. Many also indicated that they see AI as a way to free engineers to focus on other, more productive tasks.



How do you feel about the use of AI in software dev organizations?

22% Concerned AI tools might hurt our job/career opportunities

22% Concerned AI tools might negatively impact the quality of software

34% Excited about the potential to increase software development productivity

22% Excited about how AI tools could free developers to provide value in new ways

50%

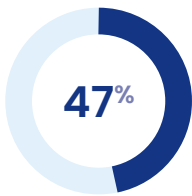
In addition, 50 percent of respondents said they can envision AI eventually replacing manual mobile app testing completely.

The State of AI Adoption for Test Automation

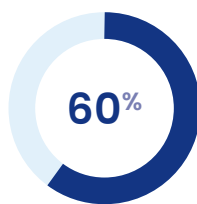
More than half of organizations are already taking advantage of **AI to improve test automation**. 47 percent generate test scripts with AI, for example, while 60 percent use AI to update scripts.



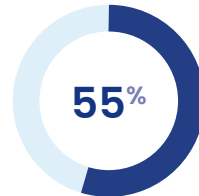
How has your organization used generative AI tools in your QA cycle?



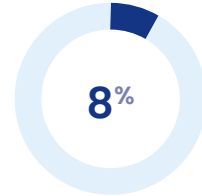
Generate test scripts



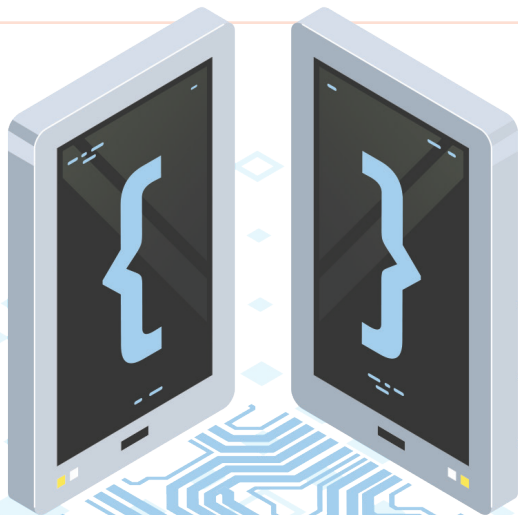
Update scripts or code



Analyze test results



Have not used generative AI



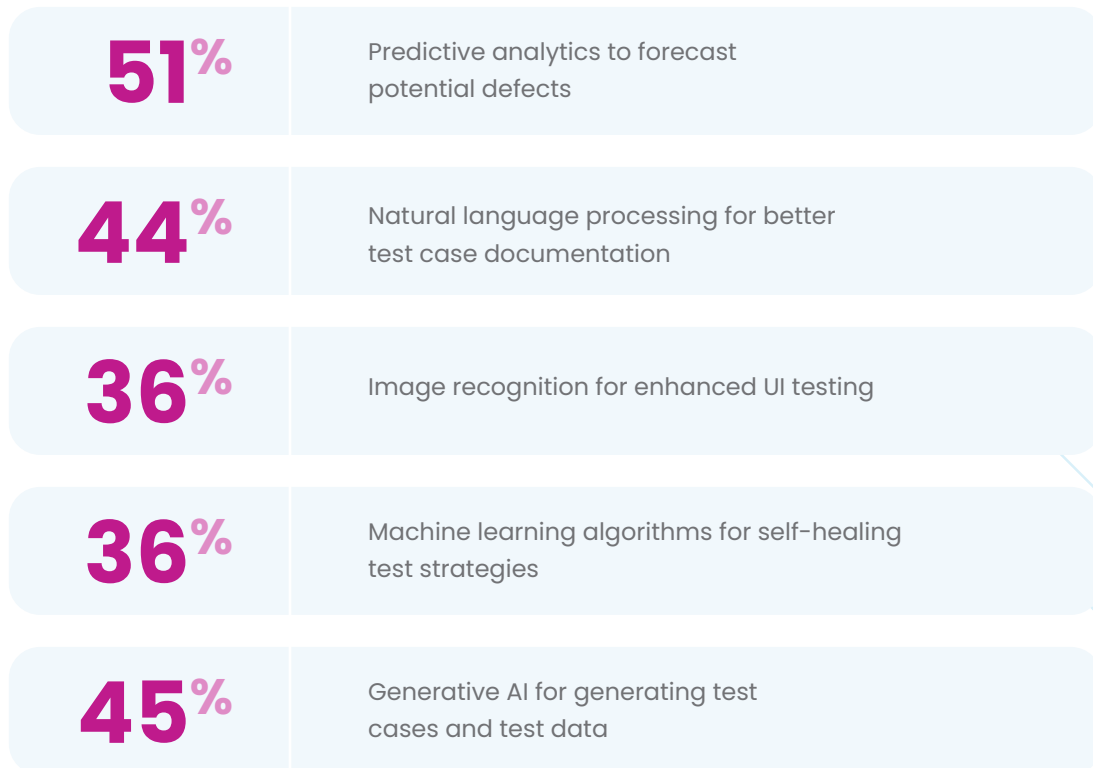
These practices alleviate key test automation challenges, which (as mentioned above) include time-consuming test development and the difficulty of keeping tests up-to-date.

Additional AI Benefits For Test Automation

Beyond the test automation tasks that AI is already addressing, QA professionals see opportunities for leveraging AI in a variety of other ways.

44 percent said they can benefit from AI to help produce test case documentation, for example, while 36 percent cited AI-based self-healing features (which can automatically fix broken tests to avoid software delivery delays) as an advantage they'd like to leverage.

Which of the following AI capabilities would be most beneficial for your mobile test automation strategy?



Key Takeaways

In summary, Kobiton survey data shows that:



Embracing DevOps

The typical organization has embraced DevOps and aspires to continuous delivery for mobile apps. 58 percent of businesses now release mobile app updates or bug fixes at least once per week.



Delays Impact on Businesses

Inefficient software development and QA processes cause delays for nearly half of organizations, leading to slower updates than teams would like.

These delays have a direct impact on the business by causing lower customer engagement, as well as revenue loss that in some cases amounts to hundreds of thousands of dollars per year.



Automate Software Tests

To mitigate these challenges and speed software delivery, the typical team seeks to automate at least half of its software tests. Due to challenges in test implementation and maintenance, however, most teams currently automate fewer than 24 percent of their tests.



AI can help close the gap between test automation goals and realities.

While about half of organizations today are already using AI for software testing in some way – especially for test generation and updates – there remains plenty of opportunity to leverage AI to gain additional benefits, like performing self-healing to repair broken tests.

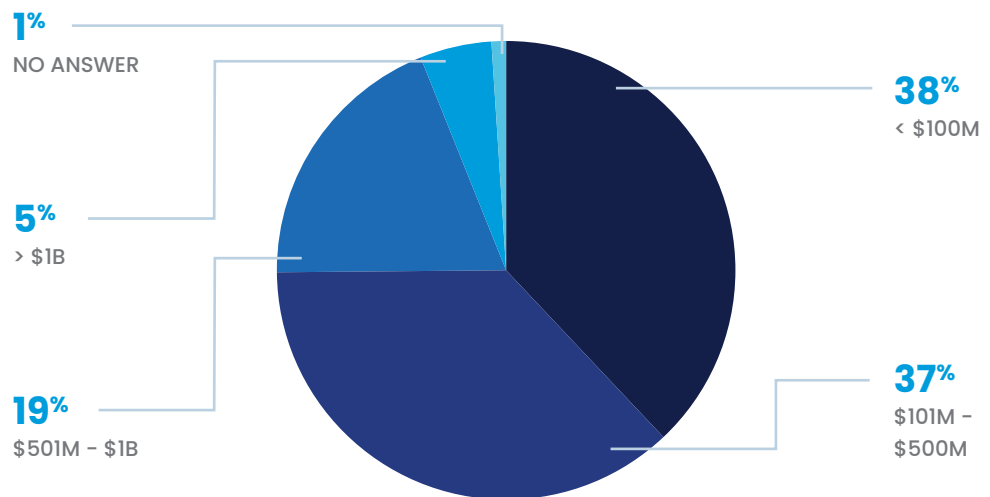
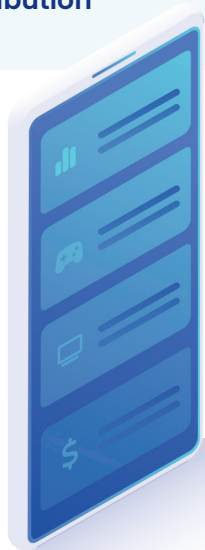
Conclusion

Taken as a whole, the data shows that AI is already having a major impact on test automation and is poised to play an even greater role in software testing in the coming years. Businesses that leverage AI-based tools to increase the number of tests they automate gain clear benefits in the form of increased revenue and higher rates of customer engagement. Meanwhile, those who lag in the adoption of AI for software testing face increasing risks of falling behind in achieving their business goals.

About this Survey

From October 9, 2023 - October 24, 2023, Kobiton surveyed 100 developers and software testing professionals who were directly involved in the development and testing of mobile apps, and employed at companies with at least 100 employees.

Company revenue distribution



Company industry distribution



About Kobiton

Kobiton is a cloud-based platform that empowers enterprises to build great mobile apps faster. With Kobiton, mobile app developers and testers have access to real iOS and Android devices to run manual or automated scripts, compare against the world's leading app UIs, view rich session analytics, connect virtually to their IDE, and identify issues in real-time. Kobiton tames the complexity of mobile app development by giving you your Monday back.

Learn more at www.kobiton.com



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