

TURKEY SOFTWARE QUALITY REPORT

2019-2020

SOFTWARE TESTING
CAREER

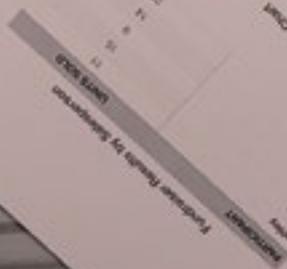


TESTISTANBUL
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107 International Software Test
Engineers
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Re-Energize Your Test
Test Engineer X.0 : A Bright Career Opportunity

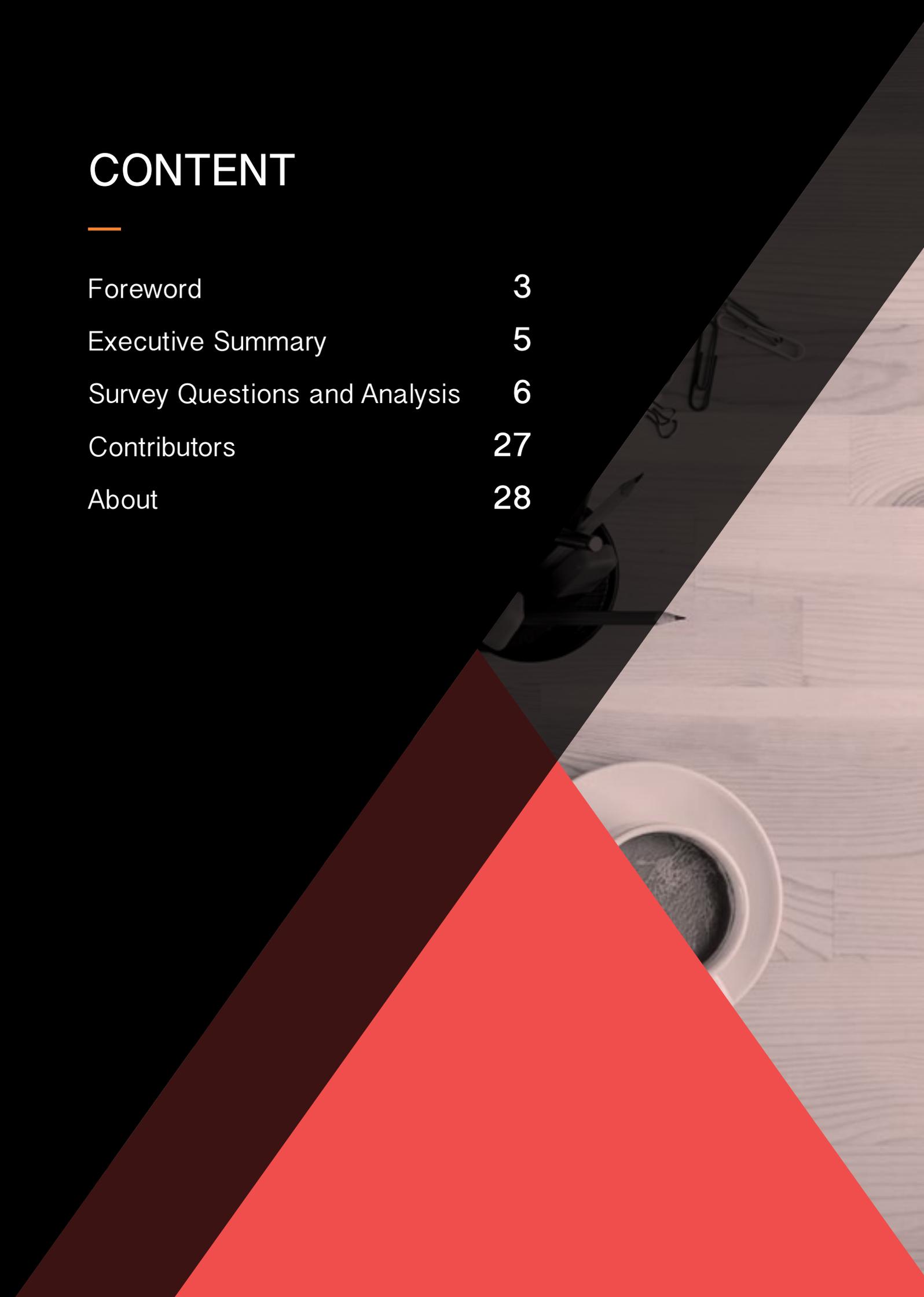
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Test Report



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FOREWORD

As Turkish Testing Board, we are pleased to bring you the 2019-2020 edition of the Turkey Software Quality Report [TSQR] which focuses on “Software Testing Career” and “Re-energizing Software Testing Teams”. For the last 10 years, software testing industry in Turkey has experienced huge progress and steady growth. But, this rising trend was not painless. Software testing teams were the ones who had to deal with the challenges of this growth the most. So, we believe software testing teams deserve a special issue of TSQR dedicated to them and to their career paths in order to praise their efforts and commitment in this success.

The report is designed to help organizations and especially decision makers to make paradigm shifts in their mindsets. It not only draws a clear picture of the current situation in the Turkish software testing industry but also sets the de-facto standards and trends for future information technology (IT) projects. We hope this report will be a reference point for all decision makers.

With the help of TSQR, we are trying to lay down the foundations of a healthy discussion platform for improvement in Turkish software testing market. As a conventional practice, TSQR will be presented at the opening ceremony speech of TestIstanbul 2019 (<https://testistanbul.org>), initiating a series of keynotes, presentations, and discussions.

Regards,

TestIstanbul Strategy Committee



OVERALL EARNINGS

UX

EXECUTIVE SUMMARY

Software testing cannot be imagined separate from software development, business analysis, UX design, and project management. The career trends affecting these disciplines are also affecting the careers of software testers. The shift from I-shaped competency model to T-shaped, Pi-shaped, and even to comb-shaped competency models, the emergence of software development engineer in test (SDET), and the convergence of roles and capabilities into one role such as full stack developer are all affecting the career of software testers. The impacts of these trends can be easily observed in Turkey Software Quality Report (TSQR) as well. TSQR survey respondents indicated that their organizations are expecting diverse skill sets from their software testers such as:

- Bug reporting
- Test execution
- Test analysis
- Test planning
- Test automation
- Test design
- Test implementation
- Test monitoring
- Test strategy
- Business/domain knowledge
- Continuous testing
- Tool knowledge

Those are the skills sets which received more than 40% of the responses among survey respondents. In parallel to the diversification of the skill sets of a typical software tester, education background of a software tester has also diversified. The most common backgrounds a typical tester has are:

- Engineering
- Mathematics
- Management
- Statistics
- Economics

These diversifications both in skill sets and backgrounds could not happen without a growth in software testing industry. More than 80% of the respondents are expecting a growth or at least stability in their software testing teams or budgets. 2019 and 2020 will be exciting years in the history of Turkish software testing industry.

As usual, you can access the softcopy of this report together with previous reports at www.turkishtestingboard.org and we are hoping to see you at TestIstanbul 2019 Conference on April 16th to discuss the findings.

QUESTIONS

1

What was your motivation in selecting software testing as your career path?

2

What is the tester/developer ratio in your organization?

3

How does your organization improve the competency level of your testers?

4

What is the annual turnover rate of the software testing team in your organization?

5

In your organization, how aligned is software tester career path with business analyst and software developer career paths in terms of salary, promotion, and career opportunities?

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Please rank the below tests based on the allocation of testing effort in your organization.

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When do your test automation efforts generally start during a project?

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Which testing and non-testing skills are expected from testers in your organization?

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For the next 12 months, what is the growth expectation for the test team in your organization?

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Which education background/s do testers have in your organization?

What was your motivation in selecting software testing as your career path?

* multiple selection was allowed



ANALYSIS OF THE CURRENT SITUATION

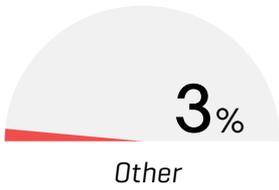
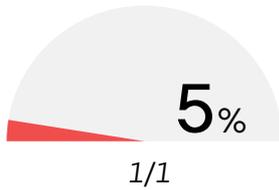
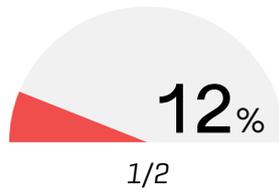
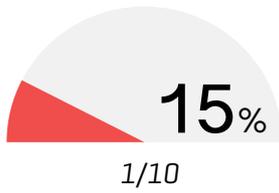
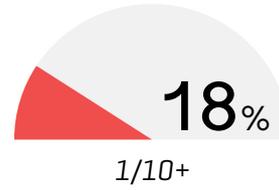
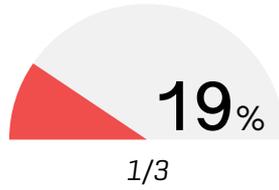
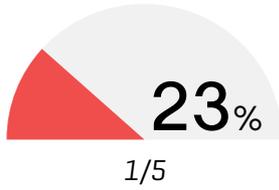
Software test engineers need systemic thinking skills, good eye for detail, and error catching. According to the survey results, it is clear that these skills are in the top three motivations in selecting software testing as a career path. Following these motivations is having bright career opportunities. Survey results show that there is a group who selected software testing by coincidence. This is due to the fact that software testing is not sufficiently explained in the industry and especially in the universities.

FUTURE PREDICTIONS

The top three motivations in selecting software testing as a career path are expected to be the same. Yearly growth rate of software testing is around 13 percent. As a result, the demand for software test engineers will increase. To respond this demand, the industry and academy should have a closer collaboration in recruiting and educating software test engineers. Since the awareness about software testing will increase, the group who selected software testing by coincidence will decrease. This will improve the quality of software test engineers.



What is the tester/developer ratio in your organization?



ANALYSIS OF THE CURRENT SITUATION

Comparing to last year's results, the total percentage of tester to developer ratio that is above 1 tester per 5 developers is almost the same. 60 percent of the participants reported that they are working in an environment where 1 or more testers are hired per 5 developers. This means that, testing is perceived as an important part of the development process. However, 33 percent of the participants reported that they are working in an environment where 1 tester is hired per 10 or more developers. This year's percentage is slightly higher than the last year's percentage. This might be caused by the responsibility changes and the variation of roles induced by agile frameworks.

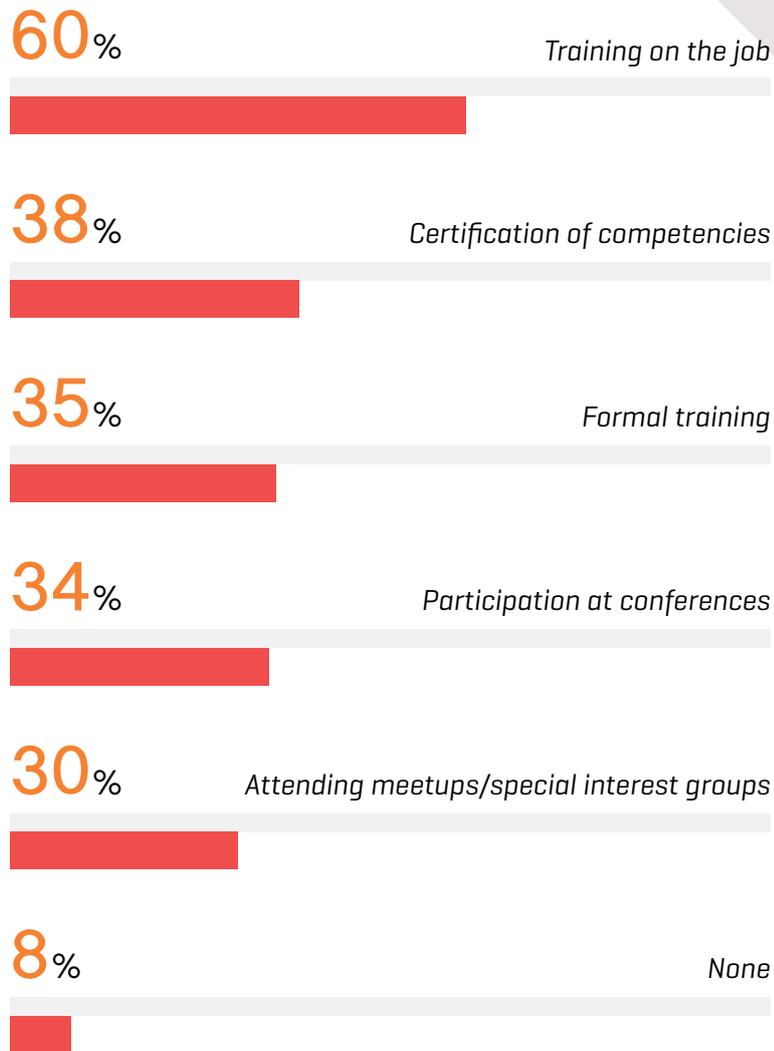
FUTURE PREDICTIONS

Compared to current IT market, future IT market is expected to demand even faster and higher-quality product deliveries. Thus, more high-quality outputs are expected in less time from IT teams creating the need for more automated testing and more testers having automation capabilities. The number of manual testers is also expected to grow but if the developers invest more in clean code practices as expected today and test automation is done properly, the increase in the number of manual testers will not be as many as the increase in the number of test automation engineers.



How does your organization improve the competency level of your testers?

** multiple selection was allowed*



ANALYSIS OF THE CURRENT SITUATION

Results show that more than 90% of the organizations invest in improving the competency level of their testers. 'On the job training' is the most selected option which is fundamental to the success of every business regardless of the industry where experienced mentors or supervisors provide the training at work. This is indeed very important in software testing jobs where there are currently very different test approaches, practices, tools, domains, and environment in the organizations. It is very important for testers to have these coaching sessions to get involved with the team and be productive in their work quicker.

Organizations also support the 'certification of competencies' with a rate of 38%. This result shows that companies are aware of the fact that having the certified tester in their organizations is important. Having certified testers brings the common language of software testing in their organizations. In addition, certification means there will be a need for the preparation for it, so it means there is more focus on studying on software testing which brings more awareness of software testing aspects.

'Certification of competencies' is followed by 'Formal training' with a rate of 35%. This is not surprising since testers need to study before the certification, where formal training is very helpful and important.

'Participation at conferences' is rated as 34%. This result shows that organizations are also happy with the result of getting new ideas, approaches, and good practices out of the conferences. By this way, testers get useful information, the practical approach to apply in their work.

'Attending meetups/special interest groups' is evaluated with the rate of 30%. Participating these events are very useful for testers to focus on particular areas and meet people in the similar areas to share, learn and apply.

There are also some organizations that are not supporting their testers with the above topics, with the rate of 8%. One suggestion for testers who work for those organizations would be to follow online courses, blogs, and webinars to improve themselves and gain competencies.

FUTURE PREDICTIONS

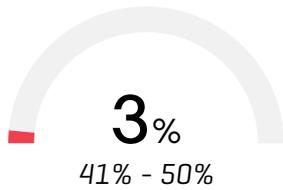
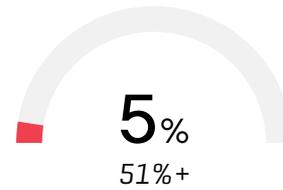
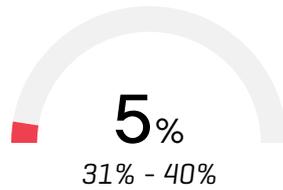
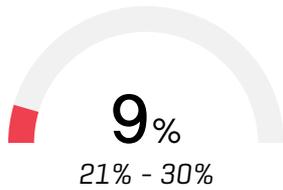
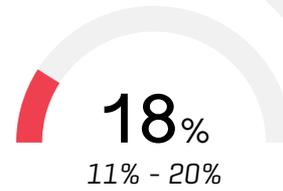
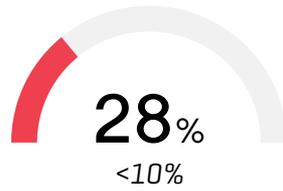
Having the great advantages of 'on the job training' in mind, it will be also important for organizations to consider creating 'online trainings' where in this digital age, everything is being digitalized. Creating video tutorials, online guidelines for job, and online new joiner programs will be very helpful and less time consuming.

Conference participation will still be very popular and a good option to gain competency but testers should also think about not only participating but also presenting their best practices to get feedback. This will also help improve themselves.

Certification programs are and will always be important to keep the software testing terminology common within software testing world, make testers understand the testing processes, and help testers have the confidence of being capable of proposing good approaches to software testing in the organization.



What is the annual turnover rate of the software testing team in your organization?



ANALYSIS OF THE CURRENT SITUATION

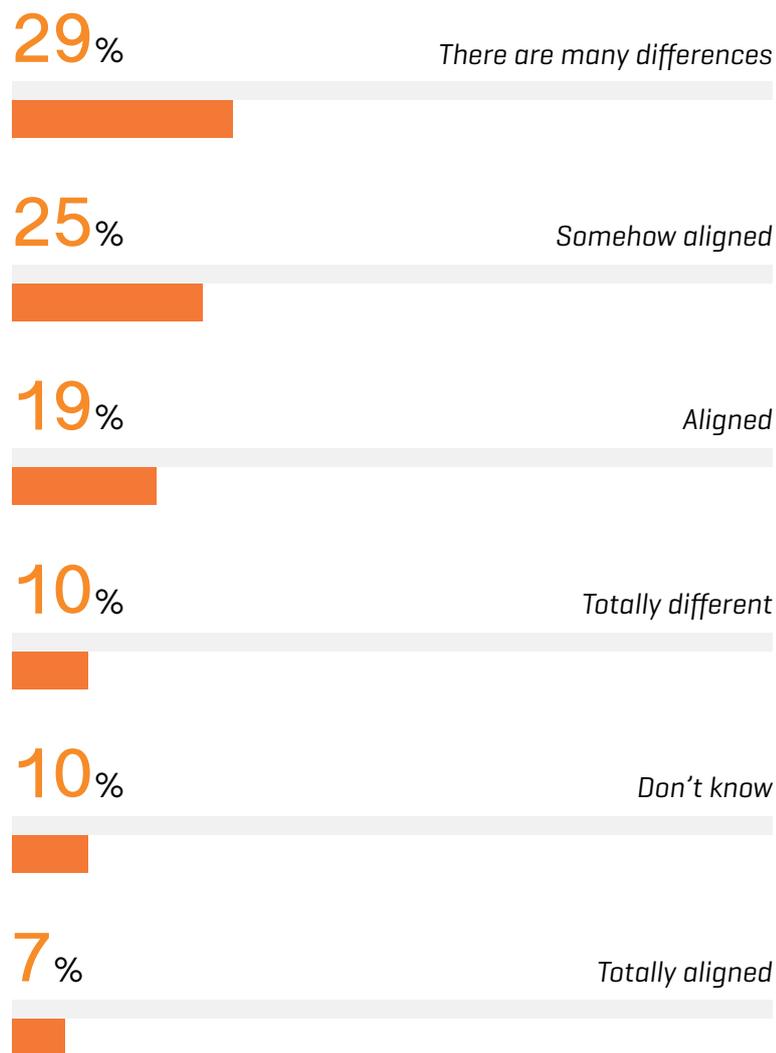
Results show that the software testers are happy working in their current organizations. Among respondents, although response rate of 20% or more turnover rate is not very high, it still should be considered seriously and the current employers shouldn't feel comfortable in this competitive job market. The most important and interesting response among the responses is the "Don't Know" option which is much higher than the others. This shows that the most important metric to evaluate the healthiness of a team is not measured well.

FUTURE PREDICTIONS

Test team leads will need to have decent action plan to re-energize their teams by converting them future-proof testers having new skills to adjust themselves to the trending topics such as Agile, DevOps, test automation, AI-assisted testing, cloud, and container-based world. These trends will demand highly skilled testers which will be a challenge to recruit them due to the lack of high qualified testers in Turkish market.

The other challenge facing the software testing teams will be the mindsets of top management. If test teams do not adapt to the changing needs of the market and deliver expected value, top management may consider test teams as cost centers. In order to prevent this, the entry criteria for test teams should be defined clearly and it should not be easy to be a part of the test team. There should be well defined career paths for testers such as test architect, software development engineer in test, test analyst, and technical test analyst.

5 In your organization, how aligned is software tester career path with business analyst and software developer career paths in terms of salary, promotion, and career opportunities? (5-Totally aligned, 3-Somehow aligned, 1-Totally different)



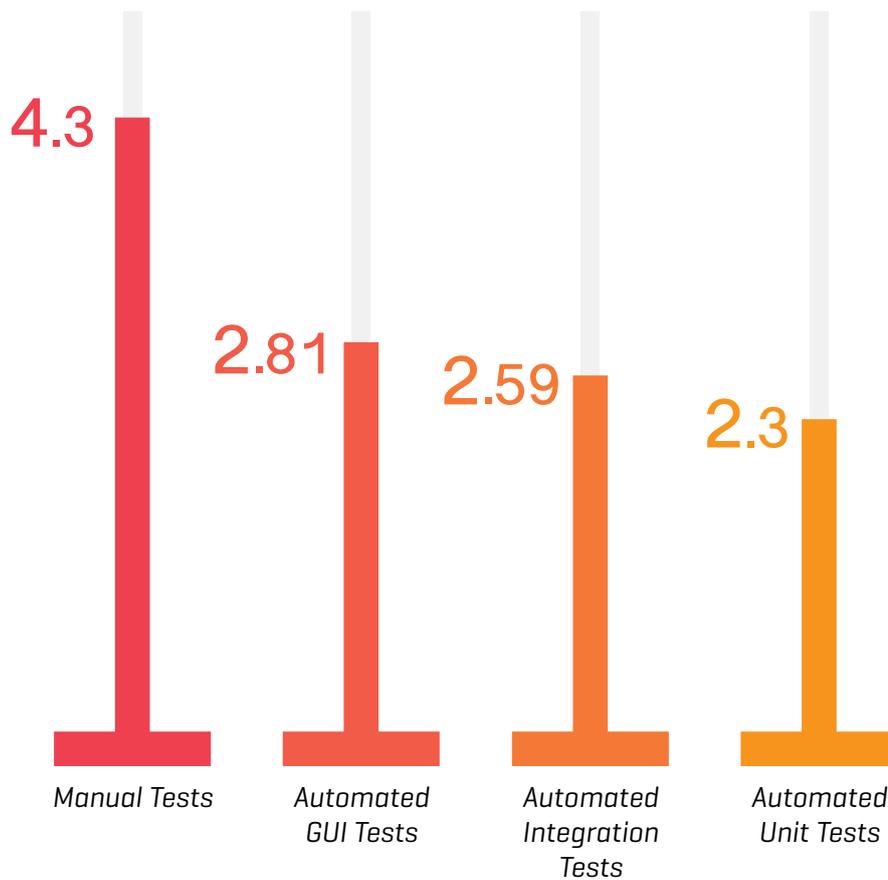
ANALYSIS OF THE CURRENT SITUATION

Survey results show that majority of testers [more than half of the respondents] believe that career paths in terms of salary, promotion and career opportunities are different than that of the software developers and business analyst. Only 26 percent think they are totally aligned or aligned. This is because the testing area in Turkey has still some space to grow and, the recruiters and managers of the companies still behave testing not as a profession but as part of an analysis task. Moreover, unfortunately, there is a widely accepted thought that says testing is not much difficult compared to software development, the individuals who can't code become testers and everyone can test. This could only be changed by showing the increased quality and efficiency when testers are involved in a task.

FUTURE PREDICTIONS

The shift from manual testing to automated testing, the rise of agile and DevOps, the evolving technologies like AI, IOT and machine learning would be very challenging for software testers. Testing is one of main drivers and a catalyst in the success of DevOps, however the roles and responsibilities are getting blurred by DevOps. Besides all these challenges, companies need software testers, who play an essential role in producing high quality product to win the customer trust, more than ever. If the testers adapt to this change by developing new skills [especially automation skills] and refreshing their knowledge base, the future of software testers would be bright.

6 Please rank the below tests based on the allocation of testing effort in your organization. (5-Highest testing effort is allocated, 1-Lowest testing effort is allocated)



ANALYSIS OF THE CURRENT SITUATION

Results indicate a perfect anti-pattern for test automation. It is called “Ice-cream Cone Anti-Pattern” meaning lowest effort is spent to unit test automation, a little higher to integration test automation, more to system/GUI test automation and most to manual testing. Such an automation architecture comes up with great risks in maintainability, stability, and reliability. That no organization wants to have.

Although higher levels of test automation cover business logic more, the chance of having false-positive or false-negative results get higher significantly. This phenomenon is called flakiness. The flakiness of the test scripts brings a significant maintenance burden avoiding new case development. It is the exact opposite for unit tests. While unit tests provide less business coverage, flakiness converges to zero.

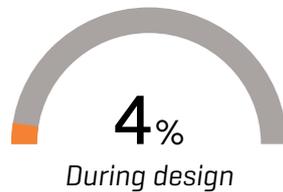
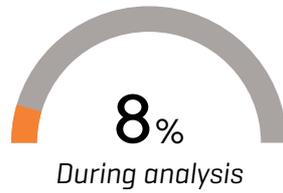
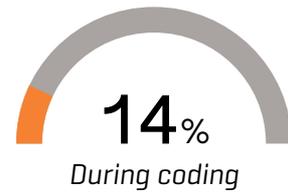
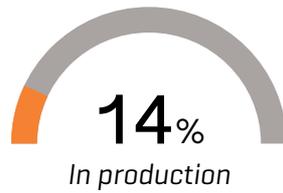
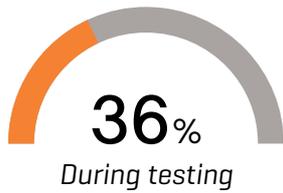
Besides that, low unit testing numbers might be a sign of problems in collective ownership. Development teams may not feel responsible for the quality of the product. And that can be counted as a serious problem in the foundations.

FUTURE PREDICTIONS

In the near future, we might expect that the ice-cream cone anti-pattern will evolve into the right test automation pyramid, maybe not the ideal one but close to. Increasing awareness and experience in the test automation area let companies see the drawbacks and side-effects of the wrong approach which may cost too much to them in the long run. Especially for the ones who want to transform into DevOps.

Meanwhile, QA Teams might be expected to play a key role in the implementation of the right test automation pyramid. Since QA does not stand for quality assurance or quality analyst anymore but stands for quality assistant, it is the assigned QA Teams to bear the flag of quality and help stakeholders in name of. Undoubtedly bring best practices to the testing process and get rid of anti-patterns.

When do your test automation efforts generally start during a project?



ANALYSIS OF THE CURRENT SITUATION

Most of the survey respondents mentioned that their testing efforts start during testing, production, and coding phases rather than planning and analysis. This means that, still in most organizations testing is realized as the last phase of software development lifecycle [SDLC]. This late positioning of testing activities especially testing efforts in production environment brings higher risks for system under test. Users of the system might experience service interruptions and fatal errors that can be hardly recovered.

FUTURE PREDICTIONS

According to International Software Testing Qualifications Board (ISTQB) standards, software testing should not be handled as a last stage in software development lifecycle. It is a set of activities that should be integrated into all phases of SDLC including planning, analysis, design, and coding. For instance, test plans should be a part of project planning and test case designs should be a part of analysis and design activities. Additionally, this integrated approach is a must have for organizations having Agile and DevOps transformations. Agile and DevOps even necessitates “continuous testing” approach and shift left testing which put testing at the center of every SDLC activity to handle regression issues and ensure super-fast software delivery.



Which testing and non-testing skills are expected from testers in your organization?

* multiple selection was allowed



21% Coding



21% System Thinking



20% System Analysis



17% Workload estimation



14% Project Management



14% Continuous Deliver



10% Enterprise Analysis



8% Network



4% Containerization



ANALYSIS OF THE CURRENT SITUATION

According to the survey results, top three skills expected from testers are “Bug Reporting”, “Test Execution”, and “Test Analysis”. “Test Planning” and “Test Automation” are the following skills. “Test Design”, “Test Implementation”, and “Test Monitoring” are the ones which are expected from at least half of the organizations. The fact that the percentages of “Business Analysis”, “Coding”, and “Project Management” remain low shows that organizations are expecting the testers to focus more on testing practices.

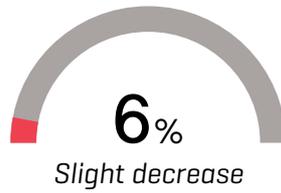
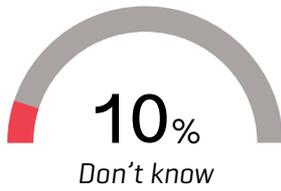
FUTURE PREDICTIONS

With the Agile transformations and the DevOps approaches becoming widespread in the IT world, organizations have begun demanding the testers to develop more test automation skills. For this reason, the “Test Automation” skill is expected to be one of the top three skills in near future. Test planning, Test Analysis, and Test Implementation will continue to be popular as well.

With the introduction of artificial intelligence to the IT world, the testing world will also be affected by this trend. In the coming years, organizations will demand more from testers to develop their skills related to artificial intelligence and AI-assisted testing.



For the next 12 months, what is the growth expectation for the test team in your organization?



ANALYSIS OF THE CURRENT SITUATION

Most of the organizations have realized the importance of testing in software development. However, in the past while the testing used to mean only the test execution, now it includes many topics such as test analysis, test design, test planning, test reporting, test automation, and test monitoring. As a result, organizations have begun to invest more in testing and test teams.

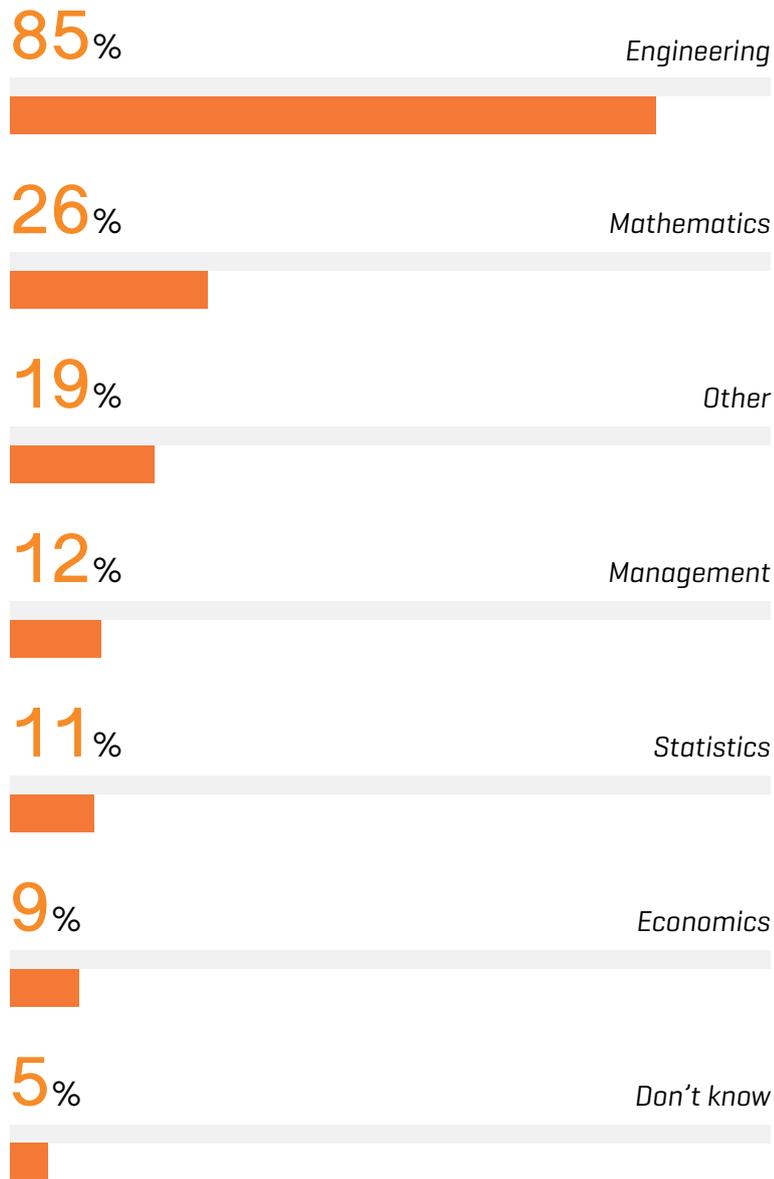
FUTURE PREDICTIONS

Despite the difficult market conditions, the reasons mentioned above will not allow the test teams and testing budgets to be downsized, on the contrary they are expected to grow. This growth will be sustained both by outsourcing testers and/or distribution of testing among other team members as it is in Agile teams.



Which education background/s do testers have in your organization?

** multiple selection was allowed*



ANALYSIS OF THE CURRENT SITUATION

The results show that engineering graduates have the highest percentage, 85%, within the testing team. As seen in the survey, software testers should have high analytical and problem-solving capabilities, and organizations choose among those who have engineering backgrounds. Following the engineering background, mathematics comes as second with 26%. Math education is also quite normal, as it increases the analytical thinking and problem-solving abilities of its graduates like engineering education.

FUTURE PREDICTIONS

Due to the increasing complexity of systems, increasing competition, and the lack of time for manual testing, the need for test automation and the usage of AI-assisted testing will increase the demand for more analytical skills from testers. This trend will also have a positive impact on the number of engineering and mathematics graduates in software testing.



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Yıldırım Elmacı
Sigorta Bilgi ve
Gözetim Merkezi



Zehra Taşgın
Yapı Kredi

ABOUT



Turkish Testing Board (TTB) is the regional body representing and supporting software testing professionals in Turkey. The TTB was constituted in Istanbul in September 2006 as a non-profit organization and a member of the International Software Testing Qualifications Board (ISTQB).

TTB is responsible for certification of testing professionals to the standards and syllabi laid down by the ISTQB. TTB also acts to generate public awareness of the economic and risk mitigation benefits that professional software testing practice offers.

www.turkishtestingboard.org



TestIstanbul is the largest conference in South East Europe and Middle East on software testing. TestIstanbul introduces the region not only to the advancements in software testing but also to the advancements in other streams of SDLC like business analysis, design, development and usability. With its more than 400 participants from all over the world every year, TestIstanbul creates a healthy discussion and networking platform for IT professionals and organizations.

www.testistanbul.org



ISTQB is a global, non-profit organization responsible for enabling test professionals, through globally accepted software testing certification standards to support their career development. As of December 2018, ISTQB® has administered over 830,000 exams and issued more than 605,000 certifications in over 120 countries world-wide. The scheme relies on a Body of Knowledge (Syllabi and Glossary) and exam rules that are applied consistently all over the world, with exams and supporting material being available in many languages.

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