

Czech University of Life Sciences Prague

Faculty of Economics and Management

System Engineering and Informatics



Bachelor Thesis

**Extended Abstract of The Effectiveness of the Latest Methods of
Software Testing**

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Abstract

Thanks to technological developments, software is used in all areas of our lives today. Software testing is the most crucial stage in getting the best software to the end user since it is the ultimate way to determine the quality of any piece of software. No doubt, testing has also been positively affected by all these developments in technology, and testing technology has advanced a lot today. This research aims to learn about different types of software testing with a focus on how effective modern methods are in software testing today. Software test life cycle, the importance of automation tests, Agile and Waterfall test processes will be investigated in detail.

Keywords: Functional Testing, Non-Functional Testing, Acceptance testing, Leverage Automation, Integration Testing, Waterfall methodology, Black-Box-Testing, User accessibility, End-To-End Test

Abstrakt

Díky technologickému vývoji se dnes software používá ve všech oblastech našeho života. Testování softwaru je nejdůležitější fází při získávání nejlepšího softwaru pro koncového uživatele, protože je to konečný způsob, jak určit kvalitu jakéhokoli softwaru. Není pochyb o tom, že testování bylo také pozitivně ovlivněno veškerým tímto technologickým vývojem a technologie testování dnes velmi pokročila. Cílem tohoto výzkumu je seznámit se s různými typy testování softwaru se zaměřením na to, jak efektivní jsou dnes moderní metody v testování softwaru. Podrobně bude zkoumán životní cyklus testování softwaru, význam automatických testů, agilní a vodopádové testovací procesy.

Klíčová slova: Funkční testování, Nefunkční testování, Akceptační testování, Automatizace pákového efektu, Integrované testování, Metodika vodopádu, Black-Box-Testing, Uživatelská dostupnost, End-To-End test

Objective of Thesis

The objective of this thesis is to evaluate the comparative effectiveness of automated software testing approaches in contrast to traditional manual testing methods. The research aims to assess the impact of automated testing on reducing defects and enhancing software reliability. It will involve a comprehensive analysis of existing literature and empirical studies to examine the advantages and disadvantages of both approaches. Additionally, interviews with software testing professionals will be conducted to gather insights and perspectives on the challenges and considerations associated with implementing automated testing in real-world software development processes. The findings of this research will contribute to a deeper understanding of the effectiveness of automated software testing and provide insights into the potential benefits and limitations of adopting automated testing methods.

Methodology of Thesis

Qualitative methods of research will be used, involving employee interviews and questionnaire-based survey for a more comprehensive understanding of software testing methods used in selected company.

Interviews will involve observing activities, team interactions, and any challenges encountered during testing.

Data obtained through employee interviews and surveys will be analyzed using a theoretical framework to identify recurring patterns and themes related to software testing methods. The analysis will focus on identifying bottlenecks in the current software testing practices and exploring the advantages and efficiency of the latest methods adopted in the field. To validate the findings of the qualitative part, a testing script will be developed. This testing script will be designed based on the identified themes and patterns from the qualitative analysis. It will serve as a tool to assess and evaluate the effectiveness and applicability of the software testing methods identified in the qualitative findings.

Results and Discussions

The primary objective of this thesis was to evaluate the effectiveness of software testing methods and identify areas for improvement. A literature review was conducted on software testing, including software testing life cycle. The study involved comparisons between Agile and Waterfall methods and gathered opinions from experts in the field.

Furthermore, it was found that automation testing, which eliminates repetitive manual effort, is more efficient than manual testing. Automation testing offers numerous advantages, such as reducing testing effort and costs, faster execution of tests, and providing detailed results. The development of an automation script was undertaken to demonstrate the practical effectiveness of automation testing, showcasing its efficiency and accuracy in significantly reducing the time and effort required for testing. These findings support the importance of automation testing as an integral component of modern testing methods. Consequently, organizations that embrace automation testing can expect improved efficiency, accuracy, and cost-effectiveness in their testing processes, ultimately leading to higher-quality software products.

The study emphasizes the necessity of detailed pre-definition of requirements and testing scope to achieve more reliable testing results. It is recommended to develop a well-documented testing process to ensure systematic planning, execution, and reporting. Stakeholder involvement in the test planning is crucial for obtaining insightful information and aligning testing activities with project objectives and user expectations.

Additionally, setting up the test environment correctly is essential for smooth testing operations. Organizations should establish a stable test environment, identifying and resolving potential bottlenecks or restrictions that may interrupt testing.

Effective lines of communication among team members involved in test planning procedures are vital throughout the testing process. Encouraging collaboration through frequent team meetings, specialized communication apps, and document repositories promotes knowledge exchange and a collaborative culture.

In conclusion, organizations can enhance the efficiency of testing operations, leading to improved software quality and successful project outcomes, by including automations in the testing activities, prioritizing precise pre-definition of requirements, stakeholder involvement, proper test environment configuration, and open lines of communication.

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