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Implementation of Smoke Testing as Part of a Strategyquality Assurancein the Framework of Migration of Technology System Changetreasury Wealth Management at PT Bank

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Abstract
PT Bank Danamon Indonesia is one of the largest national banks in Indonesia with an extensive network of 846 conventional branches and Sharia units. Supported by more than 60,000 ATMs (including the ATM Bersama, PRIMA, and ALTO networks), Danamon serves customers in 34 provinces. As of September 2025, Bank Danamon managed consolidated assets of Rp. 259.5 trillion and its strategic focus in 2026 includes growing Assets Under Management (AUM) in wealth management by 20%. With such large business development, Bank Danamon is migrating its technology system in one of its business products, Treasury Wealth Management. Migrating the old technology system to a newer one is necessary to more quickly process transaction data needs on a larger scale. Challenges arise where the old or previous technology system differs from the updated one both in terms of the technology brand and the principal implementer of the system. This difference is quite crucial in changing a technology system, because it involves everything from data structure, programming, to maintenance. Meanwhile, the system's features and behavior are already well-established across Bank Danamon's branch and customer network. Furthermore, the data and transaction reports from the legacy system are already meeting existing needs. Therefore, the migration to the new system needs to be carried out partially to avoid disrupting services running on Bank Danamon's treasury and wealth management products. Implementing smoke testing as part of a Quality Assurance strategy is the best scenario to support this partial migration process. Smoke testing can prioritize feature releases to the production environment without disrupting the existing system.

Keywords : *wealth management, treasury, smoke test, quality assurance, migration*

INTRODUCTION

PT Bank Danamon Indonesia Tbk is one of the largest commercial banks in Indonesia that has been operating since 1956 and has grown into a financial institution with a wide network and complete services for individuals and companies. The bank was originally established as Bank Kopra Indonesia in 1956. In 1976, its name changed to PT Bank Danamon Indonesia. Since the late 2010s, MUFG Bank from Japan has become the majority shareholder through gradual acquisitions. Danamon then developed rapidly both in terms of its service network and financial products. As of September 30, 2025, Danamon managed consolidated assets of Rp. 259.5 trillion with its subsidiary, Adira Finance. In terms of share ownership, 92.47% of Danamon shares are owned by MUFG Bank, Ltd. (directly and indirectly) and the other 7.53% are owned by the public [1]. In

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serving customers from all business lines, namely Retail, Small and Medium Enterprises, and Corporations, Danamon is supported by 884 conventional branch offices, Sharia Business Units, and Adira Finance; as well as branch offices and representative offices of the Danamon group of companies in Indonesia. In addition to physical offices, customers can conduct transactions through the D-Bank PRO app and thousands of Danamon ATMs spread across various regions.

One of the business products managed by Bank Danamon with its customers is Danamon Wealth Management Treasury. Danamon Wealth Management Treasury provides comprehensive financial and investment management services, including Mutual Fund products (open/protected) and Foreign Exchange with the support of leading investment managers, as well as special services such as Direct Call and Leave Order and also digital channels such as D-Bank PRO for foreign exchange transactions. This service aims to optimize customer assets through strategic investment solutions. Investment solutions provided by Danamon include 75 mutual fund products in collaboration with 9 providers, government and corporate bonds, 8 Exchange Traded Fund ("ETF") products where Danamon is the only bank that distributes ETFs to customers, as well as structured products including Market Linked Deposit ("MLD") and Dual Currency Investment ("DCI") [2].

With the growth of its Wealth Management Treasury product, Bank Danamon is migrating its technology system to accommodate a larger scale. Challenges arise when the old system has been in use for a long time, resulting in behavioral patterns across all branches and customers becoming accustomed to it, or experiencing difficulties with the new system if there are too many differences. Therefore, Bank Danamon cannot suddenly shut down the old system and immediately replace it with the new technology. The best strategy for the system migration process is a parallel process, where the old system continues to run but is replaced by the new system, each feature, in a partial manner.

The corresponding strategy is to perform quality assurance on partial feature-level migrations. This quality assurance can be achieved by optimizing the Smoke Test method. Smoke Testing itself aims to test each feature from the beginning without having to wait for testing of all features in the existing system migration.

LIBRARY REVIEW

Wealth Management Treasury

Wealth Management is a service that manages clients' wealth to help them grow, protect, and plan their long-term finances. This service typically covers various financial aspects, such as investment planning, asset management, tax planning, asset protection, retirement planning, and even individual wealth development (wealth management), with professional financial risk management, cash flow management, and investment in derivative products (treasury). Unlike simply saving or investing, wealth management combines various financial strategies to ensure that clients' wealth can grow optimally and be protected from risk [3]. This service is generally provided by experienced and licensed financial consultants or asset management companies.

Key Components of Treasury Wealth Management:

- Cash & Liquidity Management: Manage cash inflows and outflows to ensure sufficient liquidity.
- Strategic Investment: Allocating assets into various instruments (e.g.: precious metals, securities) to grow wealth.
- Risk Management: Using hedging strategies or interest rate/foreign exchange swaps to protect assets from market volatility.
- Financial & Estate Planning: Engaging expert advisors for retirement planning, taxes, and wealth distribution.

Quality Assurance

Quality Assurance (QA) is a systematic process focused on preventing product defects or service errors by ensuring that each stage of development adheres to established quality standards. Quality Assurance in technology system development is a crucial part of the testing life cycle itself, also known as the Software Testing Life Cycle (STLC) [4]. STLC consists of planning, requirements analysis, test case creation, environment preparation, execution, bug reporting, and closure. This process ensures that the software functions according to specifications, is secure, and performs well before release.

The following are the systematic stages in system testing [5]:

1. Requirement Analysis: The QA team studies the user requirements document to determine what features should be tested.
2. Test Planning: Developing the strategy, scope, resources, schedule, and tools. A Test Plan document is produced at this stage.
3. Test Case Development (Pembuatan Kasus Uji): Creation of detailed test scenarios, including input data and expected results.
4. Test Environment Setup: Set up hardware, software, and networking similar to a production environment.
5. Test Execution (Test Execution): Running test cases on the system and recording the results.
6. Defect Reporting (Bug Reporting): Documenting and reporting bugs or errors found to the development team for repair [8].
7. Test Cycle Closure: Analysis of results, evaluation, and preparation of a final report to ensure the system is ready for release.

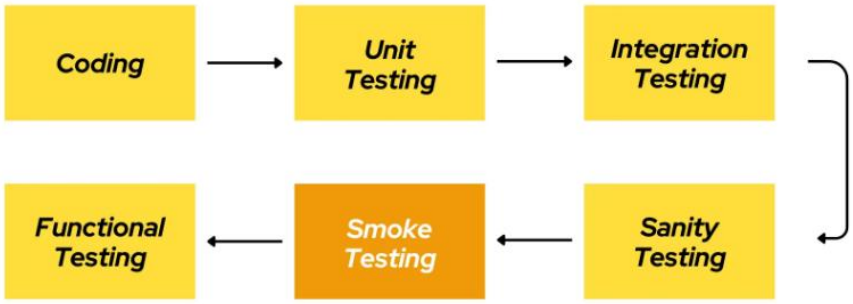

Figure 1. Testing Level

The levels of system testing range from program-level testing to overall testing, also known as regression testing. These levels are explained as follows:

1. Unit Test: a testing stage carried out at the program code level of the system and can be in the form of testing functions, methods, or even specific lines of code from a module.
2. Integration Test: a testing stage carried out on several separate modules to verify and validate their data flow.
3. Sanity Test: a testing stage carried out after errors or bugs have been fixed in a module or its integration.

4. Smoke Test: a testing stage carried out to ensure certain new or prioritized features are released.
5. Functional Test: testing stage at the function level carried out by the system users themselves.
6. Regression Test: the stage of testing the entire system or end-to-end to ultimately determine whether the improvements made do not disrupt the previous system or module that has passed the test.

Smoke Test

Smoke testing is an early-stage software testing method that aims to ensure that critical and fundamental functions of an application build are running stably [6]. Often called build verification testing, this method is used to detect major problems early, thus avoiding wasting time testing a badly broken build. Smoke testing, or initial testing (basic testing), also aims to ensure that a system's main features are running normally before further testing is carried out [7].

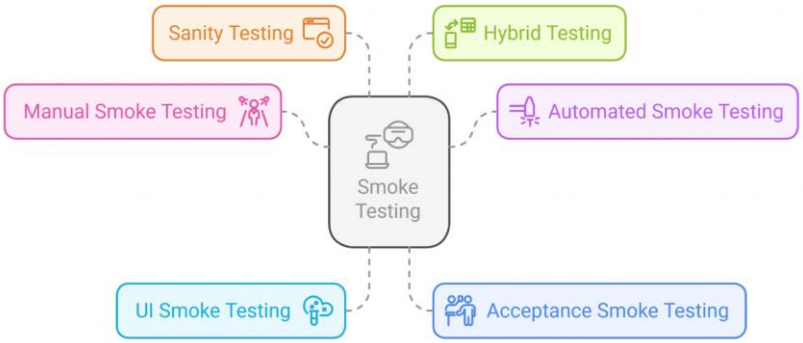

Figure 2. Types of Testing

Smoke tests also consist of several types, namely:

- Manual Test: a type of testing by writing, developing, modifying, or updating test cases for each product created.
- Automated Test: this type of testing is carried out using a tool to handle the testing process itself.
- Hybrid Testing: a combination of manual testing and automated testing.

- Daily Smoke Test: this type of testing is performed daily, especially for projects whose development process includes frequent builds and continuous integration.
- Acceptance Smoke Test: this type of testing is carried out to ensure the basic acceptance standards set by stakeholders.
- UI Smoke Test: the user interface components of an application are the sole focus of UI smoke testing.

METHODOLOGY

The methodology used in this study emphasized smoke testing as part of the testing phase of the Wealth Management Treasury system migration. This emphasis on smoke testing was intended to focus the research on testing the system itself and its impact on the overall success of the migration.

Figure 3. Feature Map Between Old and New Systems

The details of the methodology are to determine the modules or features of the Treasury Wealth Management technology system with the appropriate type of smoke test as follows:

- Manual Test: testing is done for the latest features in the new system or those that are not present in the old system.

- Automated Test: testing is carried out for features that are basically the same in use in the old system as in the new system [9]
- Hybrid Testing: testing is carried out for features that are still in transition and whose testing cannot yet be fully automated.
- Daily Smoke Test: testing is done for key features by users.
- Acceptance Smoke Test: the expectations of the test results are agreed upon and validated by the system users.
- UI Smoke Test: testing is carried out on the application interface display that has become standard for use in the old system against the new system [10].

RESULTS AND DISCUSSION

Discussion and results of the implementation of smoke tests as part of the strategy*quality assurance*in the context of migrating technology system changes*treasury wealth management*at Bank Danamon are as follows:

Table 1. Test Results for Modules with Several Types of Smoke Tests

Types of Smoke Tests	AutomatedTest	Manual Test	UI Test	Manual Test
Modules and Features	End-To-End	AdHoc	Reports	Integration
Total Test Plan	4945	548	860	609
Total Test Actual	3828	290	792	515
Overall Plan	4935	548	868	609
Overall Actual	3828	290	792	515
Overall Test Plan %	93%	100%	98%	95%
Overall Test Actual %	77%	52%	92%	84%

In the test that applied the smoke test for the system migration process, the following results were obtained:

- The End-To-End module uses a hybrid test method, with some manual and others automated. A total of 3,828 test scenarios out of 4,945 features were tested. The total test completion rate was 77%.

- The Ad-Hoc module used manual testing because almost all features were new or absent from the legacy system, requiring no reference to test scenarios. A total of 290 out of 548 features could be tested, resulting in a total test success rate of 52%.
- The Reports module is used for UI testing. 792 out of 860 features can be tested, with a total test success rate of 92%.
- The Integration Module used manual testing because almost all features were new or absent from the legacy system. A total of 515 out of 609 features could be tested, resulting in a total test success rate of 84%.
- Testing was conducted for the End-To-End, Ad-Hoc, Reports, and Integration modules. The average smoke test result reached 75%.

CONCLUSION

Implementation of smoke tests as part of a strategy*quality assurance*in the context of migrating technology system changes*treasury wealth management*Bank Danamon accelerated the migration process from the old system to the new one, achieving an average test success of 75%. The smoke tests used included manual testing for new features, automated testing for features that overlapped or were essentially the same in use in the old and new systems, and UI testing for standard features used in the old and new systems.

Implementing smoke tests can be a strategy to accelerate and simplify the implementation process for large-scale systems, meaning systems with a large number of test scenarios. In this study, the number of feature test scenarios reached over 7,000. Such a large number of test scenarios naturally impacts the timeline and duration of the process, which can be lengthy. Therefore, determining the right testing strategy can reduce costs and time for the migration process, making it more effective and efficient. Developing a better system test can serve as a reference for similar research. Therefore, this research is expected to provide an option for future improvements or revisions to improve the system.

REFERENCES

Danamon. (2025). About Danamon.https://www.danamon.co.id/tentang-danamon/profile-perusahaan/tentang-bank-danamon.

Press Release. (2025). Danamon Presents Danamon Wealth Series, Opening Customer Insights About Strategic Investment Opportunities. https://www.danamon.co.id/news/2025/09/05/Danamon-Hadirkan-Danamon-Wealth-Series.

Bank Mega. (2024). Wealth Management: Definition, Goals, and Benefits.https://www.megasyariah.co.id/id/artikel/edukasi-tips/priority-banking/wealth-management-adalah.

Basu, S. (2020). Quality Assurance and STLC in Agile Software Development. Journal of Software Engineering and Applications, 13(7), 275–282. https://doi.org/10.4236/jsea.2020.137018

Kumar, A., & Singh, M. (2023). Automation in Software Testing: Enhancing the STLC Process. Journal of Engineering Research and Technology, 10(1), 45–51.

Jayadi, Puguh (2024). Analysis of Basic Testing Using Smoke Testing in Asset Inventory Information Systems, 6(4):1969-1975. https://doi.org/10.47709/cnahpc.v6i4.5045

Margaret Teacher Banjarnahor, & Istiyowati, L. S. (2022). Smoke Automation and Regression Testing on a peer-to-peer lending Website with the Data-DrivenTesting Method. Jurnal RESTI (Rekayasa Sistem Dan Teknologi Informasi), 6(4), 684–691.https://doi.org/10.29207/resti.v6i4.4220

Mohamad Yusop, Nor Sahida (2015). Understanding Usability Defect Reporting in Software Defect Repositories. Conference: the ASWEC 2015 24th Australasian Software Engineering Conference. https://dl.acm.org/doi/10.1145/2811681.2817757

Poulová, Petra & Klimova, Blanka (2018). Automated Software Testing-A Case Study. Journal of Computational and Theoretical Nanoscience 24(4):2578-2581. https://doi.org/10.1166/asl.2018.11009

Suman & Chhillar (2014). International Journal of Computer Science and Mobile Computing, Vol.3 Issue.5: pg. 875-878.