

# Independent Validation of Cash Management Applications

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TECHNOLOGY

- Cash management services increasingly are automated and conducted via web-based applications. Because it is crucial that these are defect free, validation is critical. Risk based validation saves time by focusing on high-priority processes.
- The value of knowledge management in validation is now widely recognised, and it is increasingly an intrinsic aspect of software testing, particularly those involving cash management processes.
- Test centres of excellence optimise and standardise validation processes, skills, tools and infrastructure across an organisation. They can result in 35% cost savings and greater productivity.
- Given that quality accounts for as much as 50% of the cost of software development, the value of validation is increasingly significant.

## Introduction

Cash management entails the efficient use of cash through co-ordinated management of payments, collections and cash balances, with the aim of reducing costs, enhancing control and optimising returns<sup>1</sup>.

Maintaining an optimum level of cash is a fine balancing act between the need for liquidity and the need for returns. The crux of a robust cash management system is to do this without compromising either liquidity or returns. Deciding this optimum level should depend on factors such as the nature of the business, its credit policies, the health of its receivables, the length of the sales cycle, inventory levels, the owners' risk appetite, and overall economic stability.

Companies need to exercise caution when investing excess cash because any loss will erode the cash cushion, which is the very purpose of cash management. This is easier said than done, given the complexities of multi-billion-dollar companies operating across different time zones in different currencies and using multiple modes of collection. Stringent international banking regulations and technological advances make cash management even more complicated.

Using their experience in these areas, banks began offering customised cash management services to their corporate customers. This used to entail a great deal of interaction between bank staff and company treasuries, in the form of phone calls, faxes, mail and meetings.

With the increasing automation of cash management

1. [www.uobgroup.com](http://www.uobgroup.com)

services, most corporate customers now conduct much of their banking through the Internet, such as making inquiries online and sending instructions for payment, collection and liquidity management. As a result, they no longer depend as heavily on bank staff to execute many of their requests. This has made cash management easier, allowing companies to focus on their core businesses.

Among the more popular cash management services that banks now offer are business Internet banking, automated clearing house, automatic sweep accounts, so-called lockbox and payroll, pre-authorised debits, wire transfers, zero-balance accounts, account analysis and reconciliation, and monthly reports.

### Recent Trends in Independent Validation of Cash Management Applications

All the above services use computer applications that link the banks and their corporate customers. The success of these services – and, in turn, that of the banks offering them – depends on these applications being free of defects. As a result, validation is critical to the successful launch of all cash management services.

### Risk-Based Validation

Cash management is process- and technology-oriented, and the volume of transactions can be enormous. As a result, validation tends to focus on those applications that handle the greatest volumes for the lowest costs. Most cash management projects involve the consolidation of existing applications and integration of new systems and messaging standards to save costs. Validation typically entails testing different payment and cash concentration instructions to ensure correct processing.

However, the time available for validation is usually constrained by factors such as delays in building the application, lack of dedicated validation environments, late engagement of validation teams, and non-negotiable go-live dates. The key problem for validation managers has always been how to test all the functions of an application in the time available, while minimising risks.

### Requirements Traceability Matrix

Risk-based validation focuses on identifying processes that definitely need to be tested, on the basis of a combination of how critical they are to the business, their market priority, and the risks involved in not testing them – otherwise known as a requirements traceability matrix (see Figure 1).

Risk-based validation divides all the possible test cases into three main categories:

- **critical:** those where there is a reasonable probability of finding major defects (10-15%);

FIGURE 1: Illustrative Requirements Traceability Matrix

Client team responsible for test design, data and execution			
Test cases must be prioritised, as to whether they are deemed critical, to be executed each day, and what the financial and operational consequences are if not tested (1 = mandatory; 2 = optional; X = not required)			
Test Scenario	Test Cases	Day 1	Day 2
Payment to bank/institution via common nostro agent	Migrated nostro		1
	Non-migrated nostro		
	Back value	X	X

Source: Infosys Technologies Ltd

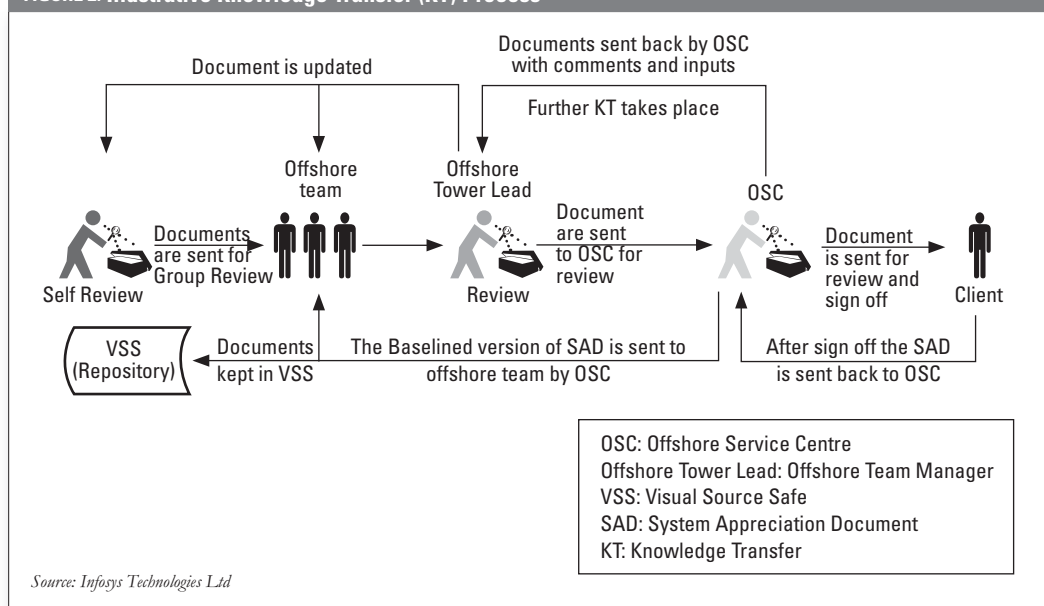
- **medium:** those that may be tested if sufficient time and resources are available (15-25%); and
- **low-yield:** those that are tested only if overall levels of system risks are very high (60-75%).

### Knowledge Management

Knowledge management (see Figure 2) is an important aspect of cash management validation because:

- cash management is such a vast domain that validation requires the collective knowledge of a team rather than the expertise of one person;
- the widely used global delivery model means that teams typically are working in different places around the world, in different cultures and time zones;
- variable-resource pools are used to augment core validation teams, depending on troughs and peaks in demand for validation;
- documentation of existing, or legacy, systems is typically inadequate;
- a great deal of interaction is required between multiple, related systems, given the complexities of cash management domain; and
- business or regulatory demands result in frequent changes to system requirements.

**FIGURE 2: Illustrative Knowledge Transfer (KT) Process**



Failing to focus adequately on knowledge management can result in more work for the validation team; difficulty in managing transitions; and a risk of underestimating the impact of changes to the system.

### Solutions Approach to Validation

Knowledge management has become crucial to validating complex cash management activities. This has led to clients demanding that validation be used not only for testing but be included in projects from start to finish, or as an end-to-end solution. This is particularly so for standard processes such as automated clearing house, zero-balance accounts, collections and payments.

### How does the Solutions Approach Work?

Based on experience, validation-service providers have built templates for standard cash management

**FIGURE 3: Illustrative Test Scenario Repository**

Functionality	Test Scenario	Explanation	Required Parameters	Scenario Result	Expected Response
Batch selection	Search by company	Select the company from a list; the batch related to the selected company will be displayed	Companies with batches created for them	Company is selected	Batches available for selected company are displayed
	Search by batch code	Enter the full or partial code in the "filter by batch code" field	Batch code	Results are displayed matching the batch code	Batches are shown matching the partial/full batch code
	Search by batch name	Enter the full or partial name in the "filter by batch name" field	Batch name	Results are displayed matching the batch name	Batches are shown matching the partial/full batch name
	Search by recurring/non-recurring	Select "recurring" or "non-recurring" from a drop-down menu; batches will be shown depending on the selection made	Batches with recurring and non-recurring payments	Results are displayed matching the batch type	Batches are shown matching batch type
<i>Source: Infosys Technologies Ltd</i>					

processes that include typical business activities, associated test cases and test conditions. Typically these templates are simply customised for new clients. Common processes include payments, collections, payroll and automatic clearing house.

Among the advantages of the solutions approach to validation are:

- a robust repository of business activities and test cases;
- a well established requirements traceability matrix, which ensures good coverage;
- minimising or eliminating knowledge transfer time; and
- offering more predictable validation, and more robust validation methodology.

### Future of the Solutions Approach to Cash Management Validation

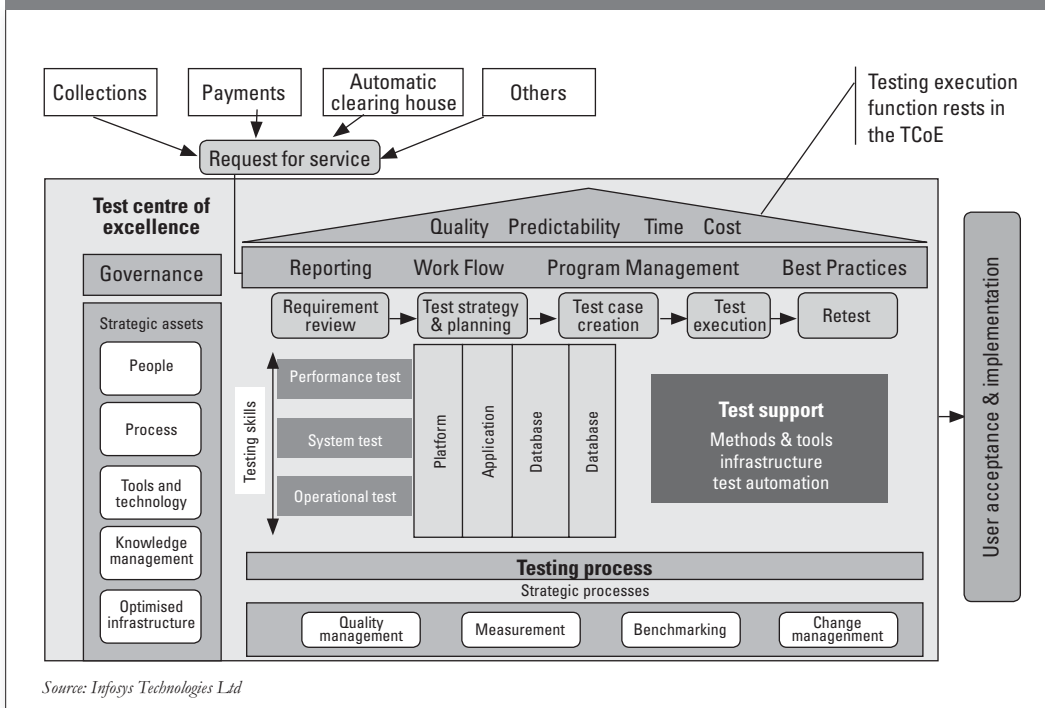
Many core cash management processes are standardised. Given the volume of transactions and scope for regression testing, service providers are making the solutions approach even more sophisticated by using automation. Increasingly, automated testing can be applied to customised templates which result in faster validation, lower costs for clients and significant improvements in quality. However, automated testing for solutions-based validation is still at an early stage.

### Test Centres of Excellence

In the early days, validation was often conducted by the developers of the software and business analysts, typically towards the end of a project. This was inefficient because testers were often idle during the early stages of development. Increasingly, service providers are using so called test centres of excellence to overcome these drawbacks.

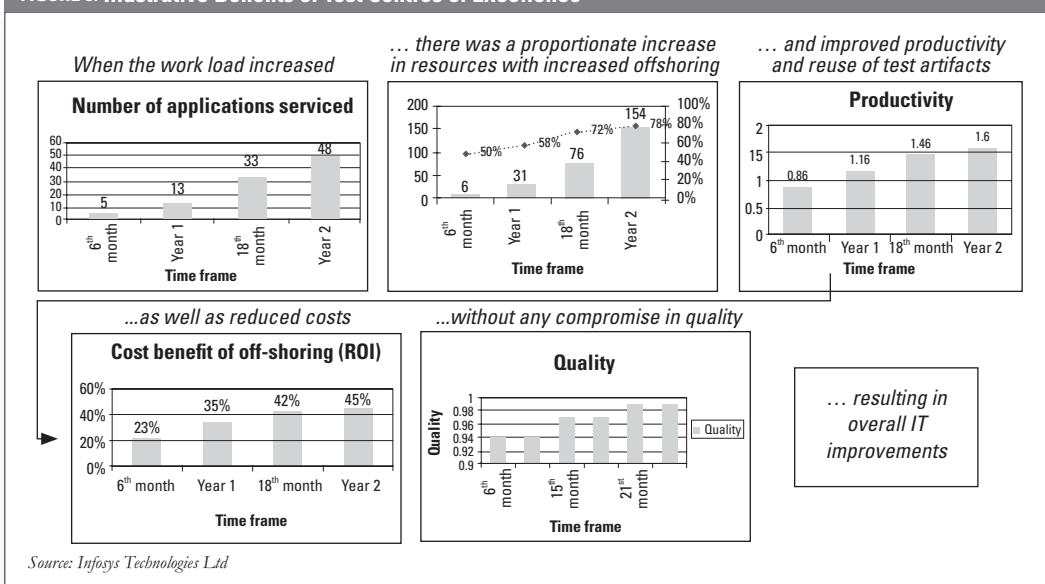
Test centres (see Figure 4) optimise and standardise processes, skills, tools and infrastructure across an organisation. Typically, this makes use of a pool of testers who can be used across different projects. This approach ensures greater rigour and dissemination of best practices as well as creating teams of career testers who can develop expertise.

FIGURE 4: Illustrative Test Centre of Excellence



A cash management test centre of excellence would comprise core and variable teams. Core members would establish test strategies and processes, and decide on tools and methodology. Variable members would augment the core team as required, and help with test-script preparation, test execution and the like.

FIGURE 5: Illustrative Benefits of Test Centres of Excellence



We have observed the following benefits for global banks from test centres of excellence (see Figure 5):

- cost savings of about 35%, compared with internal validation programmes;
- improved productivity due to reusable artifacts, knowledge assets and processes; and
- The ability of team sizes to be quickly increased or decreased, depending on testing needs.

### Conclusion

Cost of quality is a combination of costs incurred in preventing an error from occurring, costs incurred for testing and review and costs incurred in removing all the defects in the software. Our experience shows that the cost of quality in software development is now about 50% of the total. As a result, validation is increasingly being recognised as a critical component of any project from the start. Given the tough competition among banks in offering cash management services, they are averse to any risk of their applications failing. However, they are also subject to stringent, constantly changing international regulations, which make cash management activity even more complicated.