



FINANCIAL SERVICES  
**WORLD QUALITY REPORT**



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# Preface

Welcome to the first Financial Services World Quality Report, which presents a unique look at the maturity level of testing organizations within financial services (FS) institutions across the globe. The Financial Services World Quality Report builds on research from the 2009 World Quality Report from Capgemini, Hewlett-Packard and Sogeti, an all-industries Quality study. This new FS report offers unique insight into the factors that determine quality across geographies, with a special focus on banking, insurance and capital markets.

This report draws on data from the 2009 World Quality Report, where data was acquired by surveying over 10,000 CXOs, IT directors, QA managers and engineers at more than 400 unique companies around the world. We gathered responses from 60 financial services firms<sup>1</sup>, and used that data to look at trends across banking, insurance and capital markets. We also leveraged lessons captured from over 20 Quality Blueprint assessments to generate deeper insight into the issues facing testing organizations within financial services firms.

This report has been made possible by Capgemini's Financial Services Testing Center of Excellence teams, which seek to provide industry insights, capture industry best practices and provide continuous improvements to solutions for our clients. We hope you find the report valuable and helpful when defining the direction of your quality improvement initiatives.



**Govind Muthukrishnan**

Global Leader, Capgemini Financial Services Testing Practice

*We would like to thank the following people for collaborating to produce this report:*

Testing COE and FS World Quality Report leads, Shilpa Kota and Revathi Vinnmuru, along with Vasant Gore, Manish Goyal, Matt Hebel, Anantharaman Iyer, Ramanathan Iyer, Rahul Nagar Vineet Pangtey, Pankaj Pant, Karen Schneider, Seby D'Souza, and Sunoj Vazhapilly.

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<sup>1</sup> For public companies, the sector was identified based on Forbes' segmentation. For private companies, the sector reflected the way in which companies publicly identified themselves



## Key Findings from the Financial Services World Quality Report

Banks, insurers and capital markets firms are all investing in technology to better serve customers, increase transparency, stress-test their operations and provide better applications development for the future. This may not seem surprising given the financial services (FS) industry has been at the forefront of the global economic turmoil, but in fact, FS firms have long relied on sophisticated IT solutions that deliver real-time reliability, operating benefits and defect-free solutions to help drive business results.

Our survey findings confirm FS firms are keenly aware that their business applications are critical assets that need to be properly managed, and many see rigorous application lifecycle management (ALM) as key to optimizing the entire process, from development to maintenance, including testing, implementation and optimization. ALM, when proficient, can reduce the total cost of ownership of business applications, and make sure the component tools and processes are themselves best in class.

Right now, few FS firms have all the pieces of a comprehensive ALM approach in place, however. The following are among our key findings about the way FS firms are currently managing the selection, testing, launch and evaluation of business applications:

- **The proliferation and complexity of applications will continue to increase in FS, so the imperative to manage the applications portfolio effectively is becoming more acute.** Of all FS firms, 79% reported they are investing in applications development, and another 18% said their companies were investing in applications projects that would show a return on investment (ROI) within six months. In all, 46% say their workload has increased due to the scarcity of resources, and less than 10% said project cancellations had reduced their workloads. More than 90% of FS respondents overall, and all the capital-markets respondents, agree the complexity of FS applications is rising.

- **FS firms can't tell or don't know the pay-back from many tools acquired to support ALM.**

While FS firms continually purchase tools to support their ALM efforts, few of those tools are said to generate the expected ROI. Moreover, FS respondents said they didn't even know—or couldn't quantify—the ROI on 51% of ALM tools' licenses.

- **Most FS firms reuse only a fraction of testware, showing there is room to streamline.**

Only 16% of FS respondents said they reuse 50% or more of the quality and testing artifacts used to test a new version of an existing application, while another 21% said they reuse “about 50%” of such testware. Moreover, few say their firms are actually realizing strategic benefits, such as cost reductions or faster time-to-market for applications, from reusing testware.

- **Requirements automation is too sporadic, undermining ALM.**

Only 14% of FS respondents said their organizations currently leverage automation at the requirements phase of ALM, and 23% said they would like to see additional investments in requirements automation, versus areas such as environments, data management, test management, defect management or test execution. At the same time, 40% said understanding requirements presents the greatest single challenge to their testing organization.

- **Firms have sought to define ALM processes and methodologies but don't always use them.**

Of FS firms overall, 81% say their companies have formally defined ALM methodologies or processes, including both the Software Development Lifecycle and the Software Testing Lifecycle. That number is higher for banks (88%) than for insurance companies (75%). However, only 55% of FS respondents say they use the ALM processes and methodologies consistently (more than 50% of the time), though adherence was reportedly higher among capital markets respondents (83%).

- **Quality of FS applications has improved over the last two years, according to 81% of FS respondents,**

suggesting the IT organizations are continuing to mature. Moreover, 70% are engaging their test teams earlier in the testing process. These firms hope to cut costs by identifying design and architecture defects, missing requirements and business flow gaps long before actual testing execution begins.

- **Domain expertise is increasingly prevalent and required among testers.**

To best support the complex IT systems used in financial services, testers need intimate knowledge of the activities these systems support. The vast majority of FS survey respondents (94%) say their testers have at least a few years of relevant industry domain knowledge, and 10% said they considered their testers to be domain experts.

- **Outsourcing of testing services is on the rise among FS institutions.**

Seventy-two percent of FS respondents said their company currently leverages outsourced resources for testing services, compared to 49% of non-FS companies. However, more than half of capital markets respondents say they do not outsource (53%) while most banking respondents (84%) say they do. In addition, 61% of FS respondents say their use of outsourcing for testing will stay the same or increase.

These findings all suggest many FS firms see value in rigorous ALM practices, but may not yet have the requisite building blocks in place to implement a comprehensive ALM approach proficiently. There is no question though, that FS firms favor a business-driven, formal approach to managing their applications assets.

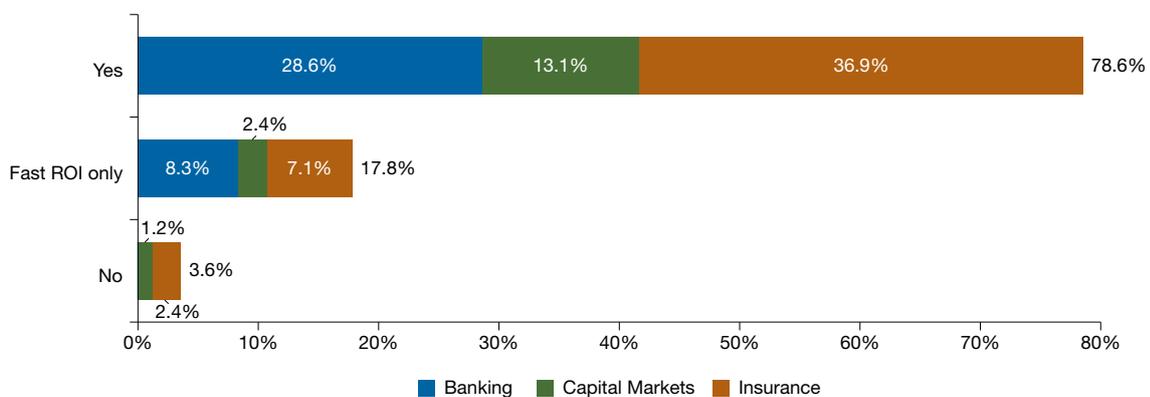


# FS Applications, Proliferating in Number and Complexity, Need to be Actively Managed

Business applications are a critical enabler of financial services, but those applications are growing in number and becoming more complex all the time. This reflects the inherent intricacies of FS business models and the pressing customer and compliance demands driven by the financial crisis.

In our global survey, 79% of FS respondents said their companies were continuing to invest in new application development. Another 18% said their companies were investing in applications projects that would show a ROI within six months—a trend that was more marked among banks and insurers than capital markets firms.

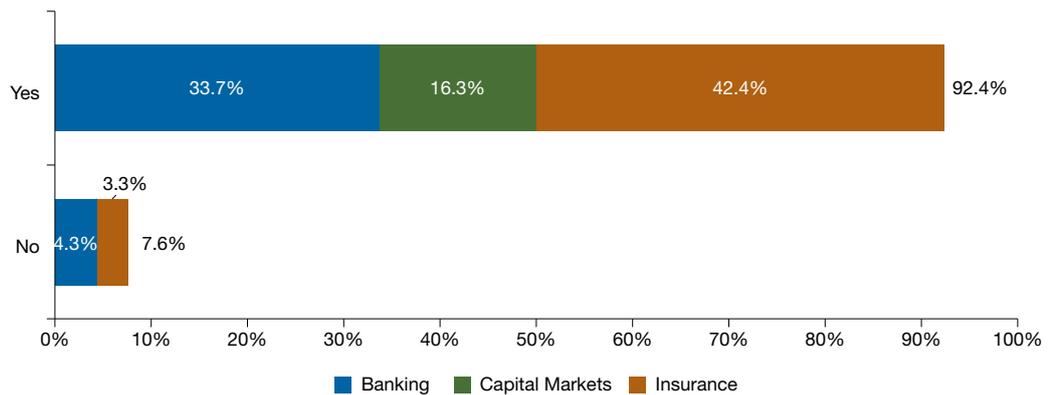
**Figure 1** Is your organization still investing in new application development projects?



Source: Capgemini Financial Services Analysis, 2010.

At the same time, more than 92% of FS respondents overall and 100% of the capital-markets respondents agree FS application complexity is increasing. That compares with 87% of respondents from across all industries. Notably, while complexity is increasing fast in FS, 81% of FS respondents feel application quality is improving, which is on par with the general industry.

**Figure 2 Do you agree that application complexity is increasing?**



Source: Capgemini Financial Services Analysis, 2010.

As applications grow in number and complexity, the relevance and integrity of those applications becomes even more critical and necessitates rigorous ALM practices to help optimize the selection, testing and launch of these applications. Certainly the stakes are high—for operating efficiency and economics, customer relationships and compliance reasons.

For example, costs drop if firms can become more proficient at applications development. Application-development project costs for firms at the early (Level 1 and 2) stages of Capability Maturity Model Integration (CMMI) are 30% higher than for those at a Level 3 or 4. Banks, insurers and capital markets firms can't afford to pay 30% more than their competitors for the same applications.

But more than that, business applications support every aspect of the FS industry. For one thing, the entire FS industry relies on highly customized, proprietary systems for a variety of very complex activities, such as securities trading, credit cards acquiring and processing, commercial lending and mortgages,

claims processing, and policy administration. These systems must connect with third-party systems to acquire market data or verify credit status, operate across borders and time zones to be available 24/7, and follow strict rules while providing audit trails for regulators and CEOs alike. FS institutions therefore need strong testing capabilities to support the applications that underpin their businesses every day, as well as applications needed to support the expansion of businesses into new markets or products.

In addition, today's FS customers have high expectations for services enabled by IT. Banking customers want to view balances and transfer money across accounts from a mobile device. Insurance customers want to compare auto insurance rates across multiple companies and complete the policy online. Investors want to see real-time information on their portfolios and be able to make changes as the market fluctuates. All these activities require robust and flexible applications that must be tested for performance and reliability.

The FS industry also needs applications that support regulatory compliance and address customer concerns about data security. With emerging technologies such as Software-as-a-Service (SaaS) or Service Oriented Architecture (SOA), FS applications are becoming more complex, and testing is becoming harder than ever before.

Importantly, a comprehensive ALM approach takes these operating, customer, compliance and other needs into account in prioritizing and managing the applications portfolio, but it requires a mature testing franchise in which organization, lifecycle management, techniques and tools, and infrastructure are aligned. Critical too is the drive toward innovation—though innovation can certainly emerge in many ways. It might take the form of an independent, centralized testing function at a global investment firm, providing ‘one stop shopping’ for testing needs throughout the enterprise. Or it might be a tool to extract business rules from an application and test them automatically in minutes instead of hours.

Ultimately, though, proficient ALM has many components, and FS firms need to put the building blocks in place to improve the relevance, efficacy and reliability of business applications through ALM.

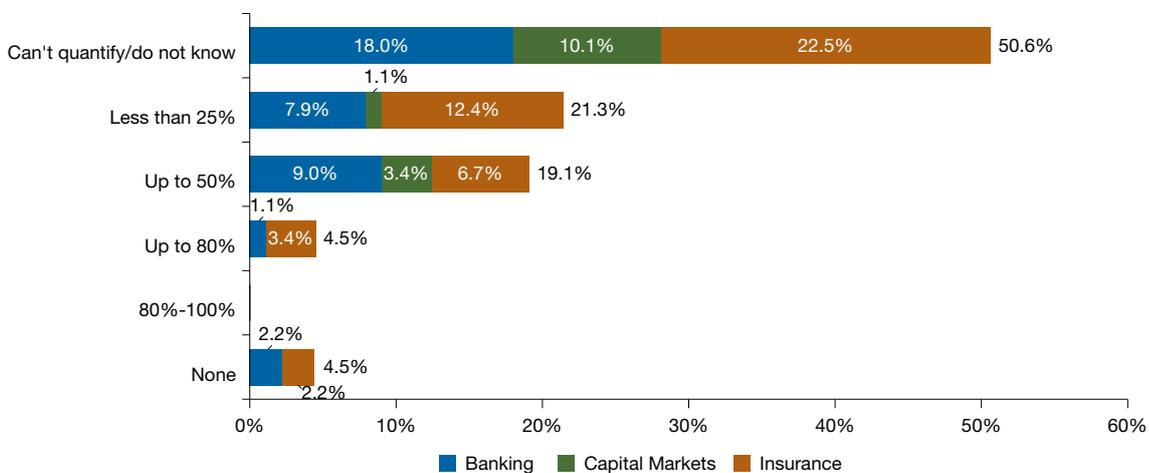
### Few FS Institutions Really Know the ROI from Many ALM Tools

At present, despite recognizing the value of proficient ALM, few FS firms are reaping a significant ROI from many of the tools purchased to supplement their ALM approach. Capital markets firms are generally leveraging even fewer of their ALM tool licenses than banks or insurers. More striking still, FS respondents said they did not know or could not quantify for 51% of ALM tools’ licenses whether the ROI was being fully leveraged.

Without mechanisms to measure the ROI from ALM technology investments, it’s impossible for FS institutions to identify and prioritize those areas that will provide the maximum benefits.

In fact, ROI measures are an especially important part of enterprise-level strategy for technology investments. And without them, teams, projects and geographies are likely to end up purchasing technology unilaterally, increasing the purchase cost, or acquiring different technologies that cannot be integrated.

**Figure 3 Of all tools’ licenses purchased to support ALM, what percentage is fully leveraged?**



Source: Capgemini Financial Services Analysis, 2010.

### FS Firms Want to Streamline Application Management, but Few Even Widely Reuse Testware

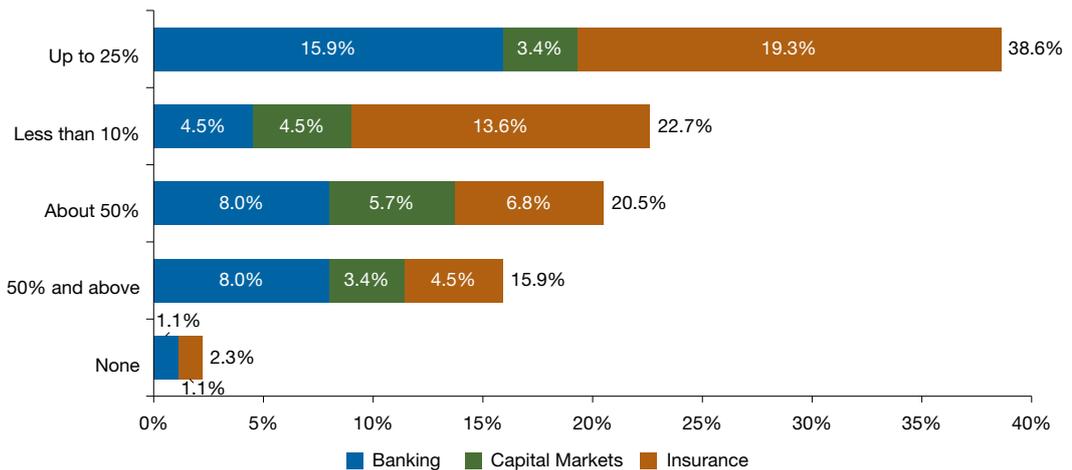
As applications increase in complexity, FS institutions are certainly focusing more on the tools and technologies that can help automate or streamline the application lifecycle, but a look just at testware reuse suggests there is room for improvement.

Survey data show FS institutions reuse only a fraction of the quality and testing artifacts used to test a new version of an existing application, even though reuse can help avoid significant redevelopment costs and

deliver other benefits. Only 16% of FS respondents said they reuse 50% or more of such testware, while another 21% said they reuse “about 50%”.

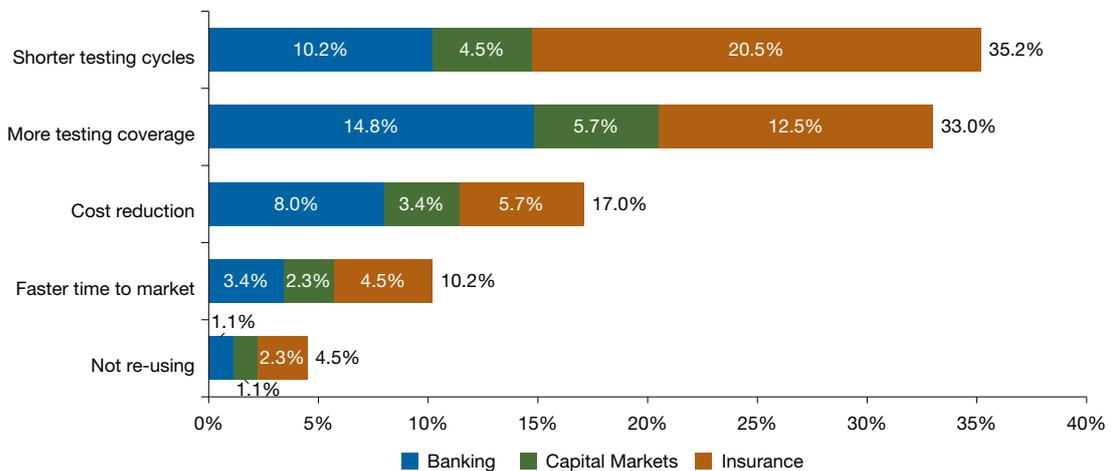
While testware reuse rates are generally quite low in practice, FS firms recognize there are benefits. Few, however, are actually realizing strategic benefits like cost reductions or faster time-to-market for applications. Among FS respondents overall, 68% said the greatest benefit of reuse was either shorter testing cycles or more testing coverage. Only 17% said the biggest realized benefit was cost reductions, though that number was higher among banks and capital markets respondents (20%), and lower among insurers (12%).

**Figure 4** What percentage of the quality and testing artifacts created for an application is reused from one version of the application to the next?



Source: Capgemini Financial Services Analysis, 2010.

**Figure 5** What is the greatest benefit realized by your organization from the reuse of testing artifacts across multiple versions of applications?



Source: Capgemini Financial Services Analysis, 2010.

## Many Firms See the Need for and Value of Investing in Automation

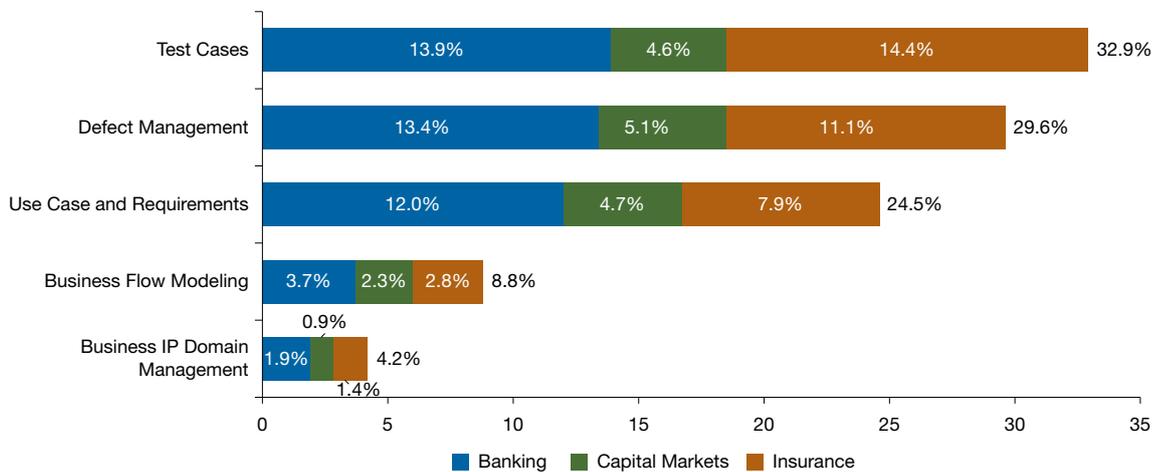
FS firms also recognize the need for more automation as they manage requirements and strive for well-defined, accepted requirements. Most of the existing investment in automation technology has been toward the test management, execution and defect lifecycle end of the ALM lifecycle.

Of all FS respondents, 23% said they would like to see additional investments in requirements automation, versus areas such as environments, data management, test management, defect management or test execution. This would bolster ALM, since requirements automation is not common right now. Only 14% of FS respondents said their organizations currently leverage automation at the requirements phase of ALM. At the same time, 40% said understanding requirements presents the greatest single challenge to their testing organization.

As is the case in many other industries, the complexity of tying large requirements to test scripts has undermined the establishment of repeatable testing processes. This has resulted in ad-hoc testing rather than the requirements-based validation that is industry best practice. In our survey, for example, 30% of FS respondents said they don't have requirements documented and shared between all stakeholders during project initiation.

Consensus on investments was said to be the second biggest challenge to the organization (cited by 22% of all respondents), but that concern was much more prevalent among insurers than capital markets or banking respondents.

**Figure 6** What components of your organization's Application Lifecycle Management (ALM) process leverage automation technology?



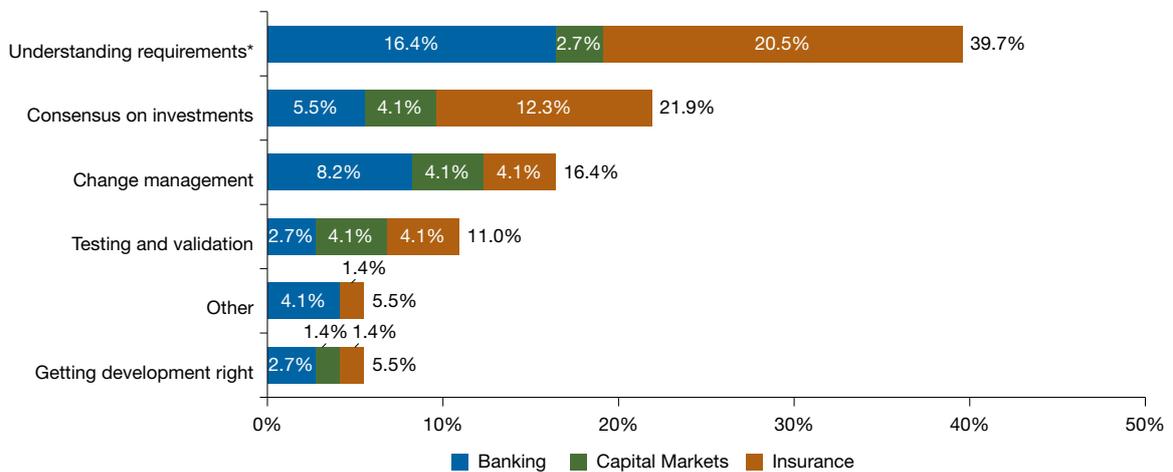
Source: Capgemini Financial Services Analysis, 2010.

## What a Difference Automation Makes

The behavior of many financial services applications are governed by business process and workflows that are defined by business rules. These business rules must be validated during application testing. For most companies, testing business rules is a costly and complicated process that involves business users and testers.

Capgemini has invested in automated test methods and tools integrated into leading solutions, such as PegaRULES Process Commander® to test and validate business rules and add breadth and depth to testing efforts. By using pre-defined testing parameters, hands-off automation methodologies, and innovative solutions, banks and insurers can accelerate and simplify a complex process. We've been able to lower testing time by 95% over manual methods by automating business rules and workflow validations for our clients.

**Figure 7** What poses the greatest challenge to your organization?



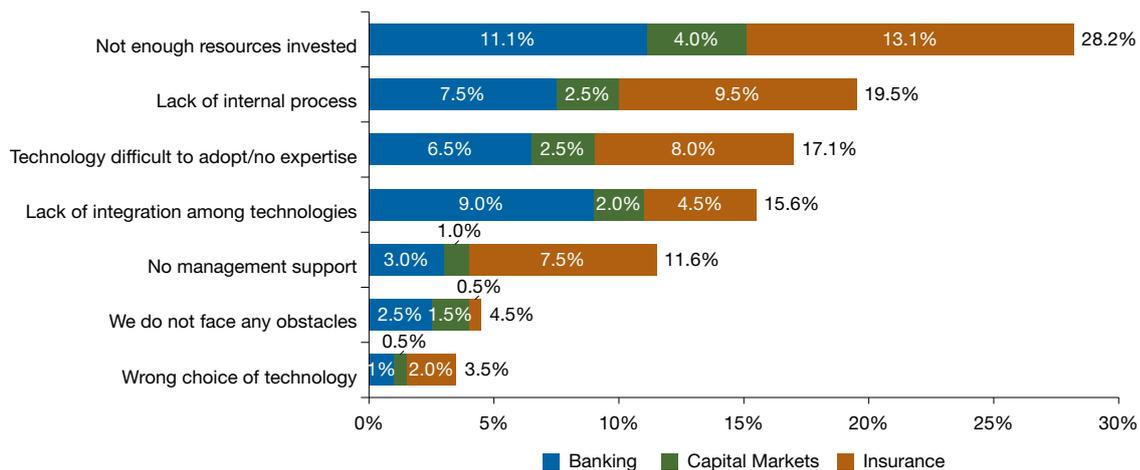
\*Answer read 'understanding and capturing business requirements'  
 Source: Capgemini Financial Services Analysis, 2010.

## Banks, Insurers, Capital Markets Firms Each Face Different Obstacles in Fully Leveraging Investments in ALM Tools

Not all FS institutions are the same, and the three sectors highlighted in this report use different applications with different levels of maturity. Overall, 28% of FS respondents said the largest obstacle to fully leveraging ALM tool investments is the lack of resources invested, but among insurers, lack of management support, lack of internal processes and technology issues were also key factors. For banks, lack of integration is a close second to lack of resources invested, which likely reflects the challenges banks have faced in integrating systems during the recent consolidation in the banking sector.

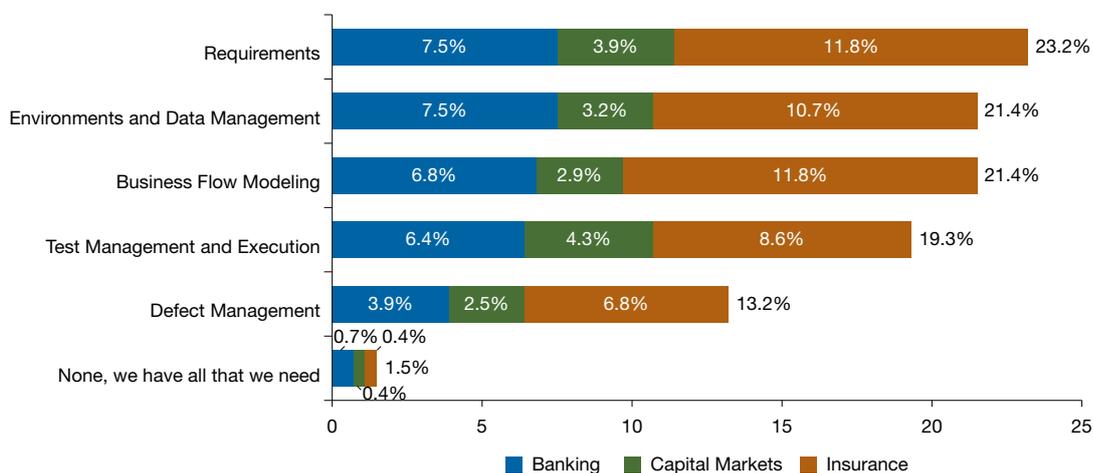
'Test environments and data management' received the second highest ranking among areas that banking and capital markets respondents said needed more technological investment in 2010. This reflects the reality that as more complex applications are created, it is becoming increasingly difficult for quality-assurance teams to create testing environments that mimic the production applications. Our benchmark data shows that 70% of our FS clients provide for a separate environment for testing, but around half of the teams have no idea on the code movement to and from the test environments.

**Figure 8** What are the biggest obstacles that prevent you from fully leveraging 100% of your ALM-tool investments?



Source: Capgemini Financial Services Analysis, 2010.

**Figure 9** Where would you like to see additional technological investments made in ALM automation?



# Application Lifecycle Management as a Value Creator

Proponents of application lifecycle management argue ALM increases productivity and improves quality throughout the application lifecycle so applications truly meet the needs of business users, and are developed, maintained and retired within the context of those needs. In the drive to optimize costs and processes, financial services institutions are looking to vendors to manage the full lifecycle of their IT applications.

By using Application Management Services, Capgemini and Sogeti help clients unleash the power of their applications portfolio to maximize returns and enhance business value. Business domain knowledge specific to banking, insurance and capital markets is integral to our approach. We go beyond the basic technologists trying to manage resources, to structuring business domain teams that embed best practices and domain-specific frameworks throughout a financial institution's business processes to generate real value.

Improving resource efficiencies is of course part of the task, and we do that by driving continuous improvement and innovation, and applying industrialized techniques for routine activities. But more broadly, we seek to lower IT costs and increase business value through the comprehensive multi-year management of all or part of an application portfolio across its entire lifecycle.

Key components of our approach include:

## PORTFOLIO ANALYSIS

- 'What if?' analysis of changes on downstream applications
- Assessments of redundancy and consolidation to optimize the portfolio

## KNOWLEDGE EXCELLENCE

- Active Knowledge Database: Periodic review of the knowledge database and relevance of problems logged
- IT Risk database maintained and used throughout the engagement duration

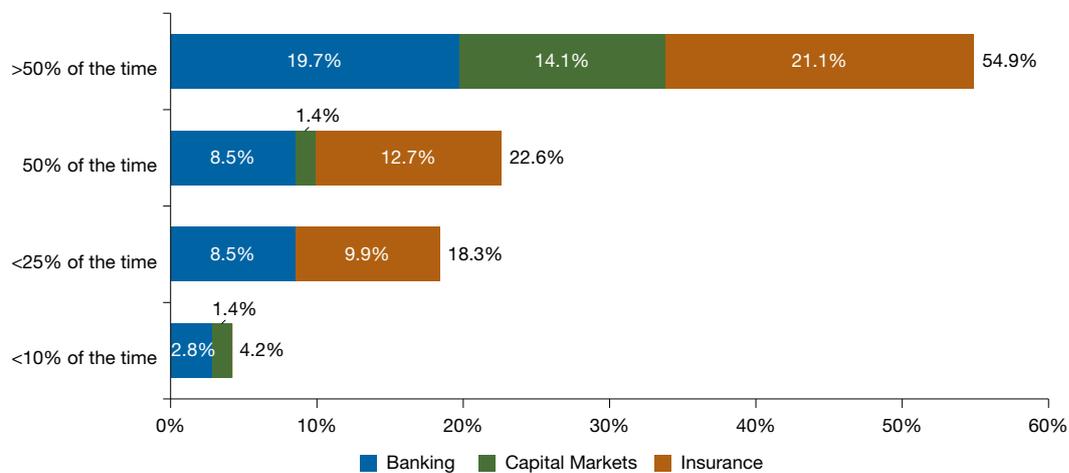
Our holistic approach allows us to deliver both tactical and strategic benefits to clients, including improved ROI, cost reduction, process efficiencies, proper sourcing (right place, right cost) and IT-risk transfer—all driven by the overarching needs of the business. We also work to make sure our clients put in place the kind of tools they need to institutionalize ALM—a strong governance model, best-practice processes, organizational structures, and decision-making mechanisms—to ensure sustained success.



## Most FS Firms Have Formalized ALM, but Not All Use the Processes and Methodologies Consistently

Of FS firms overall, 81% say their companies have formally defined ALM methodologies or processes, including both the Software Development Lifecycle and the Software Testing Lifecycle. That number is higher for banks (88%) than for insurance companies (75%). However, only 55% of FS respondents say they use the ALM processes and methodologies consistently (more than 50% of the time), though adherence was reportedly higher among capital markets respondents (83%).

**Figure 10 Is your ALM process followed consistently for all projects?**



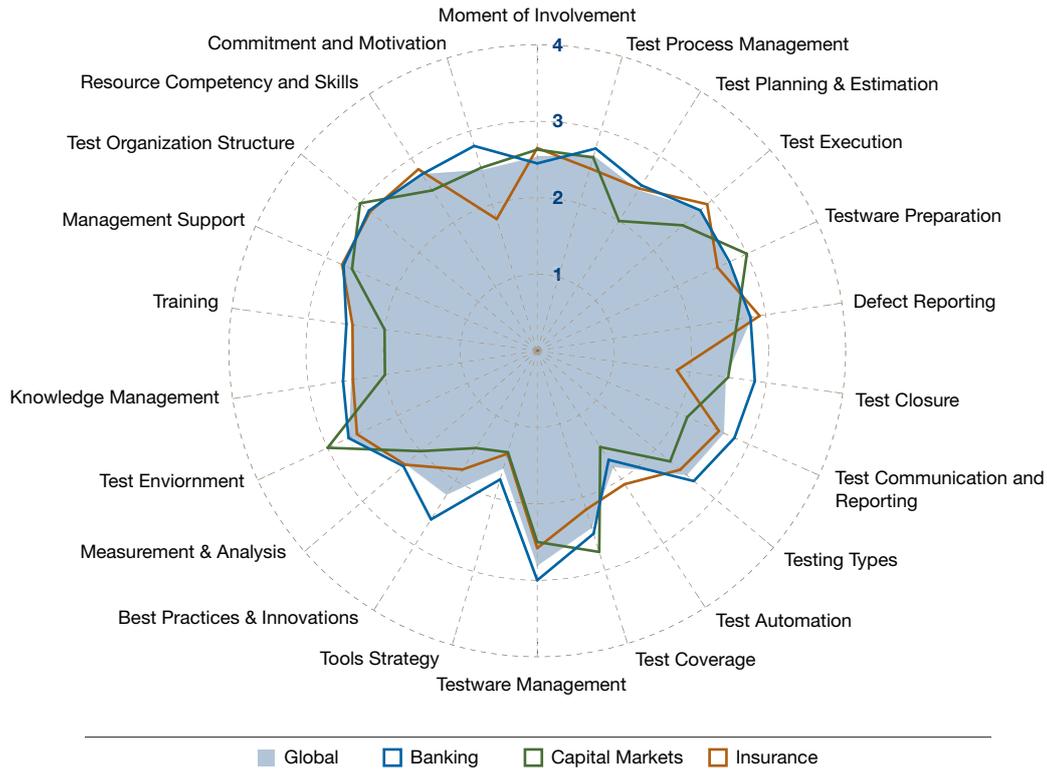
Source: Capgemini Financial Services Analysis, 2010.

Despite these challenges, the maturity of testing in FS organizations has progressed, and 81% of FS respondents say the overall quality of their organization's applications has improved over the last two years. Moreover, 70% are

engaging their test teams earlier in the testing process. These firms hope to cut costs by identifying design and architecture defects, missing requirements and business flow gaps long before actual testing execution begins.

**2009 Financial Services Testing Benchmark**

Banking, Insurance and Capital Markets vs. Global Performance



Capgemini's Quality Blueprint assesses 22 quality dimensions so individual institutions can be easily benchmarked against their industry peers

## Getting the Moment of Involvement Right

If defects are created during the requirements phase and lie undiscovered until the user-testing phase, the cost-to-fix ratio rises by a factor of 10. In fact, every defect in your application that leaks to the next stage is costing the organization time and money. It's best to catch issues as early as possible, especially those related to requirements or user expectations.

During Capgemini's TPI and Quality Blueprint assessment, one of the factors we look at is the moment of involvement for the testing organization. For a European-based insurance company, we found testing teams were involved early in some countries but late in others, which resulted in problems across the globe when it was time to launch enterprise applications. Sharing best practices among the different countries allowed everyone to involve testers early, lowering costs and errors.



## Trends & Skill Sets for the Future

### **Testing Certifications are Becoming More Important as Test Organizations Mature**

In the past, testers were former developers who switched careers to quality assurance. But as the testing industry has matured, so has the ideal profile of test professionals. Today, many testers receive credentials from organizations such as Quality Assurance Institute (QAI) and International Software Testing Qualifications Board (ISTQB). Common certifications include Certified Software Quality Analyst (CSQA), Certified Software Test Engineer (CSTE), ISTQB Certified Tester (three levels of certification), and Project Management Professional (PMP®). In addition to testing process-related certifications, testers are increasingly taking more and more technology and domain-based certifications as well. Vendor tool-related certifications are popular at the test engineer levels. Our benchmark data shows most of our financial services clients track certifications within their test organizations, and of those, many say their testers hold at least one testing certification. We've seen this trend increase as financial services institutions improve the maturity of their test organizations.

### **FS Domain Knowledge is Mandatory; Development Skills are Not**

For FS institutions, professional testing qualifications are only part of the picture. The industry is built on customized, proprietary systems, such as those used for trading, credit cards, lending, claims and policy administration. To best support these systems, testers need intimate knowledge of the activities these systems support. The vast majority of FS survey respondents

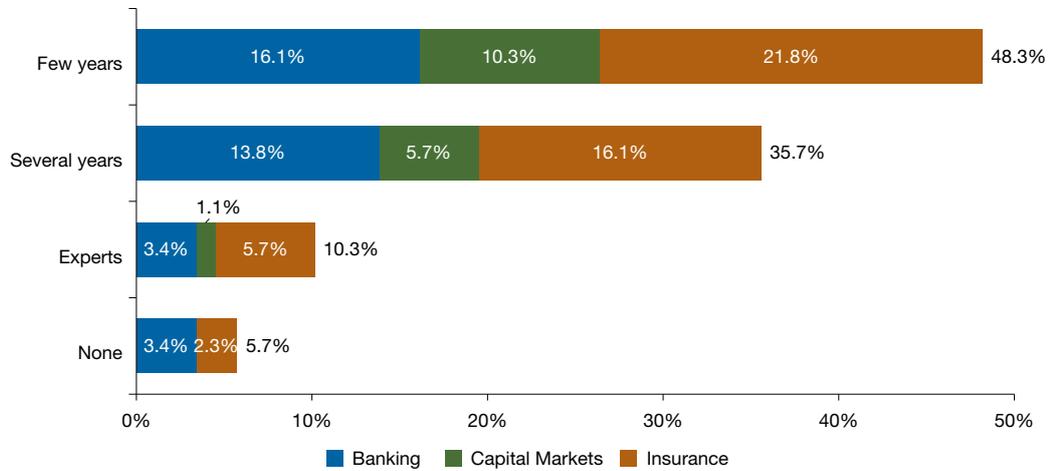
(94%) say the testers in their organization have at least a few years of relevant industry domain knowledge, and 10% said they considered their testers to be domain experts. That is consistent with the need to focus not just on the tactical performance of applications, but on their quality and relevance. Indeed, two-thirds of FS respondents say quality assurance is not just about executing test scripts—reflecting the premium placed on business relevance versus technical functioning.

In the capital markets industry, all respondents indicated that testers have some industry domain knowledge. Since systems used for trading, asset and wealth management, foreign exchange, and other transactions managed by capital markets and investment firms are more likely to be complex yet not standardized, it's not surprising to see this sector reporting a higher requirement.

Additionally, our clients who involve testers early in the software development lifecycle report that testers with FS domain knowledge can help lower the time spent by business users during the planning and requirements phases. Lack of domain expertise makes testing more expensive to the business by requiring more business-user involvement.

While a development background is seen as useful, 67% of the FS companies surveyed do not require development expertise for testers. Only 8% felt a development background was necessary for test professionals, though that number was higher among capital markets and insurance than banking.

**Figure 11 On average, how much relevant industry domain knowledge do testers in your organization have?**



Source: Capgemini Financial Services Analysis, 2010.

## How Testers with Domain Knowledge Can Help Capital Markets Firms: FIX Protocol Testing

Virtually every major stock exchange, investment bank and mutual fund and thousands of smaller investment firms use the Financial Information eXchange (FIX) protocol for electronic trading. For these firms, the reliability, scalability and availability of their FIX engines is essential to providing electronic trading services 24/7 around the globe. Any service degradation or failure can result in loss of substantial revenue with current and future customers.

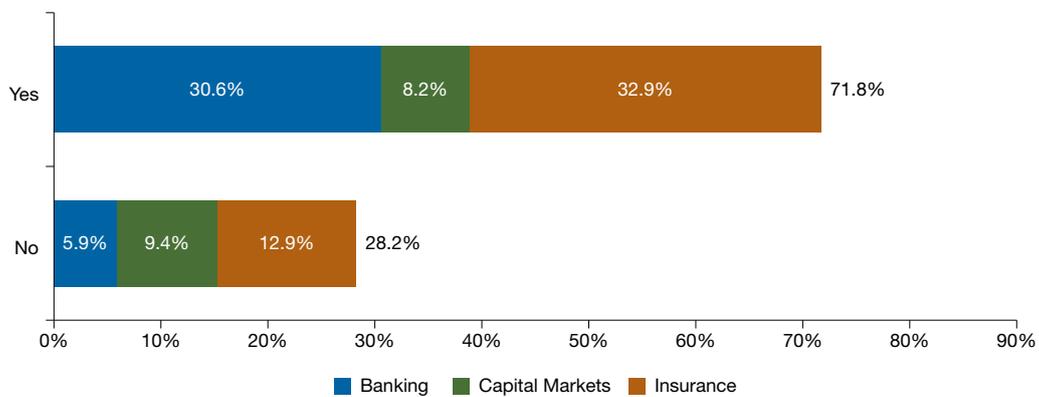
Capgemini has found ways of harnessing the domain knowledge of test professionals by creating reusable test assets. Capgemini test professionals partnered with Hewlett-Packard, Aegisoft and Blueprint Systems to build a FIX protocol testing accelerator which helps automate more than 60% of the existing manual processes involved in FIX validation.

## Use of Outsourced Resources is On The Rise Among FS Institutions

Seventy-two percent of FS respondents said their company currently leverages outsourced resources for testing services, compared to 49% of non-FS companies. There was a large discrepancy by FS sector, though, with more than half of capital markets respondents saying they do not outsource (53%) and most banking respondents (84%) saying they do.

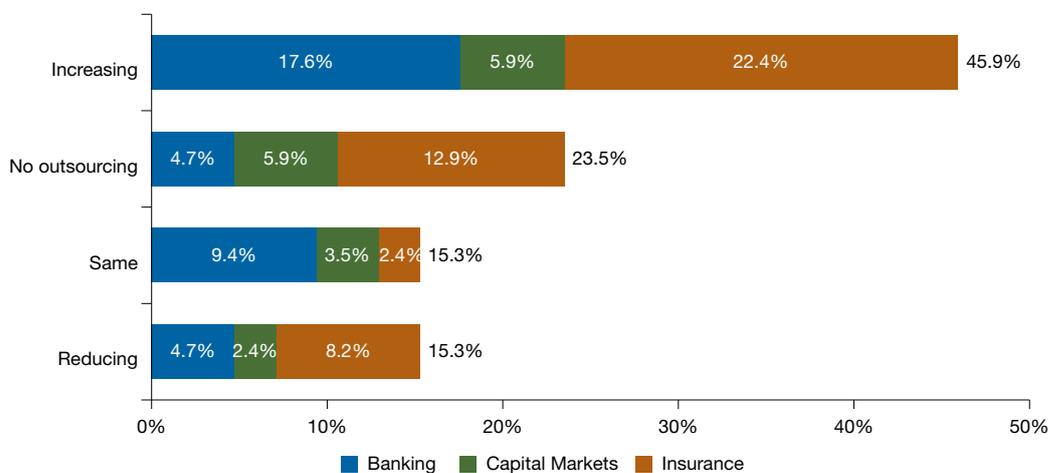
FS organizations are continuing or expanding the use of outsourced resources for testing, with 61% of FS respondents saying their use of outsourced resources will stay the same or increase. Notably, though, 15% of respondents say they are reducing outsourced resources, and 41% say they could reduce the number of outsourced resources by demanding greater ALM automation. Since automation and outsourcing are both strategies to lower costs, it's probably not surprising to see a focus on these activities by FS institutions after the financial crisis.

**Figure 12 Does your organization use outsourced resources for testing?**



Source: Capgemini Financial Services Analysis, 2010.

**Figure 13 Is your organization increasing the leverage of outsourced resources for testing?**



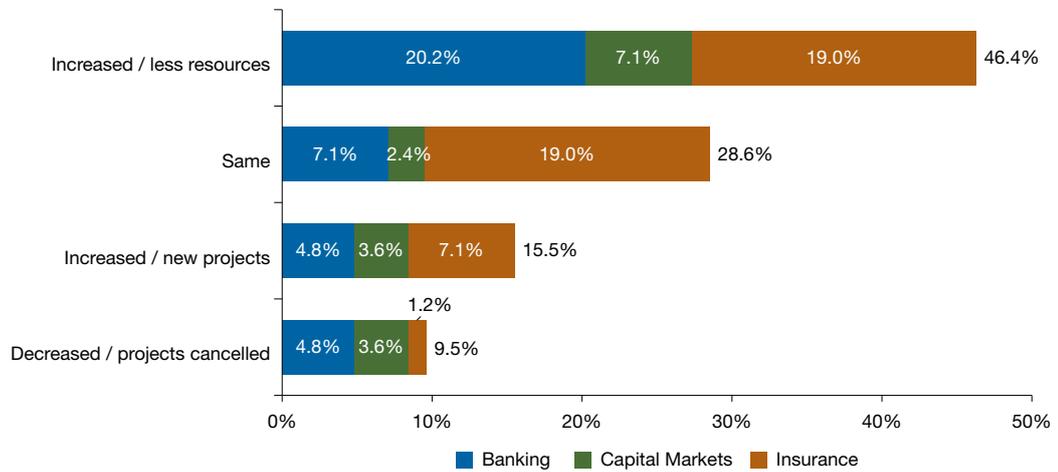
Source: Capgemini Financial Services Analysis, 2010.

### Increased Workload Doesn't Necessarily Mean New Projects

With new applications development continuing, 62% of FS test professionals expect their workload to increase—but mostly because they have fewer people, not more

projects. Only 16% of FS respondents expect their workload to increase due to new initiatives, and nearly half of them are in the insurance sector. Insurance respondents were also least likely (1.2%) to report a decrease in workload or project cancellations/declines.

**Figure 14** What has been the effect of economic crisis on your work load?



Source: Capgemini Financial Services Analysis, 2010.



## Conclusion

The global FS sector is in the midst of firestorm. Regulators, customers and counterparties are scrutinizing individual firms and the industry as a whole, demands for transparency are at an all-time high, and risk-management performance has become an issue of corporate governance as well as a strategic imperative. At the same time, the economics of financial services are more challenging than ever, and industry consolidation and convergence is progressing rapidly. In this environment, FS firms need sophisticated business applications that deliver real-time reliability more than ever. The real challenge—and potential to add value to the business—is in proactively and proficiently managing the entire lifecycle of those applications, from selection to testing, maintenance and retirement.

This type of management requires a mature quality management and testing organization, and our survey suggests FS firms have many of the building blocks they need to be successful on this count, but more work is needed.

Many FS firms will need to conduct self-assessments to properly gauge their existing maturity levels, and to benchmark themselves more accurately against the competition. Importantly, though, that benchmarking will help to drive the business case, and facilitate discussions with senior management, business lines and other stakeholders over costs, benefits, funding, and expected outcomes for applications development and use.

This dialogue, and the shared vision that should emerge, is critical to sustained success. In the more immediate term, though, there are several things an FS firm can do to improve the management of its applications portfolio.

# Top 7 Things Your Organization Can Do Today To Better Manage the Applications Portfolio

Based on Capgemini's experience of delivering high-quality applications, and implementing and maintaining centers of excellence, we feel certain recommendations are key to addressing many of the challenges involved in developing best-practice ALM. They include the following:

**1. Develop an enterprise-level plan for ALM investments.**

The plan should include mechanisms to define goals and ROI measurements and should be driven centrally to ensure investments are aligned with business priorities, but are not being duplicated. The success of investments will also depend on gaining management commitment, investing in the right resources, and defining the right processes.

**2. Implement a Center of Excellence (COE) to standardize processes, tools, and guidance to effectively manage Test Projects.**

The COE can be aligned with the Project Management Office (PMO) to leverage best practices across the organization. A COE can help streamline processes and focus on implementing these processes consistently across the organization. It also provides a forum for testers to share knowledge.

**3. Establish focused teams to drive key initiatives.**

For example, many FS firms today are focusing on Data Privacy and new technologies around Cloud Testing and SOA. Teams devoted to these efforts can help concentrate learnings and accelerate initiatives.

**4. Develop a Testing community to provide a home for testers outside their projects.**

This gives testers a place where they can discuss ideas, learn and share best practices and grow their careers through training and formal certifications.

**5. Develop a culture of reuse.**

Organizations can support reuse and automation for testing by providing a tools repository and promoting reuse through newsletters, contests or other initiatives.

**6. Define and strictly implement requirements definition and control processes**

Since costs and business value are both so closely tied to successfully gathering and managing requirements, these are areas that require more investment. Defects introduced in the requirements phase are the most costly to fix later in the lifecycle.

**7. Share and adopt best practices from outsourcing vendors.**

Outsourcing is on the rise in the FS space. However one outsourcing strategy does not fit all. FS organizations should evaluate vendors to best match their company's needs and culture. Analysts like Forrester and Nelson Hall provide guidelines that can help in short-listing the right fit.



## About the Study

The Financial Services Quality Report is based on data from two sources: The 2009 World Quality Report survey and Quality Benchmark data derived from over 20 years of history assessing and supporting testing organizations within financial services firms.

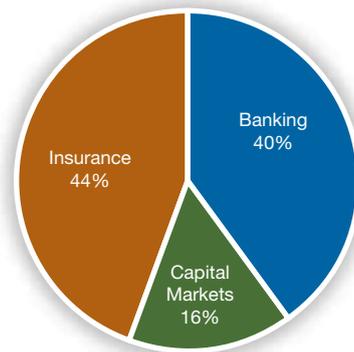
### World Quality Report Survey

The 2009 World Quality Report survey was sent to over 10,000 CXOs, IT directors, QA managers and engineers at more than 400 unique companies around the world. It included responses from 60 financial services firms, which were further identified as banks, insurance companies or capital markets firms<sup>2</sup>. The survey data also identified the size and headquarters for each financial services institutions. We used this FS-only data to look at trends across banking, insurance and capital markets.

Of the FS respondents, most were from insurance companies (44%) and banks (40%), while 16% were from capital markets or investment firms. The majority of FS companies surveyed are headquartered in North America (76%) with about 20% from Europe and the remainder from Asia.

Almost half of the FS respondents were employed in companies identified as Enterprises (more than 20,000 employees). The next largest segment of respondents were from Mid-sized companies (1,000 to 5,000 employees), followed by Small (less than 1,000 employees) and Large companies (5,000 to 20,000 employees).

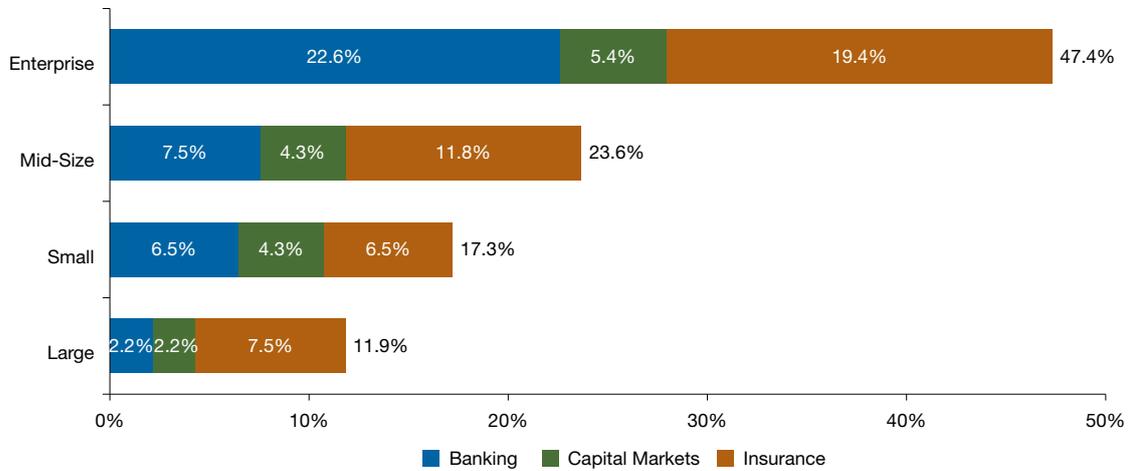
**Figure 15** FS Respondents to 2009 World Quality Report survey by sector



Source: 2009 World Quality Report, Capgemini, Hewlett-Packard and Sogeti.

<sup>2</sup> For public companies, the sector was identified based on Forbes' segmentation. For private companies, the sector reflected the way in which companies publicly identified themselves

**Figure 16 FS Respondents to World Quality Report survey by company size**



Source: Capgemini Financial Services Analysis, 2010.

### Quality Benchmark

This study is also supported by Capgemini benchmark data derived from client projects and over 20 Quality Blueprint assessments<sup>3</sup>. Capgemini collates industry quality benchmarks to help organizations evaluate themselves against global trends, identify the direction in which the industry is moving, and take requisite steps to ensure they are not left behind. It also helps organizations identify areas of focus that would make test delivery cheaper, faster and better.

#### How do we calculate this benchmark?

We calculate the benchmark using industry surveys across all sectors of the FS industry and through data analysis of Quality Blueprint assessments carried out for Capgemini financial services clients.

This report also draws on the Capgemini Group’s more than 30 years of experience in testing and quality management. Over the years, the Group has developed a range of best practices, including TMap® (Test Management Approach) and TPI® (Test Process Improvement), which are now accepted as industry standards around the world. TMap® is the Group’s business-driven, risk-based methodology for structured software testing, which is designed to address the key issues of quality, time and cost across the whole development lifecycle of solution delivery. TPI® is our registered model for the improvement of testing, which offers insight into the maturity of the current test process and identifies improvement actions to accomplish the desired test maturity level.

<sup>3</sup> Capgemini’s Quality Blueprint provides an assessment and roadmap for a company’s test organization to achieve a higher level of maturity

# Glossary

## **Agile Methodology**

Agile is an approach to software development based on iterations. Both requirements and the resulting solutions evolve through collaboration between self-organizing cross-functional teams through multiple incremental iterations.

## **Application Development & Maintenance (AD&M)**

AD&M can be described as the comprehensive and integrated process for managing the entire lifecycle of a single application landscape from its conception, through design and deployment, to service, renewal and disposal.

## **Application Lifecycle Management**

Application Lifecycle Management (ALM) is the marriage of business management to software engineering made possible by tools that facilitate and integrate requirements management, architecture, coding, testing, tracking, and release management.

## **Artifacts**

An artifact is one of the many kinds of tangible by-products produced during the development of software. Examples include use cases, test cases and test plans.

## **Automated Testing Tools**

An automated instrument that typically improves the efficiency of testing and supports one or more testing activities, such as planning, design and execution.

## **Data Masking**

Data masking is the process of obscuring (masking) specific data elements within data stores. It ensures that sensitive data is replaced with realistic, but not real, data. The goal is that sensitive customer information is not available outside of the authorized environment.

## **Goal Driven Measurement Program**

A metrics program that can identify, select, define, and implement software measures to support business goals.

## **Legacy Modernization**

Rewriting or porting of a legacy system to a modern computer programming language, software library, protocol, or hardware platform. It aims to retain and extend the value of the legacy investment through migration to new platforms.

## **Quality Blueprint**

Capgemini's Quality Blueprint provides an assessment and roadmap for a company's test organization to achieve a higher level of maturity. As part of the Quality Blueprint offering, Capgemini consultants compare the current state of your organization against the industry and competitors and prepare a roadmap of the path forward.

## **Quality Assurance**

Software Quality Assurance is the monitoring of the software engineering processes and methods used to ensure quality. The methods by which this is accomplished are many and varied, and may include ensuring conformance to one or more standards, such as ISO 9000 or CMMI.

## **Quality Management**

The aim of Software Quality Management (SQM) is to manage the quality of software development processes and products.

## **Requirements Visualization**

A new requirements paradigm that leverages modeling, UI prototyping, story boarding and mock-ups to better represent and capture the needs of the end-users of a particular product.

## **Software Testing Life Cycle (STLC)**

A linear and sequential approach to testing by partitioning all testing activities into phases that methodically remove levels of software risk and integrates with the software development lifecycle.

## **Test Environments and Data Management**

The planning, design, creation, maintenance of infrastructure and components such as connections, test data, tools, management processes, operating environments and hardware in which a test is carried out.

### **Test Environment Virtualization**

Testing teams require multiple environments to conduct a large array of tests ranging from integration and system tests to user-acceptance tests. Test Environment Virtualization assists in the creation and management of these environments by splitting the same hardware capacity between multiple environments with the help of virtualization software.

### **Software Testing**

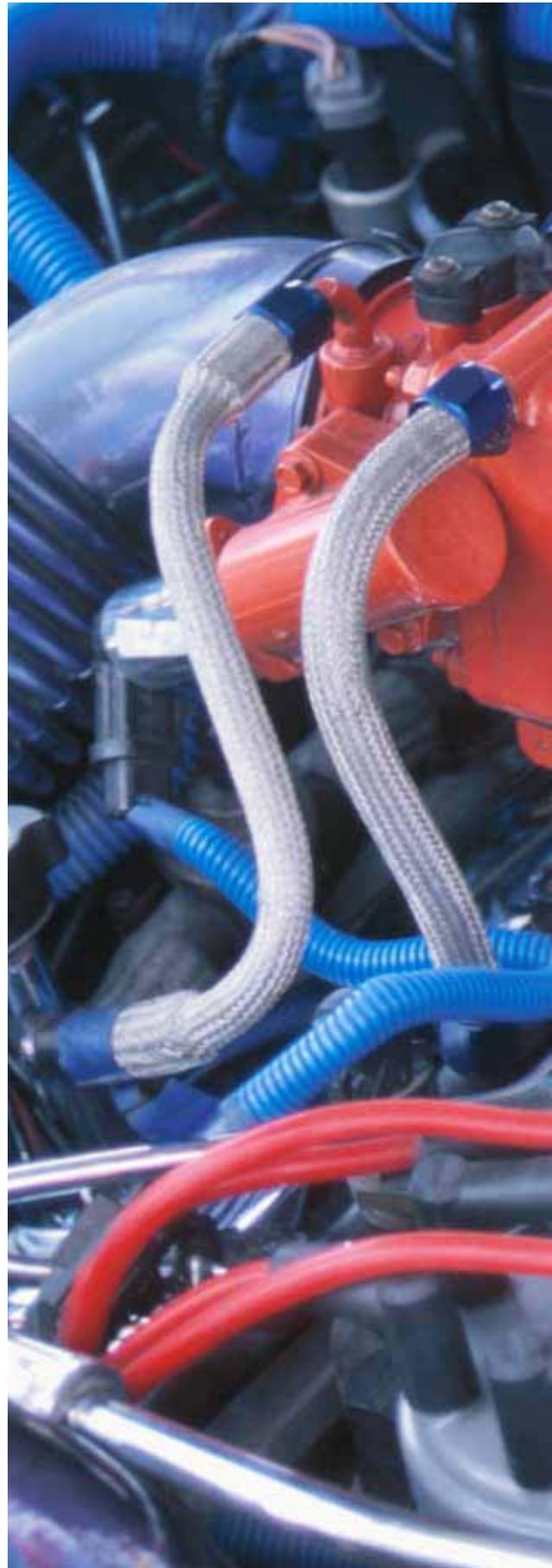
An empirical investigation conducted to provide stakeholders with information about the quality of the product or service under test, with respect to the context in which it is intended to operate. Software Testing also provides an objective, independent view of the software to allow the business to appreciate and understand the risks at implementation of the software.

### **TMap®**

TMap®, Test Management Approach, is the Capgemini and Sogeti business-driven, risk-based methodology for structured software testing that is designed to address the key issues of quality, time and cost across the whole development lifecycle of solution delivery.

### **TPI®**

TPI®, Test Process Improvement, is the Capgemini and Sogeti registered model defined to increase the maturity of testing processes. The model offers insight into the maturity of the current test process and identifies improvement actions to accomplish the desired test maturity level.







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