
Risk Management Systems In the Aftermath of the Financial Crisis

Flaws, Fixes and
Future Plans

Risk Management Systems In the Aftermath of the Financial Crisis Flaws, Fixes and Future Plans

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INTRODUCTION

The financial crisis in 2008 led to a significant increase in awareness of, and concern about, risk management. Despite millions of dollars invested in risk systems over the last two decades, failures in risk management were common throughout the financial world. As a wave of books, articles and official reports have shown, many of the most significant failures in risk management were located in executive decisions such as using high leverage, making large investments in real estate and mortgage companies at the market's peak and gaming financial reports with off-balance-sheet vehicles.

This report does not address those issues but focuses on the operations of risk management—where do risk managers get their data, how do they maintain its quality and analyze it, how quickly is it available and how do professional risk managers plan to improve their systems in the future?

GARP, the Global Association of Risk Professionals, is uniquely positioned to study and report on how risk is managed in the real world of global, regional and specialized financial institutions. With more than 100,000 members globally, in firms ranging from Tier One Banks to hedge funds and investment boutiques, it can offer a view of risk management on the ground from the perspective of the responsible professionals.

This survey was conducted by the Global Association of Risk Professionals on behalf of Sybase. It was sent to more than 5,000 professional risk managers in Germany and the UK. The purpose of the survey was to learn about the technology which risk managers are using or planning to acquire, how often they update results, and the role of the front and back office in risk management. It uncovered some interesting contradictions—risk managers often appeared relatively content with systems which failed to give them all the information they need to do their work.

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EXECUTIVE SUMMARY

Risk managers have much of their business right—they are using excellent tools from vendors or in-house development, they have access to good data and they are running sophisticated analytics.

Now it is time to move risk management up a level.

Most firms are processing their risk at end-of-day, while risk professionals largely agree many of the results they need should be available on demand.

Point solutions must contribute to enterprise risk management based on consistent information across systems. Across financial services, leading edge adoption of the latest technology has often resulted in legacy silos. While this can be an embarrassment in retail banking or wealth management firms, it can be a disaster in global risk management. The goal of system integration is still an elusive one.

Although risk managers generally control the data they use, they are frustrated by multiple data stores and the difficulty of arriving at one single version of the truth. This is often the result of the early adoption of the best available technology at the time. Technology has improved rapidly over the last few years across processors, databases and networks. Firms should ensure that they are taking full advantage of the fast and powerful systems available, systems which can be linked to avoid duplication of data, which reduces storage costs and the need for reconciliation.

Risk managers surveyed were skeptical of the business side's understanding of technology, even though the business executives typically take the lead in directing new risk management projects. Despite questions about their executives' technological knowledge, risk managers say they can implement new systems rapidly—in weeks or months, which indicates a sophisticated IT operation.

While the crisis exposed gaps and outright failures, risk committees and senior C-level executives are pushing for improvement. Their biggest danger is complacency.

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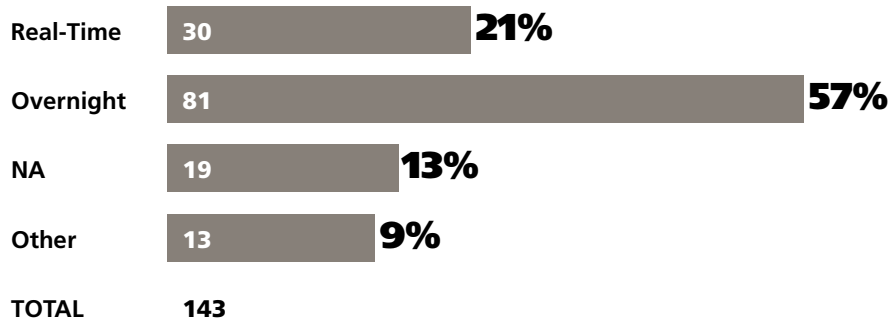
THE FRONT OFFICE

RESPONSE TO THE CRISIS

Banks have responded to the crisis with plans to invest more in risk systems, improve integration of systems and, in many cases, move to more frequent updating and valuations.

The financial crisis unfolded quickly as banks hoarded their capital, demanded more collateral, and refused to expand their trading with counterparties that looked shaky. The speed of market movement demonstrated that weekly measures of risk are inadequate in a fast-changing market. Although a few banks monitor their risk in real-time, 57 percent said they only update their risk management database overnight.

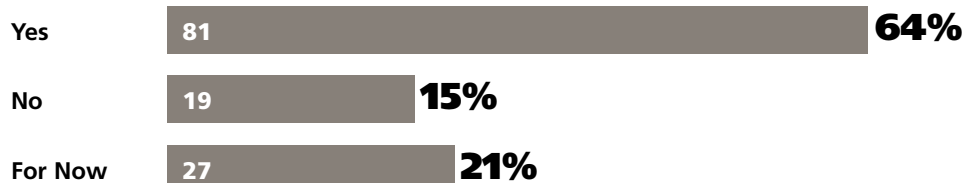
Q. How often is the database updated?



Firms were evenly split between moving toward shorter update cycles at 37 percent YES and an equal percentage NO while 26 percent were looking at it for the future.

A majority of those surveyed thought existing systems were fast enough for their risk requirements.

Q. Is that fast enough to meet your needs?

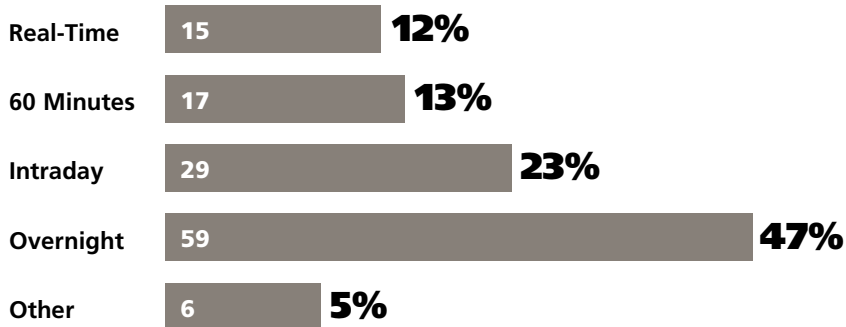


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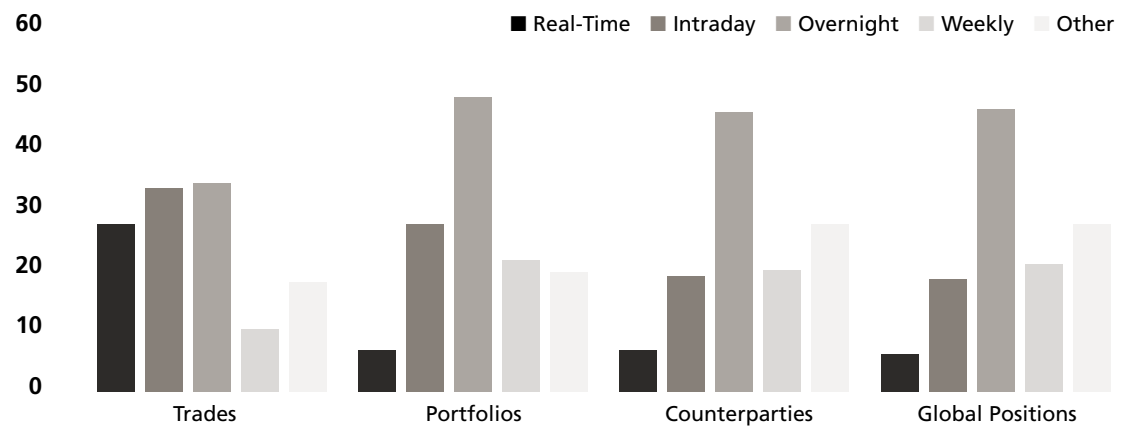
THE FRONT OFFICE

Risk analysis is done at a similar pace. Only 28 percent run complex analysis for trades in real-time, although another 32 percent did the analysis intraday. For larger problems, such as portfolio and counterparty risk or global positions, most firms relied on overnight processing. Only a few managed this in real-time while around 20 percent ran their portfolios, counterparty and global position calculations weekly.

Q. How long does it take for your risk management processes to perform the necessary analytics?



Q. Please indicate the frequency that you run additional complex risk analytics for each of the following systems:

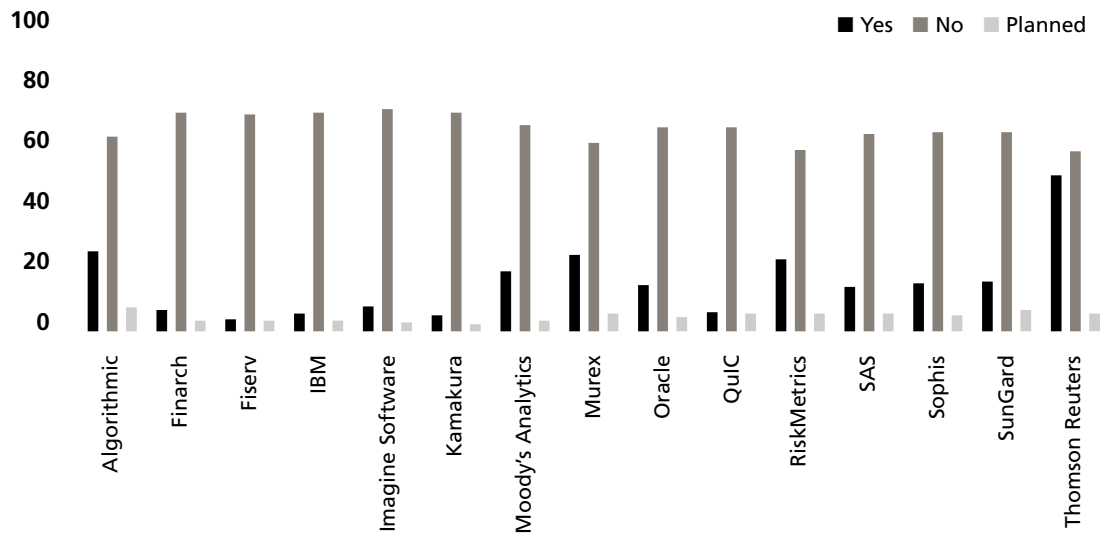


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THE FRONT OFFICE

Among the banks participating in the survey, almost all the major risk management software packages are deployed.

Front Office Analytics



For risk management pricing data, 84 percent reported having Bloomberg, 61 percent Reuters while exchanges, brokers, internal front office systems, quant models and in-house pricing data were also widely used.

CONSISTENT INFORMATION

Smart management of data can avoid complex work of synchronizing numbers.

Q. What are your data sources? (Check all that apply)



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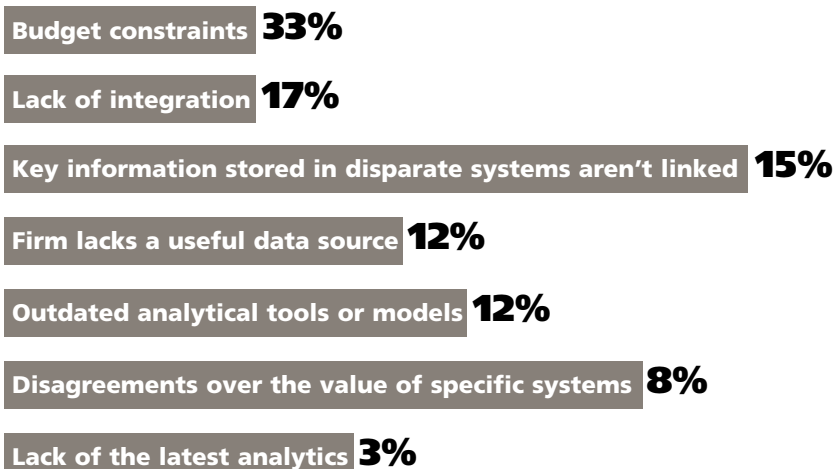
THE FRONT OFFICE

Most firms, 76 percent, said they use the same data sources for the front and middle offices. The risk managers use external data feeds and internal systems. Data is most often distributed through replication (59 percent) and firms maintain control of the data to ensure consistency where it is needed. At 27 percent, modification of data is not permitted, and at another 19 percent the distributed data remains in departments so any changes remain local. Still, at 29 percent of the firms, reconciliation remains a problem and nearly the same percentage report that obtaining a single best price from multiple data sources remains an issue.

Although integration is a key to effective enterprise risk management, many banks have not achieved it. Data silos make it difficult to run queries or risk calculations across a single office, much less a global enterprise. Middle offices, the traditional location of core risk management systems, don't appear to be integrated with many other systems. A bare majority said their middle office provides integration with multiple trading systems, while only 47 percent said their middle office systems could integrate with multiple risk systems. But a majority said that new systems and analytics would be integrated with the middle office as they are added.

TOOLS—DATA AND ANALYTICS

Only 60-odd percent of risk managers said they have the data and the analytics they need to do their job. The reasons they gave for not having what they need included the familiar lack of integration and key information stored in disparate databases.



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DATABASE TECHNOLOGY

When it comes to databases, risk managers pretty much have at least one of everything. Relational databases are widely used and may be the source of some of the problems risk managers face in using their data. While excellent for transactions, relational databases are less adept at analysis and supporting complex queries. Their widespread use in risk management is a reflection of risk's evolution. Over the last 20 years, risk management has moved from spreadsheets to relational databases to specialized risk systems. During the same time, the financial services industry has seen waves of mergers and acquisitions. And simultaneously new risk systems were developed for different types of risk—credit, market, operational and, more recently, liquidity risk. In addition, global firms were extending the reach of their systems from instruments or trading desks to an enterprise view or global positions. Individual databases implemented as point solutions over time do not add up to a single, reliable integrated source of information. The GARP survey responses indicated that integration remains a widespread problem.

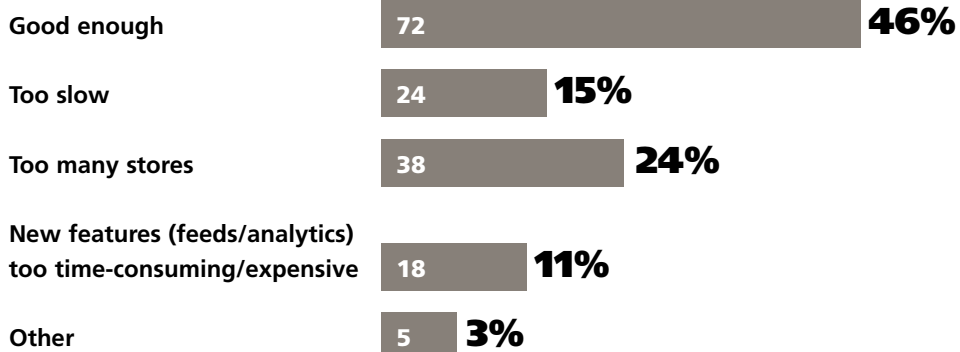
Only 39 percent said their systems were integrated.

Q. Are the systems integrated?



A minority of 46 percent of risk departments are satisfied with the way their current database technology supports the firm's risk management.

Q. How well does your current database technology support the firm's risk management?

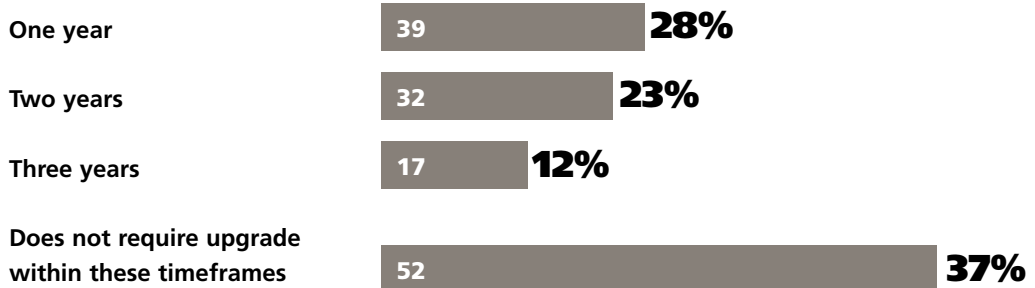


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THE FRONT OFFICE

About half as many complain they have to deal with too many different databases (24 percent), another 15 percent think their databases are too slow and 11 percent say new features and analytics are either too time consuming or expensive. Risk managers clearly want database technology to do better. But don't expect improvement right away. Twenty-eight percent said they will see upgrades within a year, 23 percent within two years, 12 percent in three. But 37 percent think their database does not require an upgrade anytime soon and fully 61 percent said it does not need to be replaced over the next three years.

Q. Your database technology will need to be upgraded within:



Is there an issue of low expectations here? Fewer than half the firms are pleased with the way their database technology is performing but nearly as many don't think it requires an upgrade. Risk managers may not know what the latest database technology can do for them. The survey didn't ask risk experts to rate their own technological expertise, but when it asked them how tech savvy the business users they work with are, only a third thought their business leaders were up to date on the latest technology. Do risk managers understand what they are missing with inadequate databases?

Storage costs are directly impacted by the widespread use of multiple relational databases in risk management. For one terabyte (TB) of raw data, a relational database typically requires 1.5TB to 4TB of storage, depending on how many views and indexes are run against the data. If the data is duplicated across five areas of a firm, the original 1TB of data can easily consume 20TB of storage. By contrast, a database designed for queries rather than transactions can contain 1TB of data in 300 gigabytes of storage.

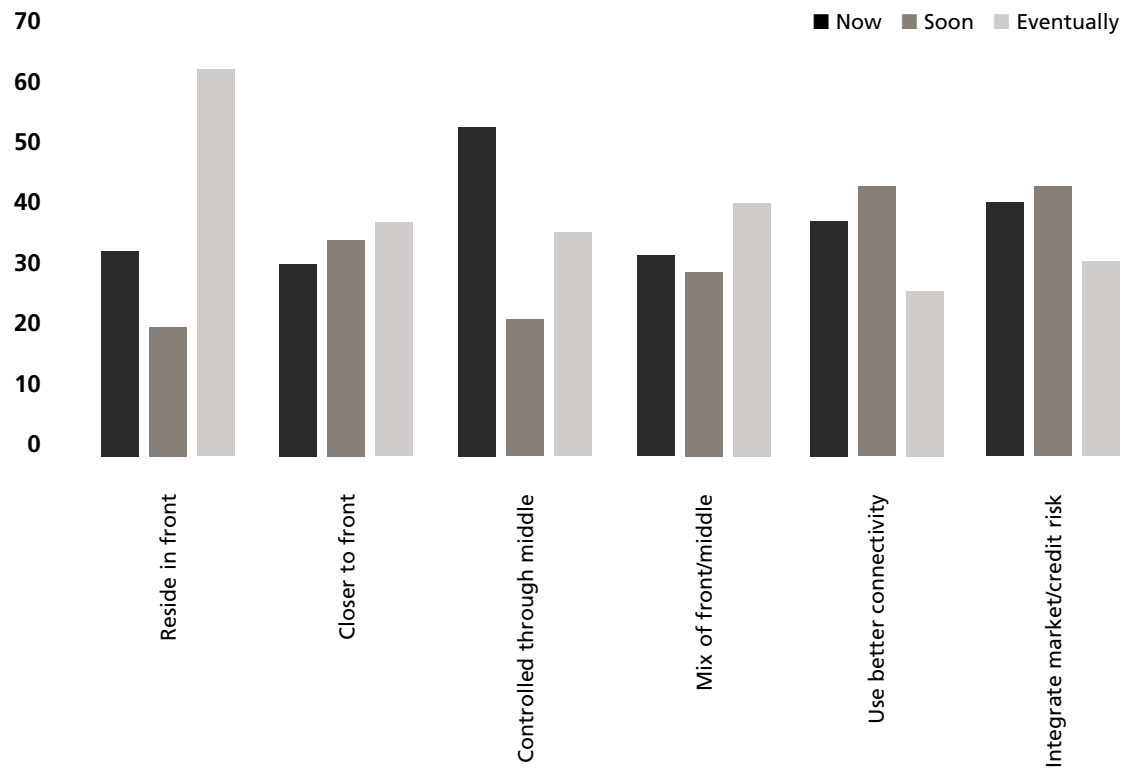
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THE FRONT OFFICE

RISK PRICING

Risk pricing has a distance to go before it is firmly established in the front office. Only 33 percent said it resides in the front office now, while 59 percent said it should get there eventually. However, 45 percent of the risk managers say their firm is ahead of competitors in risk pricing and gaining business. Others say their counterparties are pushing them to produce prices faster (35 percent) or admit they have lost business because their pricing is too slow.

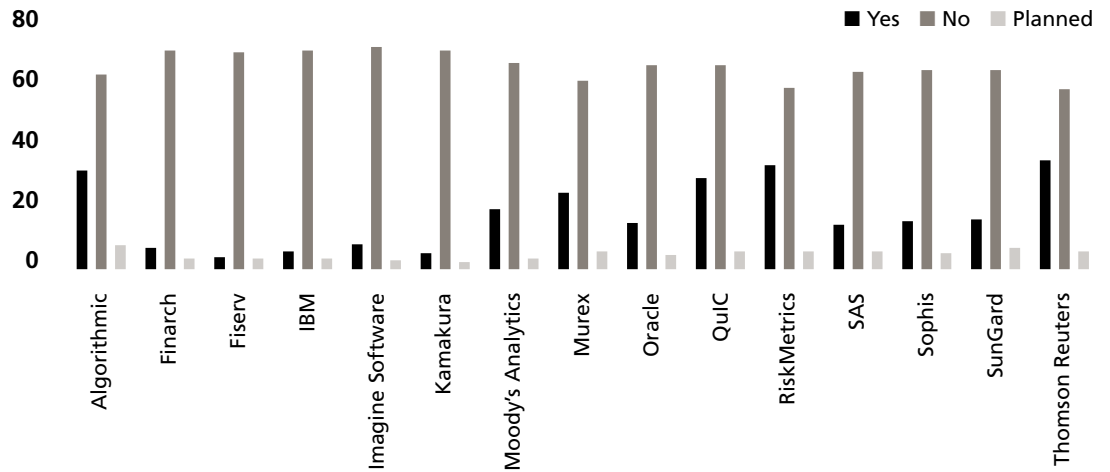
Q. What is the location of risk pricing within your firm?



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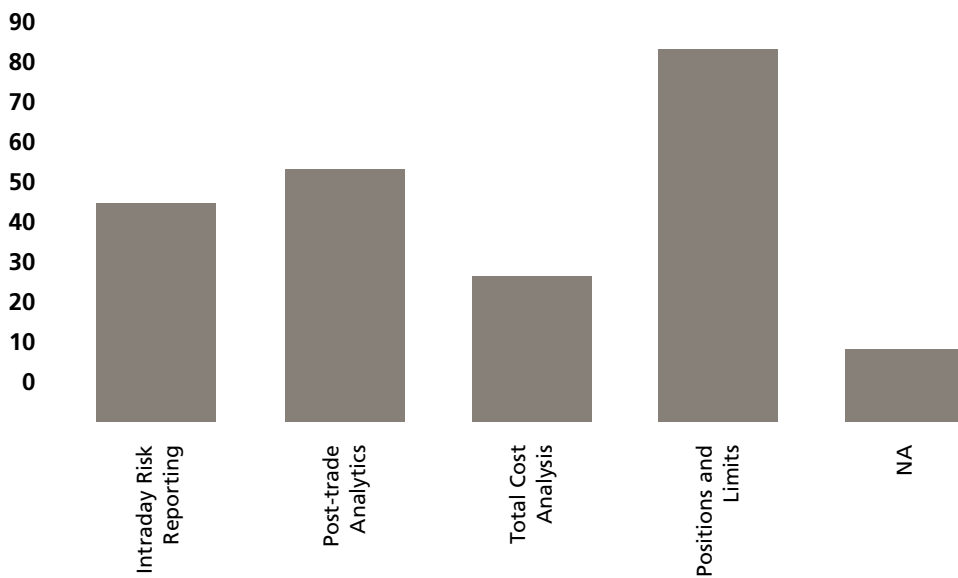
MIDDLE OFFICE ANALYTICS

Q. Which vendor analytics do you use in the middle office?



The core of risk management lies in the middle office. It is the repository for positions and limits at 69 percent of the firms and does post-trade analytics at 50 percent.

Q. Which of these do you have in the middle office? (Check all that apply)



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MIDDLE OFFICE ANALYTICS

Trading-related functions appear to be split between the front and middle offices, depending on the firm. Intraday risk reporting is a middle office task at 37 percent, while total cost analysis resides in the middle office at 23 percent.

At most firms, 66 percent, the middle office calculates the present value for trades and positions, although the remaining 34 percent say that is a front office task. Most risk management departments (56 percent) own the data they use, although at a few, (10 percent) traders manage the data which risk relies on.

Middle and back office operations people often complain that traders create new products without regard to risk and settlement issues. Apparently the problem is not quite so bad in risk management, where 60 percent of the firms say that their middle office risk management functions can keep pace with the trading desk. Still, that leaves 40 percent which apparently are lagging well behind.

Q. Do the risk management systems in your middle office keep pace with new product development on the trading desk?



Is the middle office left behind on pricing updates? More than half the firms report that they update prices, rates, curves and volatilities only at end-of-day in the middle office. Real-time or on-demand updates are running around 15-17 percent except for limits, which are updated in real-time at 25 percent of the firms. Many risk managers, around 35 percent, seem content with the current frequency although around 40 percent would prefer this information in real-time or on demand.

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BUSINESS AND INFORMATION TECHNOLOGY (IT)

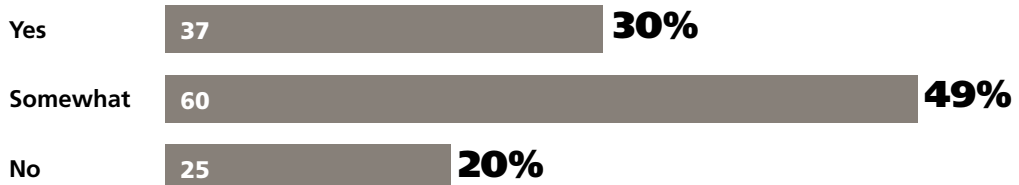
Although risk management depends on information technology (IT), the relationship between the managers and the technologists isn't always as close as it could be. Forty-three percent of the firms reported that IT is involved in business planning for risk management from the beginning, but another 41 percent said there was only some involvement by IT in the business planning, while 36 percent said IT wasn't brought in until after the plans were complete. Perhaps this explains why firms are facing problems with integrating systems and providing data and analytics to users in real-time. Earlier involvement of IT could improve risk management, especially if the IT representatives took an aggressive stance and explained what the latest technology can do cost-effectively. Looking at the amount of risk management that is done outside of real-time suggests that firms are not making sufficient investments and probably don't know how much power is within reach of even constrained budgets.

In the first seminar held to review this report, risk managers cited examples where they asked IT for real-time query capability and were told it would take three years to develop. A major part of the problem stems from the sequential way risk systems were implemented over the years with data distributed to each point of risk analysis, making it difficult to arrive at a single data definition—much less result—across systems. The original problem has been compounded by the subsequent approach to system enhancements. Rather than asking what users need, firms look at their existing IT infrastructure and ask what they can bolt on to improve the results. In the end, they are making systems more complicated and approaching a point of paralysis.

Both the business and the IT side seem to be some years behind in understanding what could be done to improve the process. Business takes the lead in identifying and providing solutions for risk management in 78 percent of the responses. Only 32 percent of the risk managers think business executives were up to date on technology. Another 52 percent said they were somewhat aware, while 16 percent said they weren't aware at all.

A gap between business and IT persists when it comes to planning, where 49 percent said there is only some understanding of what is required for risk management in the years ahead and another 20 percent said there is not a reasonable understanding between the business side and IT.

Q. Do you think there is a reasonable understanding between the business and IT about what is required for risk management in the years ahead?



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BUSINESS AND INFORMATION TECHNOLOGY (IT)

Although some responses, especially around system integration and lack of real-time information, suggest that risk management efforts lag technologically, the time it takes to implement new systems indicates skilled IT teams. Twenty percent of the risk managers said they can bring a new product or office into the existing risk management system within days, and another 42 percent measure the time in weeks.

A strong working relationship between risk managers and IT would benefit banks. The available technology in databases, networks, and processors is changing rapidly and costs are coming down. From the survey, it appears that risk management at many firms already lags well behind what is possible. Firms which don't take full advantage of their IT resources—the people who know what the technology is capable of and what more it will be able to do in the next two or three years—will be paying more for less and lag behind the competition and the markets.

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FUTURE PLANS

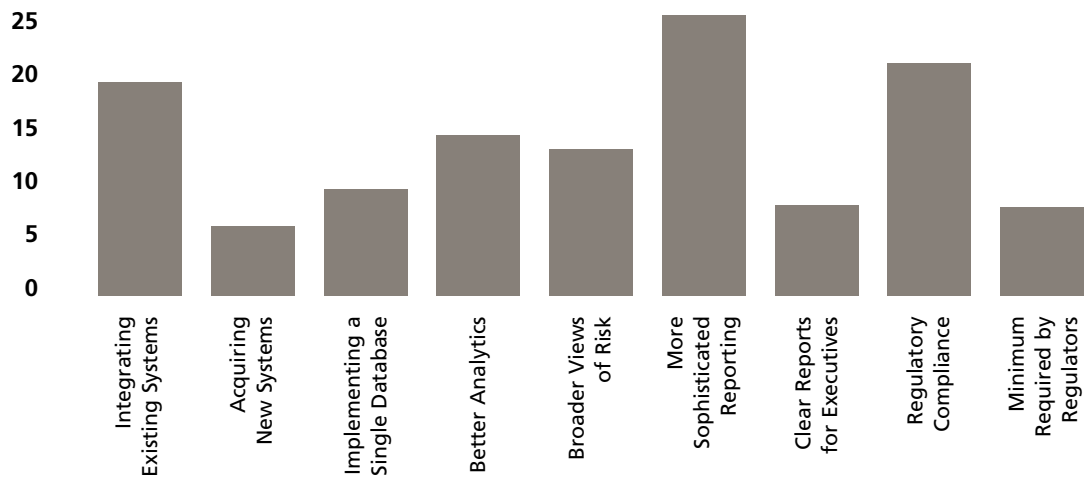
Sixty-three percent of the firms in the survey are willing to invest more in risk management technology.

Q. Is your firm willing to invest more in systems to meet the increasing needs of risk management?



Where will they spend it? More sophisticated reporting led with 19 percent of the managers, followed by integrating existing systems, 17 percent, and regulatory compliance at 15 percent. Big projects are on the list for only a few firms—implementing a single data store is a priority for 8 percent and acquiring new systems is in the budget at just 4 percent.

Q. What is the focus of the firm's risk management investment over the next year? (Check all that apply)



More than half the risk managers expect their firms will have what is needed for sophisticated risk management by the end of 2010; 24 percent thought that would be accomplished by Q3. Looking to the future, 52 percent of the risk managers said their firms are adding new systems and 60 percent said the new systems will be integrated and made available through a middle office once they are implemented.

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CONCLUSION

The financial crisis demonstrated the need for better approaches to risk management. Although the gravest failures occurred at higher decision-making levels, risk managers will be called on to improve their processes. CEOs, CFOs, board members and regulators will ask for more frequent risk reporting that is clear and comprehensible to an intelligent person who is not necessarily a risk expert. In the aftermath of the crisis, users will require that risk reporting be comprehensive, probably including liquidity risk; the taste for SIVs and liquidity puts is apt to fade away for at least a few years.

The survey reveals a wide range of risk management practices. Clearly many, if not most, firms appear to be a significant distance away from achieving best practices. The most glaring shortcomings are the lack of access to integrated data and analytics and sufficient real-time information. An Oliver Wyman review of risk governance says that “confidence in the risk management practices of financial institutions is now at the lowest point in a generation. This has come as a shock for the industry, given the enormous effort expended over the last 20 years to establish the foundations of modern risk management.”

As Rahm Emanuel, President Obama’s chief of staff, likes to say, “You never want a serious crisis to go to waste.” The opportunities for far-reaching improvements to risk management are in danger of slipping away.

Stuart Grant, EMEA Business Development Manager, Financial Services, at Sybase notes that risk management has always struggled to achieve funding, and that the struggle may well continue as banks retrench and try to reduce expenses in their recovery, although regulators may yet demand greater investment in risk management. After the first Sybase-sponsored seminar to discuss some of the findings from this GARP survey, he concluded that most risk management organizations lag two to three years behind in taking advantage of the latest technology—on both the business and IT sides. One CIO he met with was unaware that Sybase had developed technology to meet some specific needs of his—12 years ago. By integrating systems, risk managers can reduce reconciliation efforts, cut expenses and, most importantly, operate from a single data source, leading to significant savings in data storage costs.

Most risk managers don’t want constant real-time reporting; what they need is on-demand access to information in real-time, he says.

About GARP

The Global Association of Risk Professionals (GARP), a membership organization of over 100,000 individuals, is the only world-wide organization offering comprehensive risk management certification, training and educational programs from board-level to entry-level, allowing a firm to create a culture of risk awareness throughout an organization.

GARP's aim is to help develop leaders within the risk management community by encouraging communications between practitioners, academics and regulators worldwide. It offers events, training curriculum, publications, research center, website and certifications. All of GARP's programs are developed and maintained by industry-leading risk practitioners and academics, ensuring the courses and materials are consistent and reflect the latest global standards in risk management.

About Sybase

Capital markets firms choose Sybase for its risk management, compliance and trading solutions that are specifically tailored to fit their needs from real-time risk management, algorithmic trading, market aggregation, smart order routing, real-time pricing, as well as market surveillance monitoring and analytics.

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