Market Insight

TATA CONSULTANCY SERVICES

Chartis

Insurance: The role of RiskTech in effectively managing emerging risks and driving competitive edge

Contents

1. Executive summary

Chartis and Tata Consultancy Services (TCS) conducted research to explore the views of banking, financial services, and insurance (BFSI) organizations on emerging risks and the role of RiskTech in mitigating them. Our report, *The role of RiskTech in effectively managing emerging risks and driving competitive edge*, has a detailed analysis of the research.

This report delves deeper into the insurance results, exploring the experience and adoption levels of RiskTech among insurance companies. It examines the particular challenges they face, and the actions needed to effectively manage emerging risks and gain a competitive edge.

About the research

We conducted a global survey of 152 BFSI firms in 2023, of which 14 were insurance companies. Interview respondents included CEOs, board members, chief risk officers (CROs), heads of IT risk and a range of other risk and regulatory leads, predominantly in large and mid-sized firms. Due to the small sample size, the survey results contained in this insurance report should only be considered as indicative of broad trends.

To support our quantitative survey, we also conducted more in-depth qualitative interviews across Europe, North America and Asia. This included interviews with six insurance companies.

All BFSI firms, including insurers, are grappling with increasingly dynamic and continually evolving risks. A tsunami of regulatory requirements and operational shifts have already comprehensively reshaped the risk landscape.

In response, the BFSI sector has undoubtedly come a long way, with widespread RiskTech adoption. However, this remains patchy across emerging risk types and across the insurance industry. Insurance companies that underwrite emerging risks, such as cyber risk, are far more mature in their capabilities than those that do not offer such policies. However, these actuarial emerging risk capabilities often do not extend into other operational areas, and despite progress, the RiskTech sector can still be described as relatively immature.

The challenge for firms lies in transitioning from a position where RiskTech is treated as an emerging sector to one where it is effectively leveraged across the organization, thereby creating a more stable and robust technology and architectural landscape.

As insurers progress towards effectively managing emerging risks, they must look at some key aspects, which include:

- Extending their emerging risk capabilities from underwriting and pricing into other operational areas.
- Converging insurance analytics approaches with traditional financial modelling to aid the integration of emerging risks, such as cyber, with business strategy.

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Key survey findings: insurance

- **IT and cyber risks are the most pressing emerging risks for insurance companies**: 86% of insurance companies view IT and cyber as highly significant emerging risks, however, it appears from the interviews that this is much more a key part of insurers' underwriting practices rather than their internal business or organizational platforms. All insurers interviewed indicated that they had relatively mature cyber and IT risk underwriting programs. Climate risk underwriting was considered more mature, however with lower growth potential.

- **Insurers are struggling with data and data management along with technological challenges when tackling emerging risks**: Three in ten insurance companies (30%) identified data and data management as the top obstacle to addressing emerging risks, (71% as a top 3 challenge). Technological challenges ranked as the second biggest obstacle overall, but eight in ten (79%) cited this as a top three challenge. All insurance firms interviewed argued that they had a broad technology challenge across underwriting, risk, and finance. Technology modernization was seen as a central concern, however the nature and focus on technology was less on transactional platforms and much more on data platforms.

- **RiskTech use is common**: Eight in ten of the insurers surveyed have adopted each of the major frameworks explored in our research for at least one emerging risk. As mentioned before, insurance underwriting of emerging risks is a relatively mature discipline.

- **In addressing emerging risks, insurance RiskTech adoption is not as mature as other financial services sectors, and levels of adoption vary across the industry**: Insurance companies are most likely to report high adoption of high-performance computing (HPC); four in ten (43%) feel their organization is at this level. Yet, three in ten equally report low levels of HPC adoption. Insurance firms rarely build their own risk platform. All insurance firms interviewed leverage brokerages or reinsurance firms or software firms for data and analytics around specific climate and other emerging risks.

- **Insurance spend on emerging technologies will continue to increase**: Half of insurers are predicting an increase in spend on emerging technologies over the next year and three in ten (29%) are expecting annual budgets to remain the same. The spend is expected to focus on a combination of new platforms as well as new data integration frameworks.

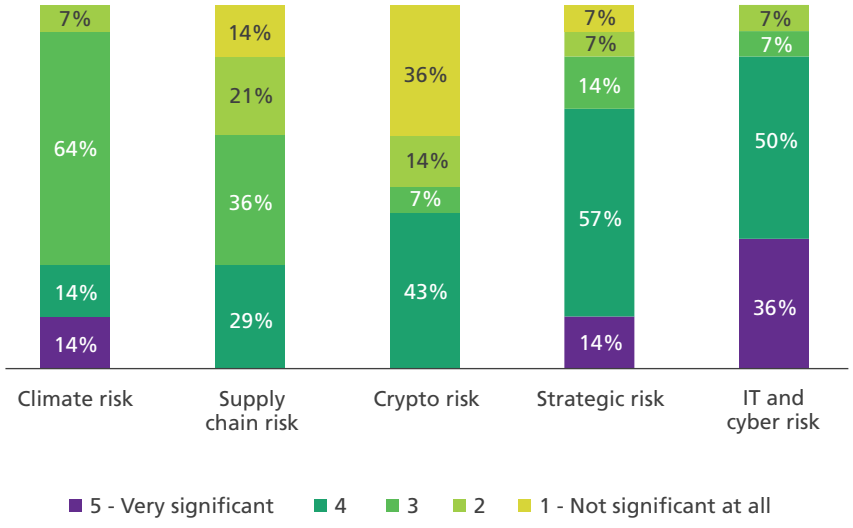
- **Infrastructure limitations are the biggest barriers to insurance RiskTech and RegTech adoption**: More than nine in ten (93%) feel infrastructure limitations are a major barrier. Insurance companies overall felt their technical infrastructure (particularly for data management) was substantially below requirements.

2. Findings in detail

The evolving risk landscape: insurance

Insurers are grappling with increasingly dynamic and continually evolving risks. Our survey examines their views on the different types of emerging risks.

Q5 State the significance of emerging risks within your organization (small sample size)



- For most insurance companies, IT and cyber risks are the primary emerging risks they are currently facing; almost nine in ten (86%) insurers view these risks as significant.
- Seven in ten (71%) insurers view strategic risk, including industry, technology, and business model disruption, as a significant issue.
- Climate risks may appear to be lower than expected for insurance companies. However, due to the very nature of their businesses, climate risk analytics are very mature in the industry, and it should be noted that none of the insurers surveyed feel climate risk is 'not at all significant'.
- Note, however, that the insurance survey had a small sample size (14).

Roadblocks to addressing emerging risks: insurance

When it comes to addressing these emerging risks, insurers are facing **strong technological challenges**. Almost eight in ten (79%) survey respondents identified technology as a top three challenge, and two in ten (21%) perceive it to be their biggest obstacle. Insurers have long struggled with upgrading and replacing their legacy technology infrastructure in the face of rapid technological changes. This is compounded by the vulnerabilities of their systems and controls to artificial intelligence (AI) risks and cyber threats, and their continual struggles with data privacy and security.

For insurance firms, **operating model challenges** stem from the fact that in emerging risk areas, insurers often play two distinct roles. They have their own emerging risks internally, such as IT risks, but they also underwrite those risks for their customers. In some ways, they have prioritized their role as a 'principal', rather than their role as a 'consumer', i.e. they have focused less on their internal, IT, cyber and other non-financial risks, and more on their ability to underwrite these non-financial risks for customers.

Data: a central challenge and opportunity

For insurers, the issues surrounding data and data management are another significant challenge, with three in ten (29%) citing this as their biggest challenge, and seven in ten (71%) viewing it as one of their top three obstacles. Alongside the cyber risks threatening data privacy and security, and the issues of regulatory and legal compliance, institutions are struggling with profound data challenges. These include the exponentially increasing volumes of data, the complexity of data environments (with fragmented data in siloed systems) and issues such as data quality, accessibility, cost, reporting, and governance.

Insurers are also struggling with diverse data sets and processes along with a lack of sufficiently detailed information. Insurers, more than other BFSI firms, are required to integrate a diverse array of third-party data and analytics with their own. These can often be very complex, larger, semi-structured datasets, such as climate risk and other underwriting datasets originating outside their organization. While banks and capital markets firms also bring in a wide variety of data and analytics from third parties, they tend to be more structured and analysed in comparison. For insurers, integrating these diverse data sets requires sophisticated data management capabilities, the development of complex data models, and data transformation tools.

Nevertheless, digitalization has enabled firms to collect extremely granular data on various operational aspects of insured assets (including details of policyholders, detailed cyber postures and cyber hygiene). This in turn has enabled insurers to structure their policies and models more effectively.

Q6 What are the top 3 key challenges your organization faces while addressing emerging risks (small sample size)?

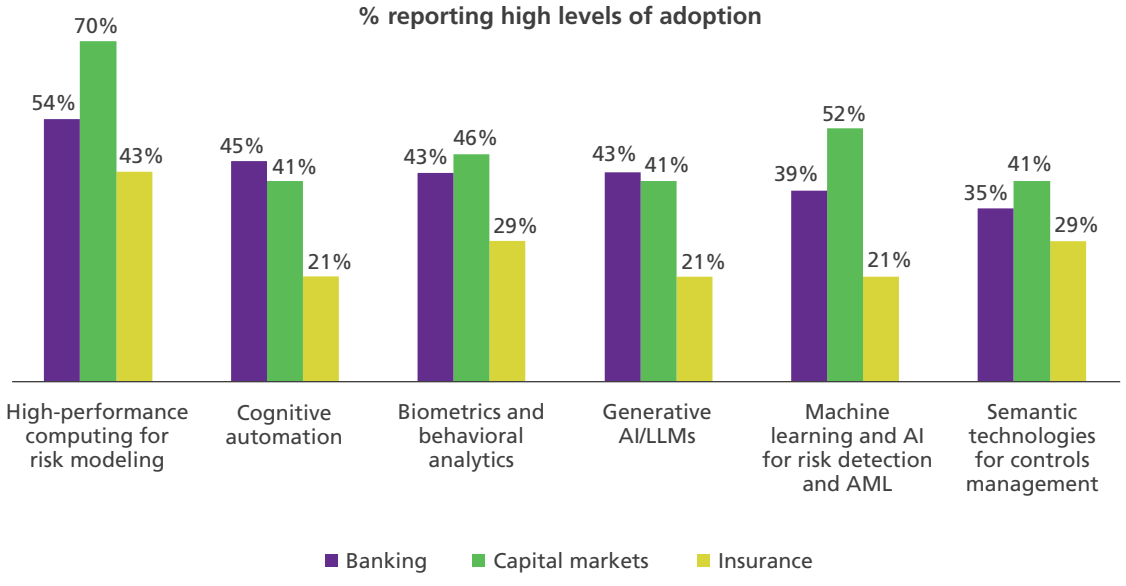
The adoption of RiskTech: insurance

In addressing emerging risks, RiskTech use is widespread; around eight in ten of the insurers surveyed have adopted each of the major frameworks explored in our research for at least one emerging risk. However, levels of adoption are lower than seen in other financial services sectors; on average insurers reported medium levels of adoption. Less than two in ten (14%) insurance companies in our survey are classified as 'mature' adopters (defined as those ranking their levels of adoption as high (4,5) across more than three technologies).

Our survey illustrates that adoption levels vary across the industry. Insurance companies are most likely to report high adoption of high performance computing (HPC); four in ten (43%) feel their organization is at this level. Yet, three in ten equally report low levels of HPC adoption. The same proportion claim low use of machine learning (ML) and AI.

Q10: State the level of adoption of the following RiskTech and RegTech frameworks by your organization.

	High	Medium	Low	N/A
High-performance computing for risk modeling	43%	14%	29%	14%
Machine learning and AI for risk detection and AML	21%	36%	29%	14%
Biometrics and behavioral analytics	29%	36%	21%	14%
Generative AI/LLMs	21%	50%	14%	14%
Cognitive automation	21%	57%	7%	14%
Semantic technologies for controls management	29%	43%	7%	21%



Deployment

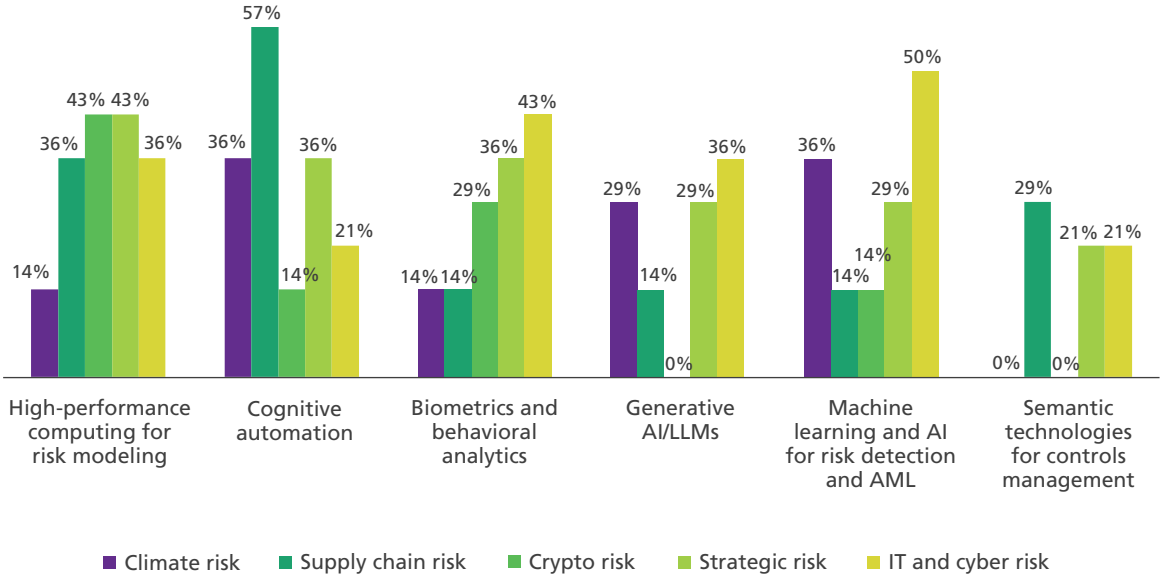
The deployment of these technologies is fragmented across risk types. There are only a couple of cases where half or more insurers are using RiskTech to tackle a particular emerging risk: ML and AI in IT and cyber risk, and cognitive automation for supply chain resilience. These technologies are therefore a long way from universal adoption.

Market Insight

Q7 Which of these technologies has your organization adopted to address each of these risks?

	Climate risk	Supply chain risk	Crypto risk	Strategic risk	IT and cyber risk
High-performance computing for risk modeling	14%	36%	43%	43%	36%
Cognitive automation	36%	57%	14%	36%	21%
Biometrics and behavioral analytics	14%	14%	29%	36%	43%
Generative AI/LLMs	29%	14%	0%	29%	36%
Machine learning and AI for risk detection and AML	36%	14%	14%	29%	50%
Semantic technologies for controls management	0%	29%	0%	21%	21%

*Note: Colour coding shows comparison vs capital markets (**PURPLE** = behind, **GREEN** = equal to or higher)*



Emerging risk maturity driven by underwriting

Our qualitative research reveals that insurance companies feel they are highly mature in handling the emerging risks that they underwrite as a business. Cyber is a clear example; all the insurers we spoke to that offer cyber insurance cover to their customers also rated their own cyber risk practices as mature. Insurers are extensively leveraging cyber risk quantification data, models, and analytics for underwriting and pricing.

Climate risk data, modeling, and analytics are also well-established in the industry, with a large ecosystem of software providers. Insurers are already significant consumers of data and analytics in this space, and investment is increasing as insurers seek to manage climate risks effectively.

Looking ahead

As insurers continue to grapple with emerging risks and challenges, RiskTech adoption will mature. Investment in RiskTech is already substantial, and these levels of investment appear set to continue, with 50% of insurers predicting an increase in spending on emerging technologies over the next year and 29% expecting annual budgets to remain the same. Given the data challenges outlined above, insurance spend on emerging technologies is heavily focused on the data management space.

Emerging risks: from historical roots to a core role

An influx of regulations and changing operational practices mean that emerging risks must progress from their historical roots under audit and organizational control, evolving to encompass a wider set of concepts and procedures and performing a core role for successful firms. The functions and sub-categories of emerging risks have expanded dramatically and are now widely linked to the risk function on one side and the technology function on the other. The control function now has a broader and more strategic role, focused on business optimization and tightly coupled with frontline operations.

In addition to the steps outlined in our overarching BFSI report, we list the following key considerations for insurance companies.

Extending emerging risk capabilities from underwriting and pricing into other operational areas

The insurance industry is the sector with the strongest penetration of data and analytics around non-financial risk. All the insurance professionals we spoke to use non-financial risk data (specifically cyber, IT, and climate) and analytics as central components of their risk evaluation. Insurers are building new models and integrating existing underwriting approaches with an expanded view of risk, including cyber, climate and operational risks. Insurance firms are far more advanced than their counterparts in other parts of the BFSI industry in incorporating a range of non-financial risks into their business.

However, while these risks are increasingly being woven into underwriting and pricing frameworks, the real challenge from an insurance perspective is how to translate this into other operational areas. Within insurance, solvency models or overall core risk frameworks, remain relatively immature in comparison and are not yet significantly used for internal risk processes.

CRITICAL TECHNOLOGIES

- Mathematical programming languages.
- Domain-specific cash flow languages.
- Vector databases for AI analytics in InsurTech.
- Cyber quantification and analytics for cyber underwriting.
- Climate risk solutions for climate risk impact in a broad range of P&C insurance contracts.

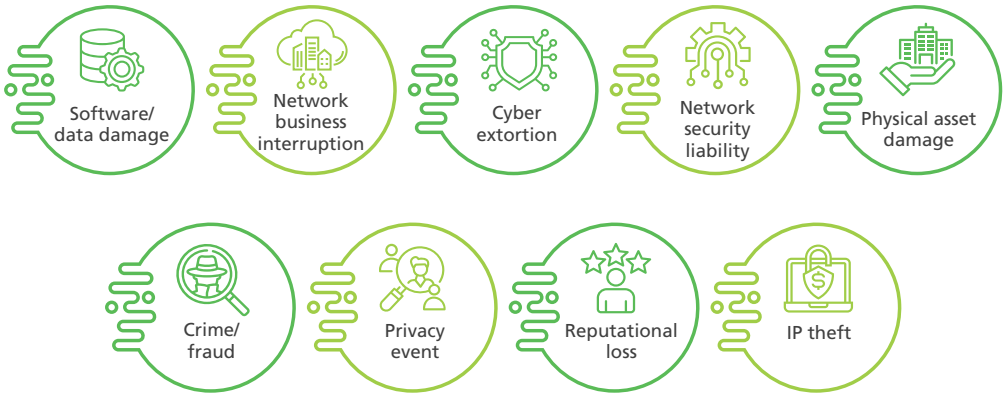
Insurance analytics provide a model for integrating cyber risks into business strategy

There is an increasing consensus that the mechanisms of insurance underwriting and actuarial practices will play a significant role in the development of analytical frameworks across the banking and capital markets sectors in the near future.

The analytics approach developed within financial markets, such as market risk and credit risk models, are not always entirely appropriate to addressing emerging risks. They often do not consider some of the key structural issues that are central to non-financial risk modelling. There is an increasing consensus that more traditional insurance approaches can be leveraged to help in the construction of non-financial risk and analytics environments.

With the evolution of non-financial risk, a convergent framework that takes significant elements and approaches from traditional financial modelling, such as risk management measures (e.g. VaR and expected shortfall) but marries these with actuarial measures will emerge. This converged risk framework is the long-term approach that holds significant promise for modelling cyber and other emerging risks.

A variety of cyber and IT risks impact insurance firms

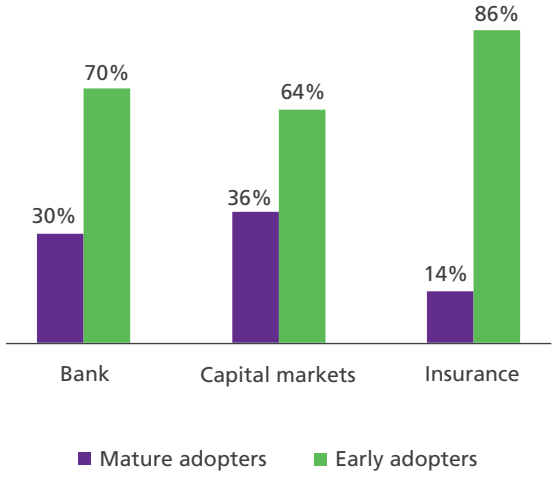


Conclusion

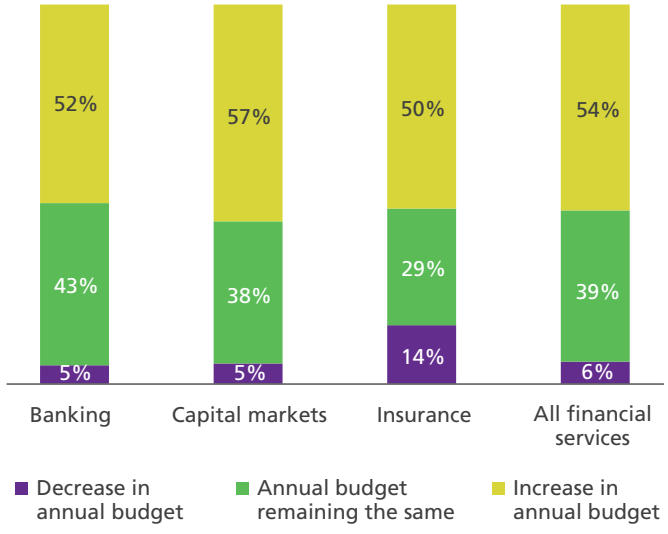
Insurers are in the risk business. They provide a risk management service. Emerging risks like climate risk /IT risk etc. are core business risks and the level of their modelling is very mature. They do not, however, have a significant presence on real time transactional platforms or the organizational complexity of banks and capital market organizations. As such they have lower operational risk. Indeed, most of their risk resides in product design, underwriting and financial risk management. We expect to see high levels of maturity in handling emerging risks from a business standpoint but less so from a regulatory standpoint.

3. Appendix: Insurance graphics/data for reference

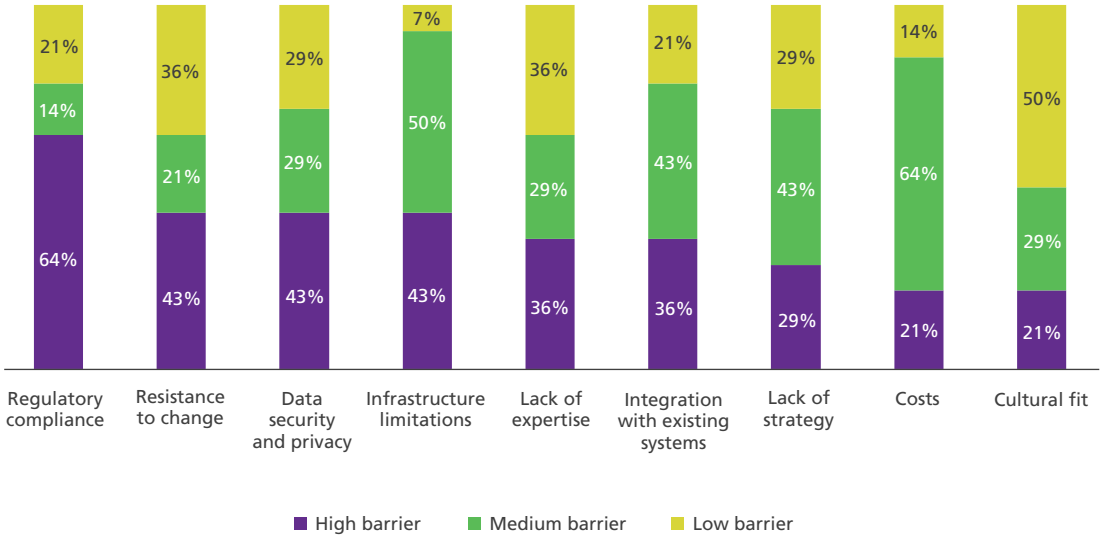
RiskTech/RegTech technologies: mature vs early adopters



Q9 How do you expect spending on emerging technologies to change over the next year?



Q11: Rate the relevant organizational barriers blocking institutions like yours from adopting RiskTech and RegTech technologies.



Q10: What are the KPIs for RiskTech and RegTech frameworks your institution uses?

	Primary institution type			
	Broker dealers and other capital market institutions	Insurance company	Banks	TOTAL
Base: All respondents	**56**	**14**	**82**	**152**
Regulatory compliance	73%	86%	71%	73%
Data quality and integration	64%	64%	70%	67%
Real-time/actionable insights	57%	50%	48%	51%
Efficiency and cost saving	50%	57%	35%	43%
System performance	41%	64%	37%	41%
Better customer experience	29%	50%	35%	34%
We do not use KPIs for RiskTech and RegTech	–	–	4%	2%
Other	–	7%	–	1%

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