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Building a more diverse suptech ecosystem: findings from surveys of financial authorities and suptech vendors

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Building a more diverse suptech ecosystem: findings from surveys of financial authorities and suptech vendors[1]

Highlights

- *Almost all financial authorities have ongoing suptech initiatives that are focused on four broad areas: data visualisation, regulatory reporting, financial risk assessment and supervisory automation.*

- *Due to organisational, legal or infrastructure constraints, financial authorities rely mostly on internal resources in building suptech solutions and much less on private vendors or collaborations with other authorities. If financial authorities engage with suptech vendors, it is mainly with regard to developing regulatory reporting solutions.*

- *Suptech vendors are generally optimistic about the future direction of the suptech market despite its inherently small size. However, they find it challenging to engage with financial authorities because they do not have a clear view of the authorities' needs, complex procurement processes and organisational siloes.*

- *Therefore, there is room to improve private sector involvement and collaboration with other authorities in the development and adoption of suptech solutions. This would entail facilitating transparency in suptech requirements, simplifying internal processes and establishing infrastructure and policies that are more conducive to secure collaboration.*

1.   Introduction

Financial authorities can harness innovative technologies to enhance supervisory effectiveness, cut costs and improve capabilities. This is commonly referred to as supervisory technology – suptech. Suptech is often seen as a counterpart to the application of innovative technologies by financial institutions to support regulatory compliance (regulatory technology, regtech). Suptech is still a very young market, with the term itself coined only in 2017.[2] The majority of solutions are still not core to supervisory processes.[3]

This note summarises the views from financial authorities (Section 2) and suptech vendors (Section 3) on the development of this market, collected through separate surveys in 2023. It provides a snapshot of the emerging solutions, strategies and challenges. By bringing these two perspectives together, the note provides insights on measures that authorities could take in facilitating private sector involvement and international collaboration in the development and adoption of suptech solutions (Section 4).

[2]   Menon (2017). It is worth noting, however, that while the term suptech is relatively new, financial supervisors have always used different generations of technology to support their work (see di Castri et al (2019)).
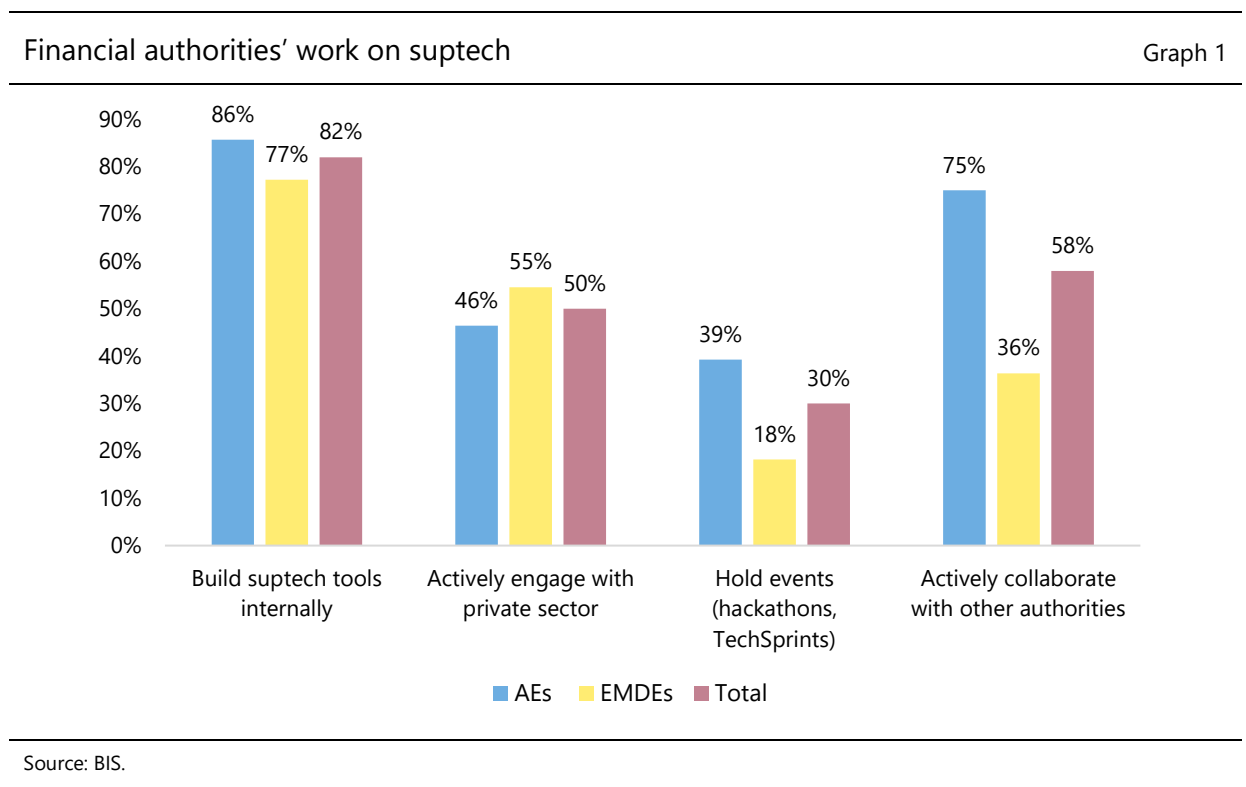
[3]   Prenio (forthcoming).

2.   Demand: financial authorities' approach to suptech

In the summer of 2023, the BIS conducted a survey of financial authorities to better understand current levels and focus of suptech activity and appetite for collaboration among institutions. Fifty national authorities in 45 jurisdictions participated in the survey.

Focus of current and emerging suptech activities

Of the 50 respondents, only three are not pursuing any suptech initiative. Those that are actively doing suptech work continue to build suptech tools in-house rather than engaging with private vendors (Graph 1).[4] About two thirds of those developing suptech tools internally also actively collaborate with other authorities, whether domestically or internationally. A smaller share of authorities organise events to bring together different parts of the suptech ecosystem (eg hackathons, TechSprints). Financial authorities in advanced economies (AEs) are twice as likely to organise such events and actively collaborate with other authorities than authorities in emerging market and developing economies (EMDEs).

Financial authorities' work on suptech   Graph 1
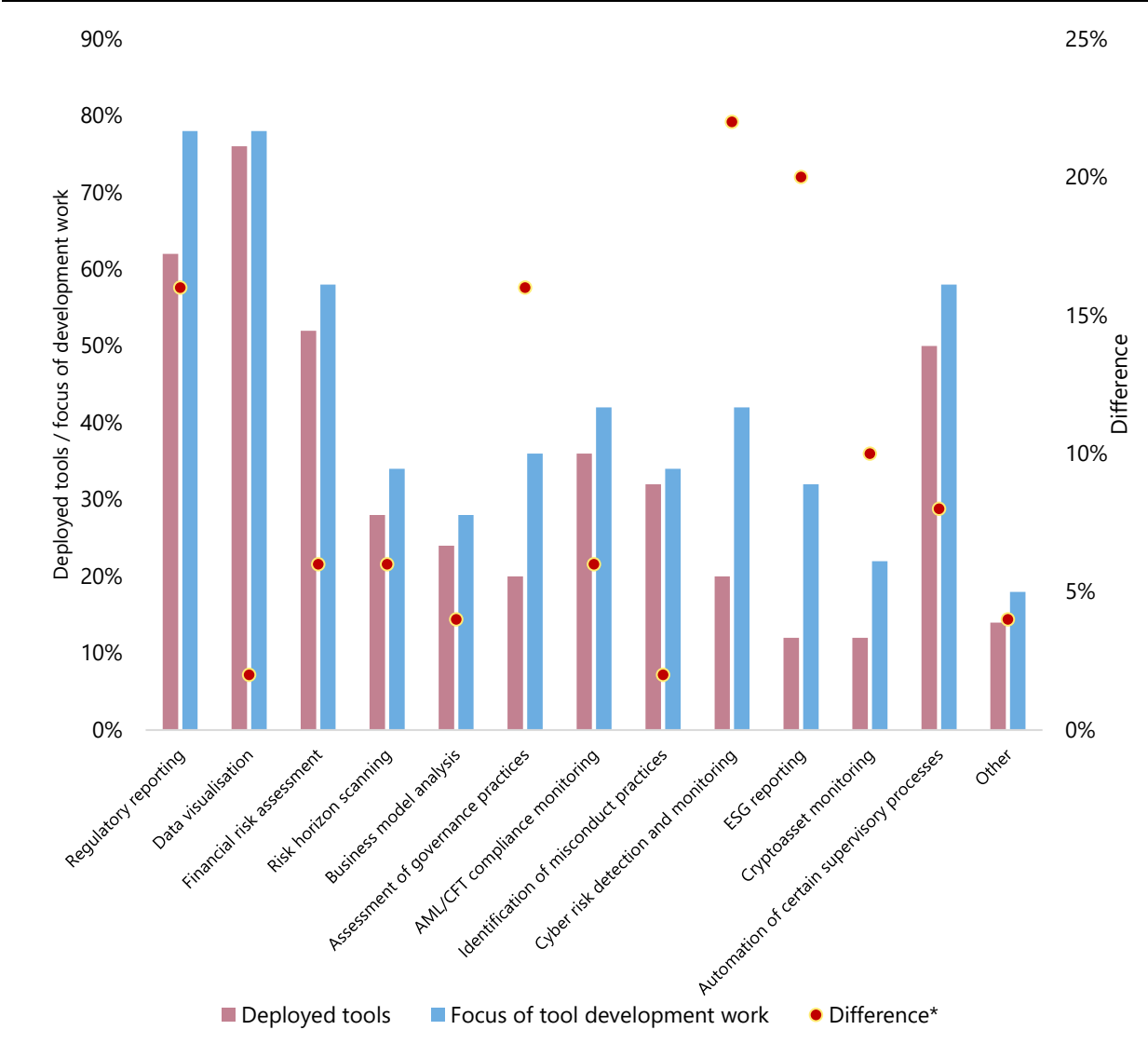

Source: BIS.

The majority of financial authorities have deployed solutions for data visualisation, regulatory reporting, financial risk assessment and supervisory automation (Graph 2). Financial authorities continue to focus on these areas in their suptech development work. They also show increased interest in other areas, including cyber risk detection and monitoring; environmental, social and governance (ESG) reporting; assessment of governance; regulatory reporting; and cryptoasset monitoring.

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[4]   This finding is consistent with BIS suptech papers published over the years. See eg Beerman et al (2021).

These efforts address identified common supervisory challenges.[5] The sustained focus on regulatory reporting, data visualisation and supervisory automation addresses challenges related to a lack of timely/quality data, ineffective use of already available data and limited staff resources. The significant increase in focus on cyber-, climate- and crypto-related tools highlights challenges stemming from the complexity of these emerging risks. These areas also mirror some of the recent projects undertaken by the BIS Innovation Hub, including Project Pyxtrial (stablecoin monitoring) and Project Gaia (climate-related financial risk analysis).

Deployed suptech tools and ongoing suptech development work

Graph 2

* Difference between the percentage of authorities that currently have ongoing suptech development work in a given supervision area and the percentage of authorities that have deployed suptech tools in that area. A larger difference indicates a greater increase in interest/focus.

Source: BIS.

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[5] A joint survey was conducted by the FSI, the Basel Committee on Banking Supervision and the International Association of Insurance Supervisors in the spring of 2023, as part of the preparation for their joint suptech event held on 5–6 June 2023. The responses from 55 financial authorities indicated that the common supervision challenges are complexity of risks (eg technology, cyber, climate), a lack of timely/quality data, ineffective use of data already available and limited staff resources.

In line with past findings, the majority of solutions in use are second- and third-generation suptech solutions.[6] The former enable digitisation and automation of existing workflows, and the latter implement "big data" architectures. There are also some notable examples of fourth-generation solutions, which employ technologies like artificial intelligence (AI) for predictive analytics. Several institutions have trained AI models to identify warning indicators for supervised entities and to facilitate new bank applications.

Organisation of suptech work

There is a range of organisational approaches to taking forward suptech initiatives (Graph 3). Respondents were asked if they have internal resources dedicated to building suptech tools. Many authorities have their suptech initiatives spread across various departments, which often include data, IT and supervisory teams. However, in the absence of more information (eg whether there are identified staff within each unit who are involved in suptech work or whether staff time is explicitly allotted to that work), it is unclear how "dedicated" these resources are. Around a third of the authorities mentioned having a central hub to coordinate suptech activity across their institution.

| Organisational approaches to suptech | Graph 3 |

Source: BIS.

Use of open source environments

Use of open source environments – where solutions are developed and maintained collaboratively by different parties – remains relatively low among the financial authorities (Graph 4). Less than a quarter have described themselves as experienced users of these environments. Authorities from AEs are much
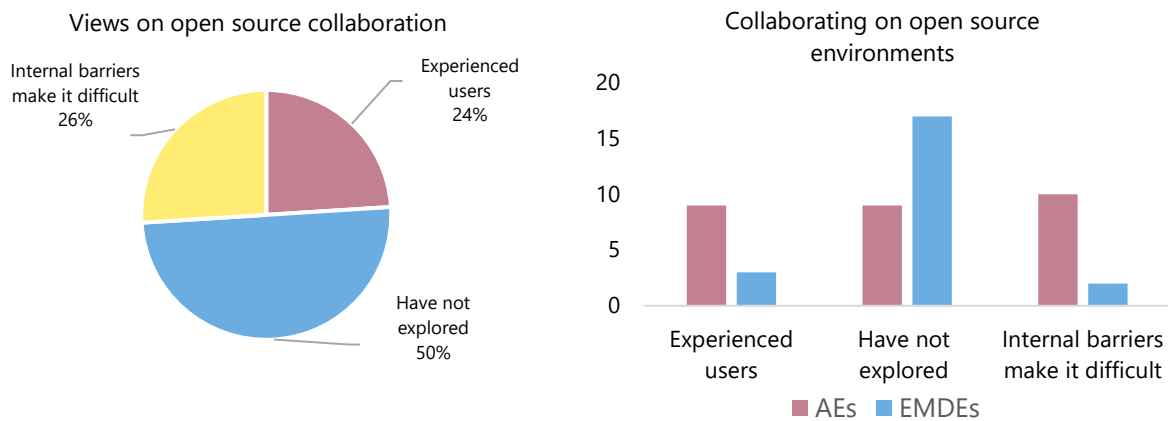
[6]   di Castri et al (2019).

more likely to report experience in using open source, but were also much more likely to report internal barriers to doing so. A vast majority of authorities in EMDEs have not explored the use of open source at all.

Authorities mentioned several key barriers to using open source environments. These include the lack of foundational IT infrastructure that would enable collaboration on projects and sharing of code in a secure environment. Authorities also cited governance and legal challenges (particularly related to intellectual property rights). Several respondents mentioned that their existing organisational policies do not allow use of open source due to potential cyber and information security risks.

Open source environments are not a preferred choice for collaboration for some authorities. Instead, they would prefer to co-develop solutions in secure, closed IT environments, which could be accessed by other public sector institutions. This could alleviate some of the security concerns but also raise some new questions (eg around ownership and licensing of solutions).

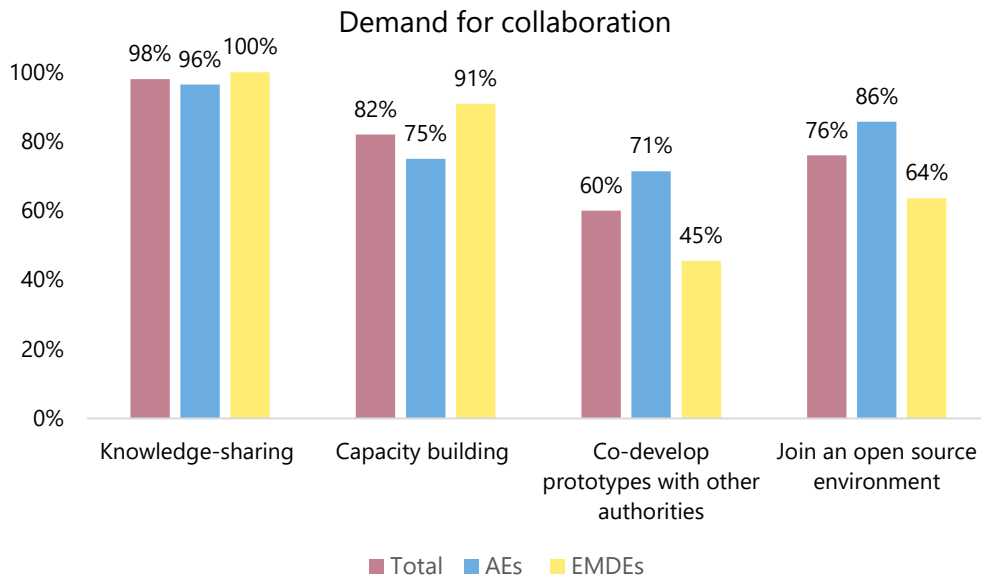Use of open source environments   Graph 4

Views on open source collaboration

Internal barriers make it difficult
26%

Experienced users
24%

Have not explored
50%

Collaborating on open source environments

■ AEs   ■ EMDEs

Source: BIS.

Demand for collaboration

Overall, authorities have a very strong desire to collaborate internationally on suptech (Graph 5). This points to substantial perceived benefits of more actively sharing knowledge and co-developing solutions for similar applications – which can also reduce the cost of innovating. Nearly all survey respondents were interested in knowledge-sharing and joint capacity-building activities. Somewhat fewer authorities, particularly in EMDEs, have expressed a desire to actively collaborate in developing suptech solutions or to join open source environments. As mentioned above, this reflects capacity constraints, as well as organisational and legal barriers to using open source.

Demand for collaboration

Legend: Total — AEs — EMDEs

Source: BIS.

Big data, natural language processing and generative AI stand out as the key topics on which authorities want to collaborate. These technologies have a range of proven applications in supervision and regulation. Distributed ledger technology (DLT) / blockchain and quantum computing were also frequently reported, reflecting the technologies' wide-ranging implications for regulated institutions. Exploring quantum computing is a particular concern for financial authorities in AEs.

Technologies on which financial authorities want to collaborate — Graph 6

Legend: AEs — EMDEs

Source: BIS.

3. Supply: market for commercial suptech solutions

While suptech solutions are still predominantly developed in-house, there is a burgeoning market of private vendors. Suptech solutions are often offered by firms providing regtech solutions to financial institutions.[7]

The BIS collaborated with EY and the RegTech Association (RTA) to survey firms that are active in the suptech market. The questionnaire was included as part of the annual regtech survey conducted jointly by EY and the RTA. Of the 25 firms surveyed, 98% were small and medium-sized enterprises (SMEs). The findings suggest a range of insights that can be instructive in encouraging further development of the ecosystem.
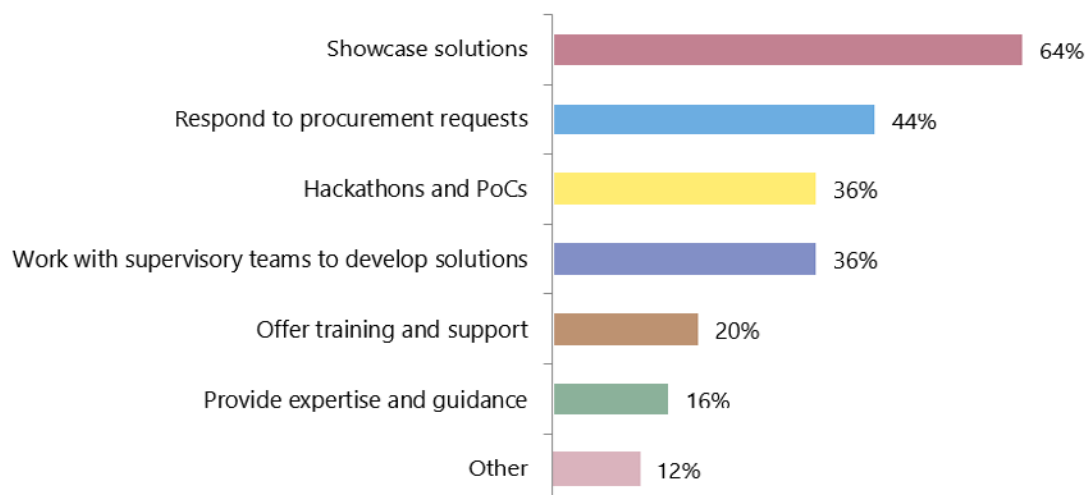
Future state of the market

Surveyed firms showed great optimism about the future direction of suptech. Of respondents, 68% expect the suptech component of their business to increase, while only 4% expected it to shrink. The projected growth of the market is driven by a combination of regulatory changes (42%) and increased appetite for new solutions (38%).

Most firms continue to focus on sales activities to promote their services to national authorities (Graph 7). The primary mode of engaging with the authorities includes showcasing solutions, responding to procurement requests and participating in hackathons and proofs of concept (PoCs). This reflects the nascent state of the market and exploratory nature of most authorities' solutions. A smaller number of firms have more direct engagement with the authorities, including having contracts to develop solutions and providing training, support and guidance.

How suptech vendors primarily engage with financial authorities   Graph 7

Showcase solutions	64%
Respond to procurement requests	44%
Hackathons and PoCs	36%
Work with supervisory teams to develop solutions	36%
Offer training and support	20%
Provide expertise and guidance	16%
Other	12%

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[7] Financial authorities also leverage commercial off-the-shelf solutions offered by major IT firms, such as big techs (see di Castri, et al (2019)). Given the type of survey respondents, this relationship is not covered in the succeeding discussions. This relationship, however, could be potentially important and thus may be something that could be explored further.
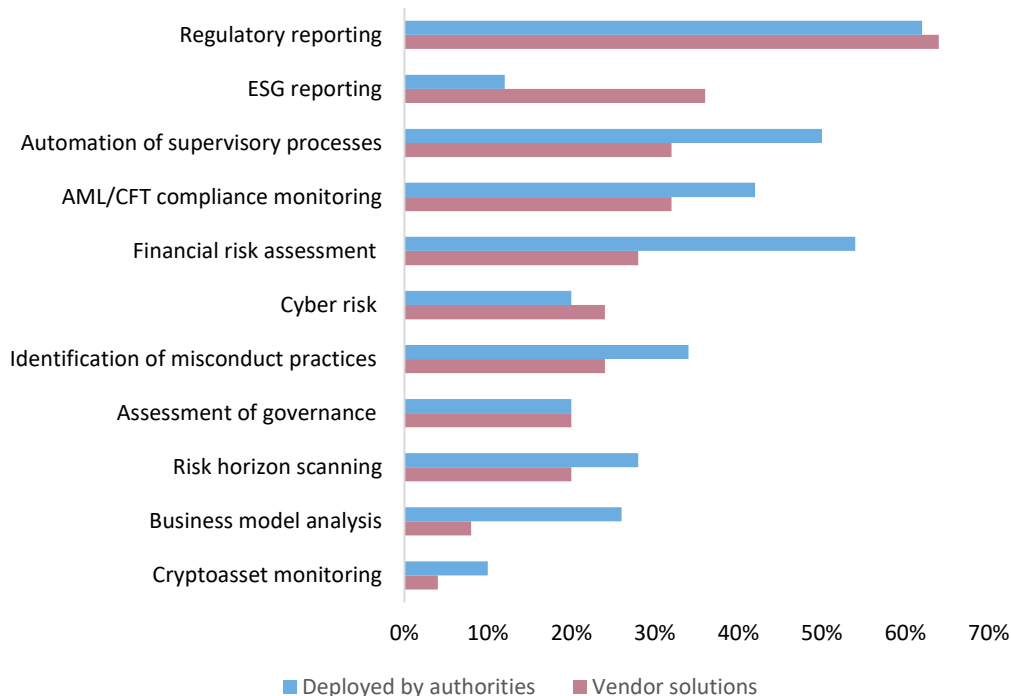
Types of solutions provided

Suptech firms support authorities across all stages of the data lifecycle. In working with authorities, the most common data challenges suptech vendors focus on are related to building robust data architecture, including security (52%), data collection (48%) and data quality assurance (40%). However, data analytics (eg dashboards and visualisations) are less commonly reported at 32%.

Consequently, regulatory reporting is the most common focus area where suptech providers are developing solutions for financial authorities (Graph 8). This also hints at the clear link between the suptech and regtech markets – solutions for supervisors are often developed alongside similar ones for regulated businesses.

There are some notable differences in the solutions developed by suptech vendors and the ones authorities develop in-house. First, authorities tend to develop a much broader set of solutions.[8] Second, there are several areas where authorities are relatively more active in developing solutions. These include supervisory automation, financial risk assessments, business model analysis and cryptoasset monitoring. This could indicate that suptech vendors do not have complete visibility or understanding of authorities' needs (see below). This could also result from authorities preferring bespoke solutions or sourcing these from non-suptech vendors.

Areas of focus for financial authorities and suptech vendors   Graph 8
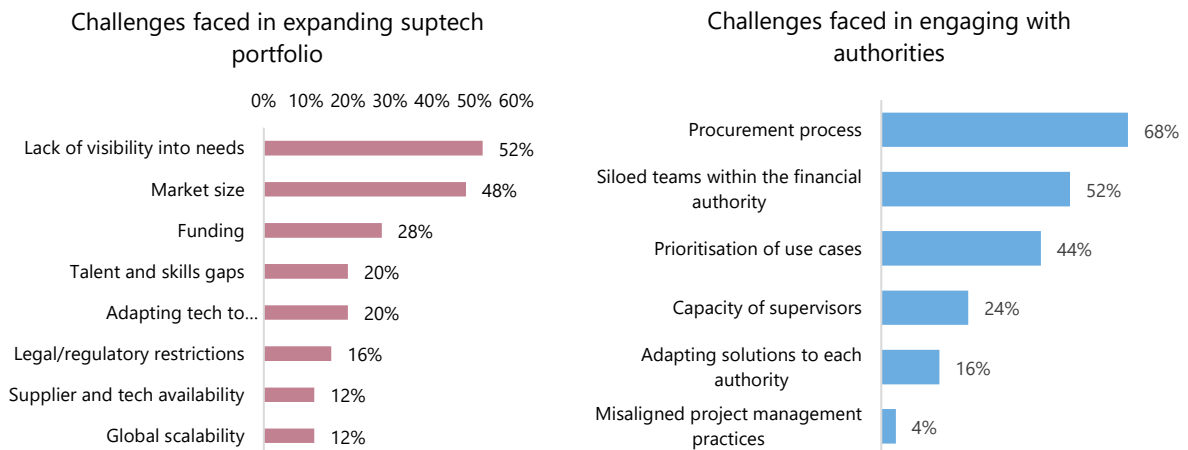

Source: BIS/EY/RTA.

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[8]   This is consistent with findings in Beerman et al (2021).

Challenges faced by vendors

The survey also explored the challenges faced by suptech vendors in expanding their suptech portfolio (Graph 9, left-hand panel). More than half of respondents cited a lack of visibility of authorities' needs, while about half reported small market size. Most vendors have a small set of customers in their country, with very diverse needs. While solutions could be sold internationally, this is not easy for small businesses.

Challenges faced by suptech vendors
Graph 9

Challenges faced in expanding suptech portfolio

Lack of visibility into needs	52%
Market size	48%
Funding	28%
Talent and skills gaps	20%
Adapting tech to…	20%
Legal/regulatory restrictions	16%
Supplier and tech availability	12%
Global scalability	12%

Challenges faced in engaging with authorities

Procurement process	68%
Siloed teams within the financial authority	52%
Prioritisation of use cases	44%
Capacity of supervisors	24%
Adapting solutions to each authority	16%
Misaligned project management practices	4%

Source: BIS/EY/RTA.

When engaging with authorities, the most common challenge is the length and complexity of the procurement process (Graph 9, right-hand panel). Again, the uncertainty and cost of procurement is likely to affect small firms more. Other barriers reported include organisational silos within financial authorities and lack of prioritisation by the authorities. This speaks to challenges faced by suptech vendors in establishing and anticipating customer needs and reaching the right customers for their existing solutions. Fewer vendors reported challenges in adapting solutions to each authority's needs. This is encouraging, as it suggests that solutions can be scaled internationally.

4.   Conclusions

Suptech is a young but rapidly growing field. Financial authorities have implemented a range of solutions and made organisational changes to add resources and coordinate suptech development across the organisation. There is also an emerging market of private sector providers, who often develop suptech solutions alongside regtech ones for financial institutions.

Suptech solutions tend to be focused on certain areas, such as regulatory reporting and data visualisation. Financial authorities are also shifting their suptech development work to newer areas, such as cyber risk and ESG reporting. Survey responses from suptech vendors, on the other hand, point to a range of barriers faced in working with authorities. These include a lack of visibility of authorities' needs, organisational silos and the complexity of public procurement processes.

These findings point to some inefficiencies in the market. Most authorities individually develop in-house solutions for similar use cases, where collaboration could reduce costs and transfer knowledge more effectively. Those that actively engage with the private sector may struggle to find solutions that meet their requirements. The private sector, on the other hand, struggles to serve this market due to not having clear visibility of authorities' needs and knowledge of who within the authorities to effectively engage with. Lengthy and hard-to-navigate procurement processes also add to the cost of engaging with authorities.

Measures to address these inefficiencies could include greater transparency, simplified internal processes and governance of suptech initiatives. Transparency sends the right signals to private sector providers about supervisory customers' needs. Simplified internal processes could make it less costly for smaller, innovative vendors to bid for suptech contracts. Better governance could improve coordination within each authority. It would also make it easier for suptech vendors to engage with the right teams to understand their needs and develop appropriate solutions.

The findings also point to the important role of active collaboration and ecosystem-building. Authorities might need to go beyond market research to actively signal to the market what their suptech strategy and needs are. Activities like seminars, hackathons and TechSprints could help bring supervisors and innovators together to stimulate innovation. They could be particularly helpful to smaller suptech vendors that do not have the capacity and skills to monitor developments in public policy and regulation.[9]

There is also strong demand for more international collaboration to share knowledge, build capacity and jointly develop solutions. Increased collaboration would allow solutions to be scaled internationally, improving value for money for authorities and transferring knowledge faster. Authorities should actively consider how to lower barriers to collaboration by strategically developing necessary IT infrastructure, setting cyber security policies and considering organisational approaches to intellectual property.

Exploratory suptech projects should strive to create opportunities for public-private collaboration where appropriate. This could involve allowing private sector analytics applications to be developed on top of a common data pipeline. This would maximise innovation to complement authorities' in-house efforts and potentially stimulate private investment.

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[9] Another important avenue of collaboration could be with regulated entities, which invest actively in regtech solutions to address similar challenges. Pooling resources with regulated entities could alleviate resource and knowledge constraints of supervisors. This was not covered in the surveys but could be an important consideration to explore further.