

# The suptech generations<sup>1</sup>

## Executive summary

**Suptech initiatives have gained momentum but it remains unclear exactly what falls within its scope.** The term is defined by Broeders and Prenio (2018) as the use of innovative technology by supervisory agencies to support supervision. Since that publication, an increasing number of supervisory authorities are beginning to explore suptech applications in different areas of supervision. In addition, other non-supervisory financial authorities (eg financial intelligence units) have also used or experimented with innovative technologies to support their work. However, the Broeders and Prenio definition only refers to “innovative technology” without defining it. Consequently, the differing stages of technological progress across financial authorities have led to differences in the way “suptech” has been interpreted.

**This paper examines these developments by analysing suptech initiatives in 39 financial authorities globally.** Most of these financial authorities responded to a survey on suptech strategies and use cases conducted jointly by the BIS’s Financial Stability Institute (FSI) and the Regtech for Regulators Accelerator (R<sup>2</sup>A).<sup>2</sup> The survey responses were supplemented by information from the two previous FSI Insights papers on suptech,<sup>3</sup> as well as by information from the online tracker developed by R<sup>2</sup>A.<sup>4</sup>

**Suptech is more broadly defined as the use of innovative technology by financial authorities to support their work.** For the purposes of this paper, the term “innovative technology” refers to the application of big data or artificial intelligence (AI) to tools used by financial authorities. This new definition clarifies the scope in terms of suptech users (ie including non-supervisory financial authorities such as financial intelligence units)<sup>5</sup> as well as the types of technology used (big data or AI).

**Not all initiatives examined for this paper meet the above definition of suptech and could be considered more appropriately as belonging to different “generations” of technology.** The first generation involves data management workflows with intensive manual input, and mostly delivering descriptive analytics. The second generation digitises and automates certain manual processes in the data pipeline. The third generation covers big data architecture whereas the fourth generation involves the addition of AI as the defining characteristic. Suptech straddles the third and fourth generations. In particular, third-generation data collection solutions and fourth-generation data analytics solutions are considered suptech for the purposes of this paper.

<sup>1</sup> This paper was authored by experts/members of the Financial Stability Institute of the Bank for International Settlements in collaboration with members/experts of the BFA’s RegTech for Regulators Accelerator (R<sup>2</sup>A). Stefan Hohl (stefan.hohl@bis.org) and Jermy Prenio (jermy.prenio@bis.org), Bank for International Settlements; Simone di Castri (sdicatri@bfglobal.com) and Arend Kulenkampff (akulenkampff@bfglobal.com), BFA’s RegTech for Regulators Accelerator (R<sup>2</sup>A).

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<sup>2</sup> Regtech for Regulators Accelerator is a non-profit, donor-funded accelerator programme administered by BFA Global that aims to help financial authorities in emerging markets and developing economies explore specific suptech solutions by providing support in building prototypes.

<sup>3</sup> Broeders and Prenio (2018) and Coelho et al (2019).

<sup>4</sup> See <http://vendors.r2accelerator.org/?v=tracker>.

<sup>5</sup> However, the paper does not include authorities in charge of monetary or macroeconomic policies that may also be using similar tools. See eg Tissot et al (2015).

**While suptech will help authorities to become more data-driven, the technologies that authorities use should be appropriate to the size, complexity and development of the sectors they oversee.** For example, investments in big data architecture and AI tools might not be appropriate for an authority in a low-income jurisdiction that supervises only a handful of financial institutions providing basic financial products and services. Moreover, authorities should also be aware of the issues and challenges associated with suptech. Broeders and Prenio (2018) outlined some of these issues and challenges. In particular, the lack of transparency in some of the suptech data analytics solutions is a critical issue. This underscores the continued need for human intervention in the form of supervisory expertise to further investigate the results of analyses and when deciding on a course of action.

**Almost half of the financial authorities covered have explicit suptech strategies or are in the process of developing them.** The approaches taken vary. Some specify suptech roadmaps with a deliberate path towards adopting big data and AI processes and systems. Others have developed suptech applications as part of an institution-wide digital transformation and data-driven innovation programme. This is broadly aimed at moving the whole institution to more automated and digitised processes as well as adopting advanced data collection and data analytics tools. A well defined strategy can help authorities optimise the potential benefits of suptech for their organisation. But for authorities who want to explore specific suptech tools first before committing substantial resources, there are helpful institutionalised or one-off methodologies such as innovation labs, accelerators or tech sprints. These methodologies may also be embedded into authorities' existing or future suptech strategies.

**The suptech use cases observed cluster mainly around misconduct analysis, reporting and data management.** Conduct supervision and the work of financial intelligence units look at huge amounts of unstructured data. As such, they can particularly benefit from the development of big data architecture and AI tools. Virtual assistance, microprudential, macroprudential, and market surveillance make up a smaller share of the sample set.

**Suptech solutions have emerged only recently, are mostly experimental in nature and are being developed within financial authorities.** The majority of suptech initiatives reported are still in either the experimental or development stages, with less than a third operational. Most of the suptech initiatives covered in the paper are being developed internally or jointly with external developers or other organisations such as universities. Suptech initiatives developed solely by external vendors account for only a quarter of all reported initiatives. This could be due to the experimental nature of these initiatives, among other reasons. Consequently, many initiatives may lack clearly defined functional requirements or technical specifications with which to engage external parties. This suggests the importance of strategic partnerships between financial authorities, other governmental agencies, and academia as well as research organisations to help overcome the challenges associated with the experimental nature of these initiatives.

**Further international coordination and collaboration may help to accelerate suptech development.** Global standard-setting bodies and international organisations provide platforms for authorities to exchange information on their suptech initiatives. These international platforms could also be used potentially to collaborate on the development of suptech solutions that may be useful to a number of authorities or to address related cross-border issues affecting the development of suptech (eg data localisation). A good example is the BIS Innovation Hub that aims to foster international collaboration on innovative financial technology within the central banking community. Such platforms will help authorities to benefit from peer learning, including from the experience of different types of authority (central banks, prudential regulators, conduct regulators etc), especially given the dearth of specialist providers. They should also reduce the need for individual authorities to independently work on similar solutions, thus increasing efficiency. In addition, given the inherently small market for suptech solutions, which limits business opportunities for private providers, accelerators set up or funded by international organisations could play an important role in helping authorities explore specific suptech tools.