Regulator's Response to COVID-19

Digitize, Automate, Manage

A Study of Regtech & Suptech in the GCC region

GCC Working Group on Suptech & Regtech

Led by

Securities and Commodities Authority UAE

&

Arab Federation of Exchanges

Foreword

Securities and Commodities Authority (SCA), in collaboration with the Arab Federation of Exchanges (AFE) hosted the first GCC webinar to discuss evolution of supervisory technologies within the Gulf region. The event attracted participants from various regulatory authorities within Gulf Co-operation Council (GCC), exchanges and financial market players.

The positive feedback received for this event led to formulation of a GCC Working Group on Suptech & Regtech which mutually agreed to undertake further study and research in this area with a specific focus on GCC.

The paper below summarizes the discussion points and the key findings of the GCC Working Group on Suptech & Regtech. The paper explains the concept of Suptech and Regtech, gives a brief overview of the best global practices as discussed during the event, adoption in GCC during the pandemic and associated challenges including the road ahead.

Members of GCC Working Group on Suptech & Regtech under the Chairmanship of H.E. Dr. Maryam Buti Al Suwaidi, Acting CEO, SCA include:

1) Rami El Dokany, Secretary General of AFE
2) Narjes Farookh Jamal, Chief Operating Officer of Bahrain Bourse,
3) Yasmeen Al – Sharaf, Director of Fintech & Innovation Unit – Central Bank of Bahrain
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6) Mirna Sleiman, Chief Executive Officer at Fintech Galaxy

I. BACKGROUND:

The COVID-19 pandemic is a key factor driving transformation in financial sector supervision. The pandemic created a new urgency for supervision and oversight to be able to be conducted remotely, as lockdowns and travel restrictions have required people to work from home for indefinite periods of time. Furthermore, the economic devastation caused by the pandemic has increased pressure on supervisors to react faster, requiring tailored policy decisions to stabilize the financial sector and protect investors.

Two factors were responsible for the occurrence of these events: Firstly, supervisors lack access to commonly applied tools such as, on-site inspections. Secondly, the rapid migration of financial firms to virtual platforms, makes the use of technology vital for risk identification and management. To better understand the effects of this crisis, supervisors need agility, innovation and be able to make decisions based on alternative sources of information. [1]

A number of key technologies that can support supervisors in these efforts, such as Big Data, Artificial Intelligence, Machine learning or even Blockchain, were developed a few years ago. However, these technologies were not much used on mainstream basis by regulators of developing countries including the GCC region. However, COVID-19 has fast paced this adoption process as it is now being envisaged as the only way forward.

Given the growing prominence of Suptech, Securities and Commodities Authority (SCA), in collaboration with the Arab Federation of Exchanges (AFE), hosted the first webinar to discuss supervisory technology on June 15, 2020. The webinar attracted participation from various regulatory authorities within Gulf Co-operation Council (GCC), Bahrain, Jordan, Egypt, Saudi Arabia, exchanges and financial market players.

The event consisted of presentation from the Financial Conduct Authority (FCA), UK on the FCA's use of cloud-based technologies to deliver analytical insights and intelligence, followed by a panel discussion on the evolution of Suptech in GCC. The panel consisted of representatives from the industry, exchanges, consultants, technology experts within GCC and regulators deliberating on the need of Suptech and developmental challenges.

The working paper below summarizes the discussion points and the key findings of the working group which was formulated to undertake further research and co-operation in this field for the GCC region. The paper explains the concept of Suptech, gives a brief overview of the best global practices as discussed during the event, adoption in GCC and associated challenges including the road ahead.

II. WHAT IS SUPTECH?

Suptech is used to refer to the use of technology to facilitate and enhance supervisory processes from the perspective of supervisory authorities. The Basel Committee on Banking Supervision has defined supervisory technology (Suptech) as the "use of innovative technology by supervisory agencies to support supervision". As per the Basel Committee on Banking Supervision, "it helps supervisory agencies to digitize reporting and regulatory processes, resulting in a more efficient and proactive monitoring of risks and compliances at financial institutions".

Increasingly, regulators are using technology to shift away from the current approaches based on past data, lengthy onsite inspections, and often delayed supervisory action, towards a pro-active, forward-looking supervision that relies on better data collection and sophisticated data analytics, and greater storage and mobility capacity such as through the use of cloud computing.[2]

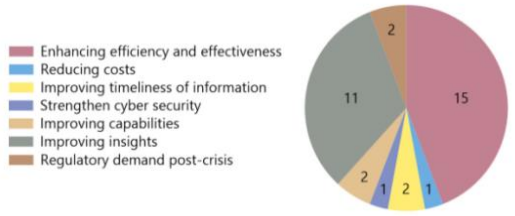
Suptech provides a better, more efficient monitoring and oversight process, aiding in automation, streamlining processes and digitizing data and offers tools to assist in proactive monitoring and oversight, reducing the regulatory burden on firms as well as supervisory authorities and improves regulatory reporting and compliance.

The Bank of International Settlements (BIS) categorizes the use case of Suptech into two main categories - data collection & data analytics. Data collection includes applications that are used for supervisory reporting, data management and virtual assistance, while data analytics includes applications that are used for market surveillance, misconduct analysis as well as micro prudential and macro prudential supervision.

[1]Matei Dohotaru & Sharmista Appaya, "Suptech: Moving from why to how", World Bank Blogs, October 15, 2020, https://blogs.worldbank.org/psd/suptech-moving-why-how

[2]Toronto Center, "FinTech, Regtech and Suptech: WhatThey Mean for Financial Supervision, August 2017https://res.torontocentre.org/guidedocs/FinTech%20RegTech%20and%20SupTech%20-%20What%20They%20Mean%20for%20Financial%20Supervision%20FINAL.pdf

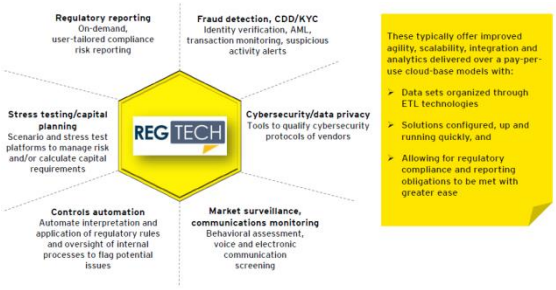
In this respect, below is a diagrammatic presentation of survey outcomes covering key drivers for Suptech for supervision based by FSB, which highly ranks enhancing efficiency and effectiveness as the key motive behind implementing a Suptech strategy for regulators.



Primary demand drivers for developing a SupTech strategy: No. of authorities who rank driver as most important

Regtech is related to the use of technology in managing regulatory requirements in the financial services industry. The main features of Regtech include regulatory monitoring, reporting and compliance. The Institute of International Finance (IIF) defines Regtech as "the use of advanced technologies to solve regulatory and compliance requirements effectively and efficiently. It is a combination of strategies, systems, and innovative processes that have been deployed to streamline and modernize data gathering and data analytics ensuring effective compliance. The end goal is to generate refined and/or timely intelligence to ensure timely, accurate, real time regulatory compliance and discharge of risk management functions at financial institutions. This can further feed into the regulatory and supervisory processes at financial and supervisory authorities.

Below is an indicative list of available problems which can be solved by Regtech:



IV. RELATIONSHIP BETWEEN SUPTECH AND REGTECH?

While Fintech is the application of new technologies by financial institutions to connect and better serve consumer and business customers, Regtech helps institutions meet regulatory requirements via technology. It is considered a sub-set of Fintech. Regtech can further be divided into sub-segments: Regtech for financial institutions and Regtech for supervisors and regulators i.e., Suptech. Regtech helps to address the regulatory challenges that financial companies and institutions face as per compliance needs while Suptech helps regulator with its supervisory challenges. As per snapshot update published by Thomson Reuters Regulatory Intelligence (TRRI) for their original Cost of Compliance 2020 report, in 2020, during the pandemic, many regulators were seen to be having a "good" crisis. During this time, they responded with a raft of mitigation measures in the early stages of the pandemic and committed to post-pandemic reviews. The report stated that "Meticulous care must be given to ensuring that all changes to policies, procedures, and oversight have been recorded, and decision-making has been comprehensively documented. Without detailed recordkeeping and retention, it will be impossible to show that the firm has followed procedure during the pandemic".

As per various researches that have been conducted, an average institution dedicates 10-15% of its staff to this area, additionally international banks (e.g. HSBC, Deutsche, JPM Chase) are spending >US$1bn p.a. each to implement regulatory compliance & controls. Regtech offers several benefits to regulators as well. For regulators, it leads to more standardization in practices and services, thus reducing the regulatory and supervisory burden in addressing concerns and problems, which is a key input for Suptech solutions to work.

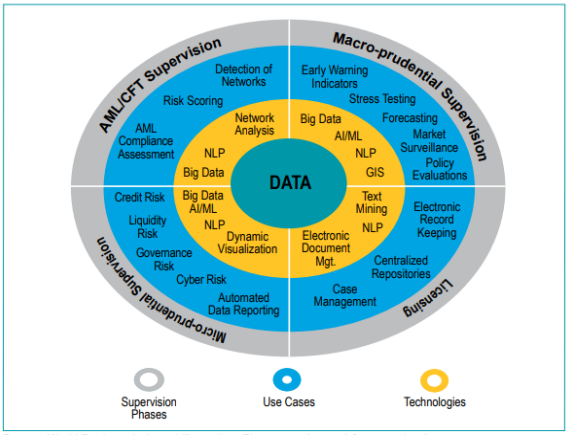
V. WHAT ARE THE GLOBAL BEST PRACTICES IN SUPTECH USE CASES?

While less attention has been given to defining and advancing the concept of Suptech relative to Regtech, interest in Suptech is on the rise.

Possible use cases of Suptech are generally developed around automated data collection, machine readable and executable regulation, data validation, analysis, and visualization, platform and database integration assisting in the better use of data, unlocking insights from unstructured data, automation of manual time-intensive processes, making reasonable predictions through machine learning and building advanced analytics capabilities for supervisory authorities.

Capital markets tend to have many use cases of Suptech due to manipulation of information networks like tracking Twitter conversations to identify manipulation, due diligence of licensed companies e.g. dark web due diligence, etc. Hence traditional surveillance technology is now largely being used for capital market supervision which makes a very good case for Suptech.

Below is an illustrative diagram covering Suptech-use cases mapped to supervision phases by World Bank followed by Suptech practices adopted by regulators globally. (Refer to Pg. 7 for the references)



Source: World Bank analysis and illustration. Please see Annex 1 for more detail on use cases.

The diagramatic representation above clearly indicates that,

Source – Dirk Broeders and Jermy Prenio; "Innovative technology in financial supervision (Suptech) – the experience of early users", Financial Stability Institute, BIS, July 2018, https://www.bis.org/fsi/publ/insights9.pdf

Suptech solutions are focused and developed around processes of automation and using emerging technologies like Artificial Intelligence (AI). Suptech solutions are useful in discovering and testing hypotheses and extracting insights from data and may not always require cutting-edge technology to complete minor tasks.

In this respect, some notable use cases of Suptech in capital markets are those developed by FCA UK and MAS Singapore which were presented during the event:

A. FCA UK cloud-based market oversight

FCA UK has been deploying cloud-based technology to deliver analytical insight and intelligence for market oversight. They are using natural language processing for analyzing documents and text faster, predicting harm through machine learning to understand risk in the regulated firms and use those findings in onsite inspections. Additionally, they deploy these solutions in spotting outlier firms through data enrichment and statistics by developing key risk indicators, heat maps and dashboard etc. They are also using graph analytics for analyzing criminal networks by visualizing relationships between regulated entities/individuals through graphs. To further aid this advancement, they have built realistic synthetic data that has all the characteristics of real data set using agent- based modelling to work around issues related to data privacy which in turn helps in collaborating with third parties to test Regtech/Suptech solutions. Additionally, they are also analyzing Google results and web pages through auto intelligence platform for gathering information and running analytics on, for example, detecting scams online and how certain financial products are marketed.

1) Implementation procedure and strategy followed by FCA UK

a) Step 1 - FCA looks across data throughout the life cycle of financial instrument right from issuance, primary market activity, through to the secondary market trading and clearing and supplements this with private sector data, finally combining it into Big Data sets. Basically, transactions data, settlements data, positions data, including MiFID data etc. backed by common set of identifiers is combined with market information to put the activity into context by further adding intelligence received from firms and internal sources to derive insights.

b) Step 2 – FCA-focused team of data experts, data engineers and quantitative analysts then employs engineering skills and data science to gather insights, which are then combined with market knowledge to ensure compliance and if required, provide the necessary base for enforcement of its rules and regulations.

c) Step 3 & 4 – The output is used to make recommendations including identity benefits and process improvements.

d) Step 5 - There is a feedback loop to ensure that all data is collected in a cost-effective manner from the industry.

2) The Technology

Given the huge data sets available with market oversight team, FCA uses Amazon Web Services (AWS) which is supported by the recent change in regulations which permits moving the decision making to the cloud backed by external systems running 24X7 from FCA's analytics platform. FCA team uses Amazon EMR* as the processing engine with data stored in highly scalable databases and has adopted agile development practices which allow it to run and report real-time analytics. The platform is open to the entire FCA data science community to support decision making. Work which earlier required days is now done in hours.

3) Outcome

A few of the applications and outputs developed by the FCA team using the above mechanism are overlay of accounts trading to the prevailing market price and market events, market wide overview of spread betting activity around market events especially useful for leveraged products, creating cross analytics by linking account to profitability matrix, order book application to study cross market abuse cases, analysis of market vide short positions to explain price movements and analysis of liquidity in the UK market to study market resilience specially around the Covid-19 crisis.

B. Monetary Authority of Singapore (MAS) Suptech strategy

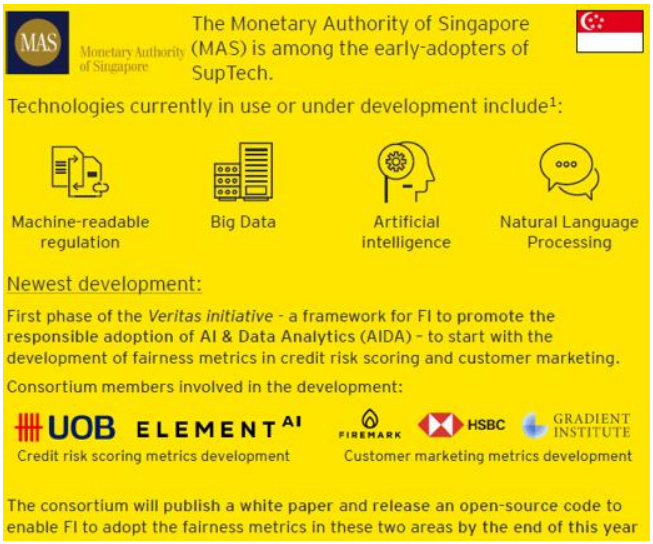
MAS Singapore is also using machine learning, Big Data, natural language processing for its supervisory operations.

MAS Singapore has digitized the read-only side of regulations since they are less sensitive and have put the digitized regulations on API to reduce the manual work-load from the regulated firms' perspective. This helps financial firms to understand the regulations and in extracting templates for reporting purposes.

Since many of the Machine Learning algorithms are black boxes, Singapore has set up a consortium which has designed a fair matrix based framework for financial institutions to promote the responsible adoption of AI & Data Analytics (AIDA). This consortium has promoted development of a fairness metrics for credit risk scoring and customer marketing purposes. The consortium will publish a white paper and release an open-source code to enable financial institutions to adopt the fairness metrics and further define the governance framework and standards for use and audit of AI.

In addition to the above, the regulator is trying to perform supervision by using technology which was primarily not designed for Suptech. e.g., using algorithms for flagging social media posts to identify alerts or concerns which a regulator may need to act upon.

A snippet below from MAS Singapore clearly demonstrates the gaining focus of Suptech in their day-to-day operations.



Source: Bank for International Settlements | MAS

I. SUPTECH AND REGTECH IN THE GCC REGION

The COVID-19 pandemic has triggered the demand for all financial services to become digital. Suptech works in tandem with Regtech and Fintech. As financial services platforms become more innovative, they add more complexity to the supervisory process requiring a completely different way of regulating with a new set of regulations not to mention the increased risk and threats. The GCC regulators may not have embarked on using specific Suptech tools like their counterparts in developed markets, but most authorities are using some kind of supervisory tools enabled by technology to meet this immediate need.

A. Below are some of the key trends observed in the Gulf region in this respect

1) Short-term uptake of Regtech and Suptech by regulators, leading to a reduced cost of compliance and automation of simple regulatory tasks.

In UAE, ADGM FSRA has automated its license application process, enabled by Artificial Intelligence, for venture capital (VC) fund managers. Potential applicants will be able to interact with a "RegBot" that utilizes natural language processing (NLP) and Machine Learning to identify information and risk gaps in the licensing procedure and ask clarifying questions. For instance, if the applicant did not provide adequate information about its risk management systems and processes with a regulatory requirement, the RegBot will prompt for the relevant response from the applicant. This process will enhance the applicant's understanding of and compliance with the FSRA's rules and regulations. From the information and data that has been extracted from documents uploaded by the applicant, the RegBot will classify the applicant's readiness, and complete a draft application form for the applicant as well as a draft assessment report for the ADGM FSRA's review. In this way, the RegBot is expected to increase business efficiency and reduce overall turnaround time for the application and licensing process.[3]

In Bahrain, the CBB has already introduced an Electronic Submission of Returns System for all licensees, covering periodic prudential reporting and related diagnostics and analysis. The CBB is also working on an automation project whereby a significant part of its services will be automated, both within the CBB and for external interaction with licensees. At the same time, SCA UAE has implemented its remote inspection system during the COVID-19 pandemic to conduct inspections online by using simple technology using Microsoft Teams.

Fintech Saudi, a joint initiative by Saudi Central Bank in partnertship with the Saudi Capital Market Authority has launched its Fintech Regulatory Assessment Tool. The tool is designed to provide with clearer understanding of the regulatory pathway for activities to companies applying for licensing with the respective authorities in Saudi Arabia. It will give an indication whether the activity is regulated, and if so, who it is regulated by and what are the options for bringing the activity to the market. The tool will also provide guidance on the regulations related to different technologies that a company may be using.

On the industry side, platforms like Azakaw[4] exist, a Regtech platform which provide complete compliance lifecycle support from client acquisition to regulatory reporting. Azakaw enables financial services firms globally to comply with regulations and improve profitability.

2) Wide-scale adoption of Regtech and Suptech solutions by dominant market players including regulators.

The Bahrain Stock Exchange namely Bahrain Bourse is using Machine Learning and real-time data for smart monitoring for illicit activity. The CBB has launched a nationwide e-Know Your Customer (eKYC) solution, operated by the Benefit Company to facilitate compliance with KYC rules. This was set up to speed up the process of opening new accounts and maintaining ongoing KYC compliance. Additionally, SCA UAE has also developed an electronic system for licensed companies in collaboration with OpenText for periodic reporting, which is now being linked to its internal enforcement database to enhance SCA's supervisory capabilities.

At the same time, electronic-Know-Your-Customer (e-KYC) utility project is being led by the Financial Services Regulatory Authority (FSRA) of Abu Dhabi Global Market (ADGM) in collaboration with a consortium of the UAE's major financial institutions, including Abu Dhabi Commercial Bank, Abu Dhabi Islamic Bank, Al Ansari Exchange, Al Fardan Exchange, First Abu Dhabi Bank, and UAE Exchange. UAE Pass is also a similar initiative developed by UAE for e-KYC and digital identity.

3) Embedding Regtech and Suptech within the firms' strategies, leads to greater risk management, reduced costs and ultimately a better customer experience

The XBRL implementation for listed public joint stock companies and brokerage firms by SCA UAE and many other regulators in the GCC has led to better risk management and reduced cost along with better customer experience for investors. The SCA UAE's e-system designed in collaboration with OpenText, as mentioned under point (2) above, also provides customers with electronic access to SCA's technical services such as licensing services which can now be easily provided to financial services companies within the UAE. The initiative was accompanied by remote inspection by SCA's inspection team during the COVID -19 pandemic where online inspection of licensed companies was successfully completed using basic applications and APIs.

4) Regtech and Suptech have been an area of discussion at various meetings of Union of Arab Securities Authorities (UASA) since 2017.

It is understood that, Gulf Co-operation Council (GCC) is using Abacus360 Banking to fulfill its EBA reporting** which includes a cloud-based data management solution as well.

Another development worth noting here is advent machine-readable regulations in UAE. ADGM FSRA has collaborated with Apiax teamed up with Cognitiv+ for transforming complex financial regulations into machine-readable regulatory rules giving opportunity to regulators to draft regulations digitally.

B. Challenges

In addition to the usual challenges of any technological transformation such as data and cyber security, the panelists during the Suptech webinar highlighted the below-mentioned issues the financial market players and regulatory authorities were facing with regard to digitization and Suptech adoption specifically in the Gulf region.

1) Cost and capacity considerations - More regulators are using data technology and more use cases are developing. However, the budgets of the regulatory departments nor their resources have increased in that proportion. Regulators are now being challenged to supervise much more companies, transaction and data with proportionally lesser resources.

2) Keep up with the speed and scale of innovation – As compared to developed markets, the capital markets in the Gulf countries are still at the nascent stage which adds the increased burden on actively following developments in developed markets, where many use cases may not be relevant for these GCC regulators.

3) Regulators need both rule-based and real-time algorithmic based data access–The current approach to data collection and management in GCC is primarily periodic with high reliance on the reports submitted by the regulated entities. However, given the pace of market activity, the regulators may require real-time data access and analytics to completely benefit from implementing any Suptech solution. Such real time access may require financial institutions to give complete access to the authorities or reporting on real time basis which is a significant expense to their already swelling compliance costs.

4) Built Suptech solutions in-house or engage with third party providers - Given the regulatory concerns around data and the nature of supervisory oversight operations, many developed market regulators have in-house Suptech solutions supported in in-house data scientists and experts. However, limitations on relevant human and technical resources for the GCC region is leaving it to adopt third party solutions which may not be completely integrated with the existing systems.

[4]https://azakaw.com/about-us

VII. FUTURE GROWTH PROSPECTS AND BUSINESS OPPORTUNITIES FOR SUPTECH IN GULF COUNTRIES

As regulators are using technology, they have never used before, a key defined focus for embracing Suptech and Regtech is required.

Below are some of the minimum inputs essential for any regulator considering adopting any computational application:

A. Study the need for Suptech and whether to outsource or undertake in-house.

As per discussions during the webinar, it was understood that many regulatory authorities in the Arab region were at different stages of technology adoption. Some were already using technology to perform and improve their supervisory functions especially when supervising Fintech, while many others were trying to understand Suptech and undertaking cost/benefit analysis before implementing. Additionally, given the market development and pace of digitization, the region had unique challenges of its own to deal with while adopting global best practices in the field of Suptech including cost, resources and talent.

Hence, the regulators need to undertake a cost benefit analysis to study the pace of technology adoption by domestic market players in the region for supervisory and regulatory reporting purposes. In this respect, the need for Suptech should be complemented with whether such solutions and API's should be implemented in-house or regulators should rely on use cases in developed markets or existing solutions provided by private companies to devise their own Suptech strategy.

B. Collaboration and Communication giving the data analyst and data scientist a robust and secure analytic environment to perform analysis.

Information sharing by regulators may require inter-agency regulatory collaboration through APIs which may require all regulators to move in one direction and collaborate extensively. For example, FCA UK as part of its Suptech strategy allows access to other regulators to use FCA's virtual data rooms provided they are permissioned to share data. It may be worth noting here that, both CBB and SCA UAE are members of the Global Financial Innovation Network, which is an initiative led by the FCA in the UK. Its Membership entails active participation in the networks and cross-border sandbox trials and taking effective research and cross-border collaboration in the fields of Suptech and Regtech.

C. Standardization of procedures, processes and regulations

Currently, the widespread approach to data collection by supervisory agencies (and other financial authorities) is periodically (daily, monthly, quarterly, annually) collecting aggregate business data (the bulk of which is financial data) in the format of standard report templates.

In some cases, the data may be categorized, organized, and listed in excel spreadsheets or even in hard copies. Each department within a financial authority may have its report templates that use different formats or formulas, even though much of the underlying data may well be the same. The current focus is on "documents", i.e., report templates, rather than on the primary data that constructs the desired reports.

In this respect, standardized Sharia interpretation and legal documentation present a growth opportunity for the Islamic finance industry by simplifying and streamlining the Sukuk issuance process and creating an extra space for innovation. Regtech could affect the Islamic finance industry positively by using more robust tools to achieve compliance within regulations and Sharia requirements, assuming globally agreed Sharia standards are in place. It could minimize the reputation risk related to a potential breach of Sharia requirements, and free up time for Sharia scholars to focus on innovation.[5]

D. Suptech needs Regtech

The development of Suptech needs to be complemented by the evolution of Regtech. Regtech could transform regulatory compliance and risk management of financial institutions, while Suptech can increase supervisory effectiveness and efficiency of the regulator. Hence, the GCC regulators need to study and examine the Regtech practices in their region and see how much they can complement Suptech and future business opportunities and public-private collaboration possibilities in the field of Regtech and Suptech in the Arab region.

E. Data strategy for robust data management with real time data

A clear understanding of how data is managed by the authority in turn influences the data management practices of regulated firms and is a key driver for Suptech and Regtech. Here the authority needs to devise its data strategy covering data collection and validation, automation of data collection and validation processes and dedicated data analytics supporting day-to-day functioning of the authority. The CBB in Bahrain has already announced its long term digitization strategy in addition to CMA Saudi which has a detailed data strategy and implementation plan as part of its Saudi Vision2030[6].

Supervisory agencies would be best placed to explore the potential benefits of Suptech applications if they have a well-defined Suptech strategy. A Suptech strategy should

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comprise the following three key elements, at a minimum: first, ambitious, but achievable, targets (e.g., which technology will be used, in which area of supervision, and how will it be funded); second, an assessment of today's data quality and availability of analytical resources; and third, a step-by-step action plan on how the supervisory agency will transform from the current situation to a full implementation of its Suptech strategy.

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List of Abbreviations

1) GCC – Gulf Co-operation Council
2) SCA – Securities and Commodities Authority
3) AFE – Arab Federation of Exchanges
4) FCA UK – Financial Conduct Authority, United Kingdom
5) MAS – Monetary Authority of Singapore
6) BIS – Bank for International Settlements
7) FSB – Financial Stability Board
8) AIDA – Artificial Intelligence & Data Analytics
9) CBB – Central Bank of Bahrain
10) MiFID – Markets in Financial Instruments Directive
11) CMA Saudi – Capital Market Authority of Saudi Arabia
12) API – Application Programming Interface
13) KYC – Know Your Customer
14) AML – Anti- Money Laundering
15) AI – Artificial Intelligence
16) APIs – Application Programming Interface(s)