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APEC Financial Services: Increasing APEC's FinTech and RegTech Capabilities Post-COVID-19

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Glossary of Terms

AI	Artificial Intelligence
AML	Anti-Money Laundering
APEC	Asia-Pacific Economic Cooperation
API	Application Programming Interface
ASEAN	Association of South East Asian Nations
CEMLA	Center for Latin American Monetary Studies
ASCR	APEC Services Competitiveness Roadmap
CAGR	Compound Annual Growth Rate
CCAF	Cambridge Centre for Alternative Finance
CDR	Consumer Data Right
CRTA	Canadian RegTech Association
CTF	Counter-Terrorism-Financing
DSA	Data Science and Analytics
FCA	Financial Conduct Authority (United Kingdom)
FSC	Financial Services Commission (Chinese Taipei)
GFIN	Global Financial Innovation Network
IOSCO	International Organization of Securities Commissions
KYC	Know Your Customer
MAS	Monetary Authority of Singapore
MoU	Memorandum of Understanding
ML	Machine Learning
MSME	Micro-Small-Medium Enterprise
Next-gen	Next Generation
OJK	Otoritas Jasa Keuangan (Indonesia)
P2P	Peer-to-peer

P2PL	Peer-to-peer Lending
RTA	The RegTech Association
SME	Small-Medium Enterprise
SupTech	Supervisory Technology
T&C	Terms and Conditions
WTO	World Trade Organization

Executive Summary

Within the highly diverse set of APEC economies, FinTech and RegTech are recognised as key disruptors and enablers for digital transformation and improving financial inclusion. In order to be in the best possible position to benefit from an increasingly innovation-friendly global landscape, individual economies can look towards implementing policies related to Regulatory and Institutional Reform and Balance, Consumer Protection and Law Enforcement, Improving Financial Literacy and Skills, and Ensuring Access to Financial Services, four key priority areas identified in 2018 by the APEC Finance Ministers' Process. Based on research sourced from consultancies, governments, not-for-profit organisations, and international organisations, it is clear that FinTech and RegTech developments require economies to act on legal structures, regulatory frameworks, robust principles to suit an economy's circumstances, collaborative systems within and across borders, and technical areas (Artificial Intelligence, Data Analytics, Data Governance, etc.). The research uncovered numerous high-quality programs around the world, planned and implemented by government agencies, industries, and international organizations, that can act as beacons for what can be achieved. Some of these are represented in this report by means of case studies. Underpinning the analysis are the FinTech and RegTech taxonomies, defined in the Introduction.

The **APEC Financial Services - Increasing APEC'S FinTech AND RegTech Capabilities Post-COVID-19 Project** aims to drive collaboration with regulators, regulated entities and technology companies in order to support digital delivery, standards, best practice and regional architecture. The project consisted of preliminary research presented in a concept paper, the discussions within a global workshop series, and finally this report. This report draws on research conducted over the whole project and key insights from the workshop series to deliver a set of recommendations to APEC regulators and policymakers.

Regulatory and Institutional Reform and Balance

Modern regulators are increasingly required to maintain their existing regulatory objectives while identifying new objectives around promoting innovation and competition. The growing complexity of regulatory environments increasingly demands more direct interaction between several stakeholders across numerous industries and sectors within individual economies, including incumbent financial institutions, disruptive FinTechs, RegTechs, industry associations and regulators (Central Banks, Prudential, Consumer Rights, etc.).

Consumer Protection and Law Enforcement

The explosion of consumer data collection and usage in recent years has enabled provision of improved services and given rise to frameworks around data-sharing within industries. Furthermore, RegTechs operating in Anti-Money Laundering and Know-Your-Customer risk areas have provided valuable services to incumbent financial institutions that are increasingly reliant on digital technologies. Consumer empowerment through control and knowledge of their own data, the development and adoption of consumer protection principles in areas such as Artificial Intelligence (i.e. right to human intervention) and data sharing are vital in creating a suitable environment for consumers.

Improving Financial Skills and Literacy

The move to digital, in many economies, has amplified issues around financial literacy when combined with digital literacy, creating what some consider as a perfect storm. This has been evident in circumstances ranging from individuals and enterprises not being able to make sound decisions about the use of money, to slow development of cultures of compliance in many businesses. In response, FinTech and RegTech is already delivering value at every level, being able to overcome specific barriers or address niche problems, thereby encouraging digital uptake and financial education. As a result, many economies are seeking to maximise the benefits by promoting FinTech and RegTech uptake and aligning initiatives and collaborative frameworks to ensure that digital literacy and financial literacy develop alongside technological proliferation.

Ensuring Access to Financial Services

APEC economies have been able to leverage FinTech to move towards 'true' financial access (competitively priced, accessible, facilitating access to broader services). To accelerate this, data-sharing frameworks such as Open Banking can connect the historically underserviced to the entire financial market through single access points, in many instances delivered by FinTechs, providing a 'basic' financial service. In such an ecosystem, RegTech is able to support the improvement of data security, data processing, and consumer protection notifications.

Recommendations

This paper makes 13 non-binding recommendations to APEC economies that can be acted upon unilaterally and multilaterally, to address common opportunities and challenges. These recommendations span four key areas of **Regulation**, **Innovation**, **Collaboration** and **Education**, which are detailed in the following section of this report. The recommendations include the development of a FinTech and RegTech Readiness Index, towards which this report also makes suggestions.

Key Recommendations

Based on insights from the Workshop Series and research into initiatives around the world, this paper makes the following non-binding recommendations, partitioned into the categories of **Regulation**, **Innovation**, **Collaboration**, **Education**:

Regulation

1. APEC economies to ensure close collaboration between regulators, both domestically and internationally, for FinTechs and RegTechs.
2. Regulators within APEC to consider integrating industry codes of conduct into regulatory frameworks through collaboration with local and international industry.
3. APEC regulators and policymakers to consider creating streamlined paths to market for innovators, while ensuring consumer protections are in place

Innovation

4. APEC economies to provide further funding for innovation support.
5. APEC economies to adopt policies and initiatives that support the incubation process (going from idea to proposition) while ensuring that regulatory conditions are applied at optimal points that balances innovation and compliance development.
6. APEC to develop a digital services and digital market framework to promote competition in digital markets area, as well as consumer protections.
7. APEC to adopt a typology of FinTech and RegTech.

Collaboration

8. APEC economies to consider the formation of a 'FinTech and RegTech community of interest' group for regulators and policy makers that have a desire to share information and learn from each other.
9. APEC economies to engage in ongoing regulator to regulator peer learning and sharing of regulatory best practice (i.e. GFIN - Global Financial Innovation Network, IOSCO - International Organisations of Securities Commissions).

Education

10. Regulatory bodies should actively educate industry on regulatory requirements, regulatory jurisdictions, and the specific points of contact.
11. APEC economies to continue to develop the technical capabilities of their regulators to take full advantage of technologies either developed or adopted.
12. Building on the APEC e-payments readiness index, economies to consider the development of a FinTech and RegTech readiness index.
13. APEC economies to acknowledge the role and importance of RegTech in supporting the growth and development of a trusted digital financial ecosystem.

Introduction

In 2016, the Asia-Pacific Economic Cooperation (APEC) Leaders endorsed the APEC Services Competitiveness Roadmap (ASCR) and the corresponding Implementation Plan, committing to the development and sustaining of competitive services sectors[1]. In 2018, the APEC Finance Ministers' Process (FMP) identified four **key priority areas** in relation to using financial innovation to promote financial inclusion[2], which reflected targets for APEC-wide actions to progress on the ASCR:

- Regulatory and Institutional Reform and Balance
- Consumer Protection and Law Enforcement
- Improving Financial Literacy and Skills
- Ensuring Access to Financial Services

The **APEC Financial Services - Increasing APEC'S FinTech AND RegTech Capabilities Post-COVID-19 Project** aims to drive collaboration with regulators, regulated entities and technology companies in order to support digital delivery, standards, best practice and regional architecture. The project consisted of preliminary research presented in a concept paper, the discussions within a global workshop series, and finally this report. This report draws on research conducted over the whole project and key insights from the workshop series to deliver a set of recommendations to APEC regulators and policymakers.

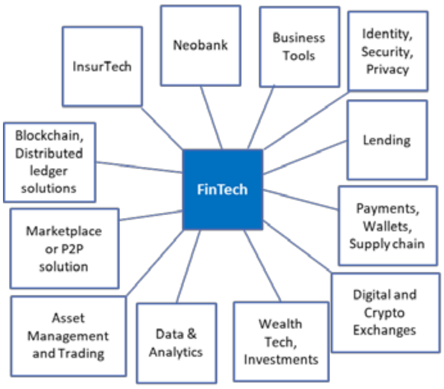
Innovation in the forms of FinTech and RegTech, have proven to be driving forces in patching gaps spanning the remit of the project across many APEC economies. Institution-driven digital innovation as well as FinTech and RegTech enterprises play increasingly important roles in a digital economy, bringing both opportunities and challenges relating to financial inclusion. Notably, all 21 APEC economies have at least one regulator that has committed to adapting to technological change and shifts in global trends[3], and the growing abundance in innovation-focused initiatives, both unilateral and multilateral, have contributed useful insights. The COVID-19 pandemic has also greatly impacted the FinTech and RegTech scenes across the APEC economies, resulting in a diverse range of consequences that are still being realised. It is apparent that the trajectory of innovation has changed due to the pandemic's socio-economic impact, especially through shifts in consumer activity. Opportunities have also surfaced thanks to the existing innovation-friendly environment and general trend towards digitalised economies, which will require collaboration and further building of multilateralism to fully realise.

RESILIENCE DURING THE COVID-19 PANDEMIC

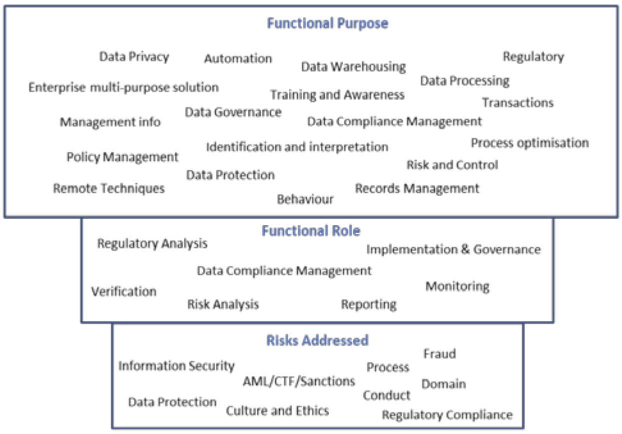
While the pandemic has negatively affected the global economy, the FinTech and RegTech industries have shown resilience. Investment into the FinTech ecosystem has continued to grow, and some FinTechs have been able to seize opportunities brought on by the shift in habits (BCG 2020). Within RegTechs, pandemic resilience has been marked by the increasing appetite from regulated entities (RTA 2021).

[1] (APEC, APEC Services Competitiveness Roadmap (ASCR) Baseline Indicators APEC #217-SE-01.12, 2017)
[2] (APEC, APEC Financial Inclusion Capacity Building Package - Synthesis Report APEC #219-SE-01.22., 2019)
[3] Appendix

The FinTech Taxonomy
(EY FinTech Australia Census 2020)



The RegTech Taxonomy
(The RegTech Association 2021)



FinTech and RegTech

FinTech - short for Financial Technology, is the application of emerging technology towards disrupting traditional financial services,

RegTech - short for Regulatory Technology, is the application of emerging technology towards improving the ways businesses in any sector manage regulation and compliance. RegTech includes SupTech (Supervisory Technology).

Project Workshop Series

The project workshop series was held between the 27th of July and 6th of August 2021. Each workshop aligned with one of the four key priority areas, with the project inviting presenters from various APEC economies to present on and discuss relevant topics to an audience consisting of regulators, policymakers, trade representatives and industry from APEC economies (totalling 145 attendees).

The aims of the series were to address pressing questions identified in the preliminary research and discussion paper, and to identify new areas of interest through presentations and open discussions. During the series, audiences were presented with polling questions to provide further insights into sentiments, which have been represented throughout this report.

REGTECH, FINANCE AND THE BROADER ECONOMY

While Financial Services is the most commonly serviced and a significant spender on compliance as a sector, RegTech firms are seeing interest from other sectors, including government, energy, telecommunications and healthcare. The sector-agnostic nature of the RegTech industry has likely been reinforced by track records and success cases coming out of deployments in the financial sector (The RegTech Association, 2021).

Organisations invited to present and discuss the key priority areas included:

- Alliance for Innovative Regulation (The United States)
- Australian Securities and Investments Commission (Australia)
- Monetary Authority of Singapore (Singapore)
- Australian Consumer Data Right Committee (Australia)
- Indonesia Otoritas Jasa Keuangan (Indonesia)
- Philippines Bangko Sentral ng Pilipinas (Philippines)
- United States Consumer Financial Protection Bureau (The United States)
- Expand Research, a BCG Company
- KPMG Australia

Attending APEC Economies at the project workshop series included: Australia, Hong Kong China, Indonesia, Mexico, New Zealand, Papua New Guinea, Peru, Russia, Singapore, Chinese Taipei, Thailand, The Philippines, The United States. This group represented 13 of the 21 APEC economies.[4]

[4] Registrations came from 15 of the 21 APEC Economies (including Viet Nam and Chile). All registrants received the supplementary project workshop series material (presentation slides).

Regulatory and Institutional Reform and Balance

Regulatory and institutional reform and balance was identified as a key priority area to improve financial inclusion in the 2019 APEC Financial Inclusion Synthesis Report, reflecting the need to find a balanced way to achieve the dual goals of maintaining financial stability and promoting innovative solutions within an increasingly digital economy[5]. Regulatory reform has been enacted in a number of different ways across APEC economies, with decisions and initiatives tailored to factors such as organisational scope, the nature of technological development (level of infrastructure, type of innovative products, etc.), and the existing regulatory environment. FinTechs have disrupted financial services in many ways, including through the promotion and proliferation of new technology that has caused increased competition, driving greater access to financial services to the historically underserved.

The modern regulators of increasingly digital economies must be able to adapt to and pre-empt key developments within their mandates. Furthermore, it is becoming increasingly clear that the financial regulatory environment of a digital economy will require collaboration and communication between regulators, incumbent financial institutions, FinTechs and RegTechs. From this collaboration, economies can look to implement digital infrastructure such as API's, synthetic datasets and the promotion of problem statements, as well as further strengthening of initiatives such as trials and sandboxes. Such infrastructure has also proven to be able to go across borders (e.g. API-Exchange, a global open-architecture platform that supports innovation and inclusion)[6], and can be valuable in helping develop ideas into concrete propositions through the provision of the digital tools and streamlined processes.

For Financial Institutions and other regulated entities, reform increasingly means the overcoming of legacy systems, the adoption of processes that are 'digitally native' and acquiring the right tools to remain compliant and competitive. Across all APEC economies, collaboration between regulators, incumbent regulated entities, RegTechs and FinTechs will be key in ensuring that a digital economy is stable.

The FinTech Perspective

The disruptive nature of FinTech has direct implications on governance and regulatory environments, and especially for central banks. In terms of the impact on central bank mandates, which 'traditionally' have objectives such as price and financial stability, FinTech activity can push central banks to reconsider legal structures, possibly raise new objectives and therefore functions, and even create situations where there are trade-offs between these new objectives and the old[7]. The 2021 IMF FinTech Note "The Impact of Fintech on Central Bank Governance Key Legal Issues" proposes several important steps in relation to Central Banks and their legal considerations:

1. Objectives - Considering carefully the stated objectives and aligning them with the statutory objectives of the central banks.
2. Functions and Powers – Reviewing how the central bank will execute its statutory functions in a digitalised world and review legal powers to ascertain whether the central bank can take all necessary actions.
3. Data use – Establishing robust governance structures and internal rules and procedures around the processing, management and use of data.

[5] (APEC, APEC Financial Inclusion Capacity Building Package - Synthesis Report APEC #219-SE-01.22., 2019)
[6] (Monetary Authority of Singapore, 2019)
[7] (Bechara, Bossu, Liu, & Rossi, 2021)

4. Cross-border collaboration – Reviewing the legal basis to enter into cross-border inter-central bank collaboration arrangements.
5. Oversight Board – Ensuring sufficiently strong technical skillsets and organizational flexibility.
6. Senior FinTech Executives – Ensuring there is no conflict of interest when having an innovation-focused senior executive function.
7. Autonomy – Maintaining functional autonomy.
8. Transparency.
9. Accountability.
10. Code of Ethics.

While the regulatory structures of APEC economies are extremely diverse, these steps reflect the importance of flexibility in legal frameworks and culture for regulators covering any mandate.

Regulatory Sandboxes

Regulatory Sandboxes have been increasingly prevalent initiatives around the world as economies seek to act on their commitment to innovation and realising the many benefits of FinTech, while maintaining the very important factors of financial stability and consumer protection (mandates which will vary across different economies). Regulatory sandboxes also provide valuable insights to regulators as they build an understanding of what sound and appropriate regulatory frameworks look like. As of 2021, all 21 APEC economies have at least one regulator that has considered running or is running a regulatory sandbox. For leading and more mature regulatory sandboxes (e.g. those run by the United Kingdom's FCA and Indonesia's OJK), notable challenges have manifested that reflect the demanding nature of these programmes on regulators. Specifically, regulators have found that the efficacy of sandboxes could be limited by the internal supply of technical skillsets, the lack of bureaucratic transparency, and lack of digital infrastructure (Kalifa, 2021) (Asian Development Bank Institute, 2019) (APEC Economic Committee, 2020). This reflects the importance of constant assessment of results, output, and feedback, and recognition that such initiatives demand a high degree of flexibility.

The RegTech Perspective

RegTechs have established a notable presence within APEC economies such as Singapore[8], Canada[9], and Australia[10], driven by an uptake by regulated entities across multiple industries and governments. Within finance, RegTech solutions provide more competitive and often more efficient solutions to compliance, most commonly through AML and KYC, but also improving reporting through better management, processing, and presentation of data[11]. Significantly, RegTechs have the potential to help organisations build a superior culture of compliance. As regulatory reform specific to a digital economy takes place (e.g. data governance regulation), and as regulatory capabilities improve, the demand for RegTech solutions in financial services will continue to grow.

[8] (Enterprise Ireland, 2021)
[9] (Canadian RegTech Association and KPMG Canada, 2020)
[10] (Productivity Commission, 2020)
[11] (Canadian RegTech Association and KPMG Canada, 2020)

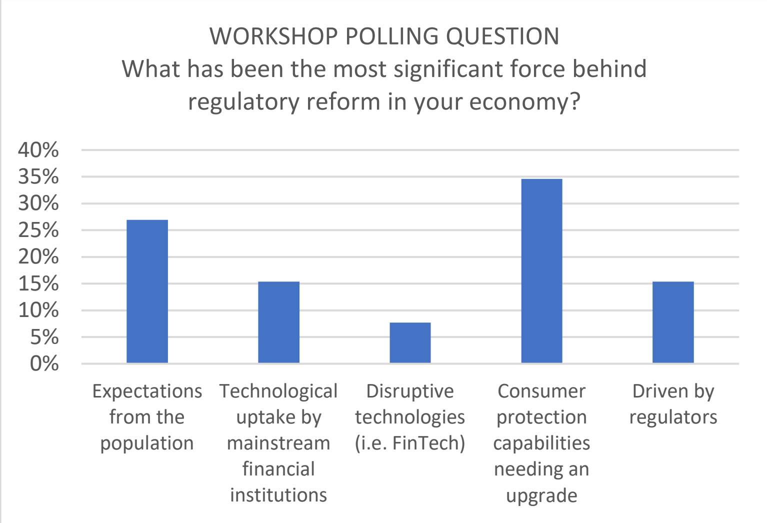
For regulators, there have been cases where RegTech and SupTech solutions have been adopted through processes such as tech sprints, as in the case of Mexico's CNBV[12] and Philippines' BSP[13]. RegTech firms can help regulators become 'digitally native'[14]. RegTechs are proving themselves as enablers of regulatory and institutional reform, providing the means to overcome legacy systems with innovative solutions. Commonly deployed SupTech tools by authorities are in areas of regulatory reporting and data management[15], while use cases in areas such as 'misconduct analysis' and microprudential supervision is growing. The uptake of RegTech services will also surface risks for financial institutions that must be accounted for by regulators, especially related to the assessing of technological solutions. Collaboration between the regulated entities (both incumbent and new), regulators, self-regulatory organisations and RegTechs will be key going into the future.

The COVID-19 Pandemic Factor

The pandemic has led to massive growth in sectors such as e-commerce (over 100% growth in Chile from 2019 to 2020), with some economies turning to digital financial services to disburse financial aid (e.g. Peru's Billetera Movil)[16]. Such a sentiment is reflected in the industry, with over 30% of FinTechs and RegTechs surveyed in the 2020 *CCAF Global COVID-19 FinTech Rapid Market Assessment Report* willing to participate in the delivery of government stimulus, fundraising through crowdfunding platforms, and loan disbursement. RegTechs have also played a part; e.g. enhancing regulatory awareness and vetting applications for government loans (CCAF 2020 citing notable examples - United Kingdom saw the launch of a start-up that provided COVID-19 regulation updates for free, and an Austrian company assisting government loan models by supporting the vetting process and helping avoidance of fraud). In the longer run, it is likely that FinTechs and RegTechs will pursue fundraising efforts as economies recover from the pandemic (something that is being realised in Australia according to The RegTech Association's Industry Perspectives 2021 Report).

A significant takeaway from the project workshop series polling about pandemic-driven uptake of digital services in attendees' respective economies showed that an overwhelming majority saw digital uptake accelerated during the pandemic. Out of those who responded to a polling question on expectations of RegTech integration into their respective economies' future financial systems, over two-thirds indicated that there was at least a likely chance of adoption, while the rest were mostly neutral.

[12] (Castri, Grasser, & Kulenkampff, 2018)
[13] (Castri & Kulenkampff, 2018)
[14] (Barefoot, Digitizing Financial Regulation: Regtech As A Solution for Regulatory Inefficiency and Ineffectiveness, 2020)
[15] (FSB, 2020)
[16] (Cantu & Ulloa, 2020)



Case Study – GFIN Cross-Border Testing Key Learnings

A global network of regulators, the Global Financial Innovation Network consists of members (including regulators from 8 APEC economies) and non-regulator observers. Created as a means to provide a more efficient way for innovative firms to interact with regulators, helping them scale and test ideas, a key initiative is the GFIN Cross-Border Testing. In 2020, GFIN published its reflections on the first round of cross-border testing (comparable to a global sandbox), attempted across 17 regulators, including those regulating banking, investments, securities and central banks. A key goal is the creation of a framework that can facilitate a new type of regulatory cooperation, which balances support for firms seeking to export with the development of regulatory understanding and capabilities on a global scale.

Key reflections emphasised the importance of a program with clear objectives and eligibility requirements, and the creation of a single mechanism that can communicate with the market (i.e. online forms which streamline data entry). Furthermore, going forward, there is more clarity on the ‘activities’ that regulators can support, which will allow individual firms to be more ready (a noted area for improvement during the first testing), and will help the right firms apply to the right places.

The GFIN Cross-Border Testing initiative, and broad membership of GFIN overall, show a global drive for knowledge sharing and collaboration across borders to facilitate the trade in innovative services, without compromising stability. Such programs are opportunities to build standards and gain an understanding of best practice, while developing the appropriate policies within each economy. (GFIN, 2020)

Case Study – The ASIC Innovation Hub

The Australian Securities and Investments Commission, the corporate, markets, financial services and consumer credit regulator, seeks to find the balance between enabling FinTech and RegTech innovation while not compromising on the core goals of promoting investor and consumer trust and confidence, and ensures markets operate in a fair, orderly and transparent way. The Innovation Hub initiative, set up in 2015, helps innovative businesses navigate the regulatory system, communicates regulatory news, and assists ASIC in understanding new developments.

The ASIC Innovation Hub was a case study in the workshop series, with the presentation and discussion showcasing the potential of a dedicated resource targeted at innovations in finance, in both the FinTech and RegTech spaces. The Innovation Hub's transparent reporting on initiatives and learnings, recognition of changing customer trends and expectations in a modern world (e.g. expecting their financial services to have seamless processes), contribution towards collaboration and better communication with industry through initiatives such as the RegTech Liaison forum and focused Symposiums, engagement in international information sharing (through GFIN and IOSCO) are all key decisions that help achieve the balance. Specifically, the "5 point approach" of:

- Engagement – ASIC events, forums and regular events
- Digital Finance Advisory panel - FinTech community, academia and other regulators
- Coordination – senior committee, internal working groups, staff and external network
- Enhanced communication – designated website and tailored resources and guidance or closer engagement with industry bodies
- Streamlined approach – provision of assistance to entities with innovative business models when this is sought

On RegTech, ASIC's recognition of the potential of the RegTech sector to build cultures of compliance and facilitating education is built on principles that involve creating RegTech outcomes that align with strategic priorities, running focused initiatives (Monitoring Financial Promotions, Voice Analytics/Voice-to-Text, Financial Advice Files, etc.) and learning from industry input both domestically and on a global level. The Innovation Hub's experience so far has built a set of considerations and learnings. Emphasis has been placed on ensuring initiatives are mandate and jurisdiction driven, clarifying the objectives, boundaries and accessibility of trials and sandboxes, and looking into automation and process optimisation with data-based decision making.

Case Study – Indonesia's OJK Regulatory Sandbox

Indonesia is an economy that has identified FinTech as a key driver of financial inclusion and is seeing a rapid uptake of digital financial services. In 2019, the most common FinTechs operated in P2P Lending (43%) and Digital Payments (26%), with the value of e-money transactions growing sixfold between 2017 and 2021 (to $840 million) (Asian Development Bank Institute, 2019). With consideration of 'speed of innovation' vs. the 'speed of regulation', the regulatory strategy revolves around 'light touch and safe harbour', with four key principles:

- Level playing field and tech-neutral in order to avoid supervisory arbitrage
- Adaptable, given rapid change that will impact FinTech in the future
- Collaboration of financial sector authorities with regulators involved with data protection and anti-trust
- Having universal dimension to cope with the global development of technology and the market for financial services

The strategies themselves have resulted in the implementation of regulatory sandboxes, which have the objectives of gathering data and insights and helping FinTechs improve business models and governance, and ultimately assessing the reliability of business processes, models, financial instruments and governance based on specific pre-defined criteria. The OJK also has established a FinTech Centre, called 'OJK Infinity' (OJK GESIT), which acts as a learning centre of FinTech, facilitates communication with other industries, and gathers data that can help the legal compliance process of firms. Within the broader Indonesian FinTech landscape, Bank Indonesia and the OJK both have encouraged collaboration between FinTechs (who often have been able to overcome specific barriers to reach the historically underserved) and incumbent financial institutions, especially in P2PL, requiring individual lenders and borrowers to have bank accounts (except in cases of group lending) (KPMG Siddharta Advisory, 2018).

As of January 10 2021, Indonesia's Otoritas Jasa Keuangan (OJK), the financial services regulator has registered over 140 FinTech lending platforms, with 41 firms holding licenses, having passed these firms through several stages of a maturing Regulatory Sandbox. The sandbox has been conducted under a developing umbrella regulation for FinTech, which require FinTechs to apply to OJK to undergo the process, with tests conducted on a sampling and prototyping method based on the business model (or cluster) of FinTechs. Key considerations for FinTechs include transparency, fair treatment, reliability, data privacy, security, and efficient handling of customer complaints. In terms of encouraging innovation, the process notably exempts FinTechs from certain regulations at specific points, such as loosening requirements AML/CTF during the application process, with the following sandbox intended to develop it.

Conclusions and Reflections

The readiness of regulators and integration of financial institutions into new regulatory frameworks have a direct impact on the pace of deployment of FinTech and RegTech, with this readiness ultimately defined both within the context of each economy's unique circumstances and within the expectations of an increasingly integrated global digital economy. Commonalities in challenges and perspectives can be addressed by further multilateralism as well as unilateral action, informed by the experiences and outcomes of existing economies. For example, building and communicating working principles (both binding and non-binding) around technical concepts such as data analytics, Artificial Intelligence and data governance, often based on existing frameworks such as the OECD Principles on AI and OECD Enhancing Access to and Sharing of Data, can underpin regulatory reform. Furthermore, further alignment across APEC economies on these concepts, and an increasing interest in cross-border regulatory testing raises opportunities for global collaboration that can encourage the trade of services and technologies, development of standards and best practice, and improvement of financial inclusion, all while ensuring that financial systems are stable and fair.

To address the key priority area of Regulatory and Institutional Reform and Balance in relation to FinTech and RegTech, the recommendations are:

- APEC economies to ensure close collaboration between regulators, both domestically and internationally, for FinTechs and RegTechs.
- Regulators within APEC to consider integrating industry codes of conduct into regulatory frameworks through collaboration with local and international industry.
- APEC economies to adopt policies and initiatives that support the incubation process (going from idea to proposition) while adjusting regulatory conditions to provide balance between innovation and compliance.
- APEC economies to engage in ongoing regulator to regulator peer learning and sharing of regulatory best practice (i.e. GFIN, IOSCO).
- Regulatory bodies should actively educate industry on regulatory requirements, regulatory jurisdictions, and the specific points of contact.

Consumer Protection and Law Enforcement

The presence of Consumer Protection and Law Enforcement as a key priority area reflected the need to adapt to the disruptions in financial services. It has become apparent that consumer data protection and other technology-related approaches will become a core part of consumer protection frameworks. In the broader world of financial law enforcement, AML and CTF are requiring increasingly complex and sophisticated solutions. This requires the presence of relevant technical skillsets and capabilities within regulators and financial institutions, a notable challenge on a global scale, and one that RegTech (especially in AML and KYC) is increasingly demonstrating its ability to make a mark on. In a digital economy, consumer protection and law enforcement will be built on regulators, consumers and financial service providers (both incumbent and new) being empowered through technology and education.

FinTech and Consumer Protection

FinTechs are becoming an increasing focus for regulators in reaction to the risks brought by their often disruptiveness. Key issues include firm failure, marketing practices, algorithmic scoring, and capital risk management. Approaches have included (often scaled-down) traditional rules on investor caps, cooling-off periods, and marketing guidelines, as well as new processes such as algorithmic auditing and right-to-request human intervention[17] [18]. While FinTech has demonstrated its importance in facilitating financial inclusion, cases of firm failures in economies at all levels of maturity and development show that the goals of financial stability and 'true' financial inclusion (affordable and competitive financial services and products) cannot be taken for granted. It has been observed that China's P2PL platforms often fail as fast as the sector grows[19], through incidents of fraud and operator misconduct.

As financial inclusion in economies evolve, new risks in consumer protection will be surfaced, requiring new methods to mitigate them. The rapid uptake of digital services presenting streamlined old products and new disruptive products that has already been experienced by some economies (and likely will be experienced by others) raises risks relating to the bombardment of consumers with a huge array of accessible products attached to effective marketing. Furthermore, as economies pursue data-sharing frameworks such as Open Banking, consumer data risks associated with sharing, classification and aggregation are brought into the spotlight. While regulatory mandates and incentives around transparency of information and marketing could help mitigate this, ensuring that consumers are best protected in such circumstances will require empowerment through education of specifically digital services (around personal data, the risks of financial products, etc.) and collaboration with regulated entities (incumbents and FinTechs), RegTechs, and regulatory authorities across a wide range of industries.

RegTech - Enabling Financial Law Enforcement, Data-driven Economies, and Consumer Empowerment

The increasing complexity and consequences around Consumer Protection and Law Enforcement are driving demand for RegTech solutions, especially in AML/ KYC, conduct, data governance and regulatory reporting.

AML/KYC and Sanctions Risk is the most commonly serviced Risk Area by number of RegTechs, providing services that enable more accurate detection of fraud. United States regulators, such as the Consumer Finance

[17] (HKMA, 2019)
[18] (World Bank Group, 2021)
[19] (World Bank Group, 2021)

Protection Bureau and the Commodity Futures Trading Commission, have identified RegTech capabilities as key tools in AML efforts (from fiat currency to crypto-assets). AML/KYC has been one of the most commonly addressed Risk Areas for RegTech solutions, mostly adopted by financial institutions to maintain compliance and to more effectively reduce noise[20] [21] [22]. FinTechs providing neobank solutions and digital payments services have also seen value provided by adopting AML/KYC RegTech tools[23].

Greatly enabled by the explosion of consumer data, the relevance of non-financial data towards making decisions around the financial status of an individual or a business and the data-sharing frameworks that come with this, mean financial institutions and FinTechs must have the best tools to manage data. As economies implement regulations and guidelines around data governance, specifically around the classification, aggregation and use of consumer data, RegTechs can provide valuable services in regulatory reporting, data management, and ensuring privacy. Under data-sharing frameworks that require collaboration between large financial institutions, which we are seeing in several APEC economies, RegTechs can contribute towards the stability of such systems.

RegTechs can also play a vital role in consumer empowerment, especially in a data-driven and data-rich digital economy where there is an unprecedented amount of choice and financial products. RegTechs operating in KYC can help financial service providers, be it FinTechs or incumbents, better implement responsible lending practices, and also empower consumers with their own data. A discussion during the Workshop Series featuring the Monetary Authority of Singapore revolved around Buy-Now-Pay-Later platforms, which could increase risk of over-spending. KYC systems in such cases could notify consumers live to better their decision making.

The COVID-19 Pandemic Factor

For FinTechs, the pandemic has had a significant and diverse range of impacts on firms, while exacerbating the risks posed to consumers. Many economies have seen large numbers of consumers turning to FinTech platforms for financial services, which has led to higher spending on cyber-security to mitigate growing risks (which are yielding smaller returns due to the reduction of fees and commissions). Over half of FinTechs have seen their capital reserves negatively impacted, and investors have generally sought to consolidate existing investments rather than make new ones[24]. In the context of consumer protection, such indicators reflect increased risks of firm failure, and comes with calls for both immediate and 'down the line' government intervention (surveyed firms from North America, APAC, and Latin America in CCAF 2020). Furthermore, there is a greater focus in many economies on marketing and the presentation of alternative financial services (enforcing guidelines on disclaimers, transparency of information, restrictions on pre-ticked boxes in electronic forms, etc.)[25].

[20] (The RegTech Association, 2021)
[21] (CCAF; World Bank ; WEF, 2020)
[22] (Canadian RegTech Association and KPMG Canada, 2020)
[23] (Deloitte, 2021)
[24] (CCAF; World Bank ; WEF, 2020)
[25] (KPMG Siddharta Advisory, 2018)

Case Study – Australia's Consumer Data Right and Standards

Australia's development of data standards has showcased the need for flexibility, as well as the importance of including sectors outside of finance in the dialogue. Notably, the Australian Consumer Data Right (CDR), a focus area of the Australian Competition and Consumer Commission (ACCC), is seeing application in the banking, energy and telecommunications sectors. Built on principles of consumer empowerment, enabling competitiveness and accessibility of essential services and improving productivity, it is an opt-in service that gives individuals the choice to share data, with full visibility of who it is being shared with. In finance, this means individuals and MSME's getting easier access to appropriately priced products and services. As of 2021, FinTechs and banks can apply to be accredited as providers of the service, with the primary two classifications being 'data recipient' and 'data holder'. Requirements for participating enterprises revolve around IT, legal obligations and an onboarding process that involves a test environment. (Australian Competition & Consumer Commission, 2021)

Australia's CDR was raised as an area for discussion during the Workshop Series, with emphasis for its potential contribution to consumer protection through consumer empowerment and education.

Case Study – HKMA Principles on AI

The Hong Kong Monetary Authority's High-level Principles on Artificial Intelligence, drawing on existing frameworks from multiple jurisdictions in the US, Europe and Asia, is another example of promoting both structural and technical change when addressing new risks. Artificial Intelligence has application in banking in front-line business, risk management, back-office operations, and in customer services, and greatly improves efficiency and outcomes. Nevertheless, the challenges and risks associated with AI use in Financial Services, in data quality, validation and explanation of models, maintaining technical talent, keeping up with evolving regulatory environments and exposure to cyber threats, all must be addressed in some form or another.

The principles for the use of AI by banks revolve around governance, application design and development, and on-going monitoring and maintenance. The governance aspect notes the importance of accountability at Board and Senior Management Levels for the outcome of AI applications. When creating the applications, the principles recommend sufficient expertise, appropriate reporting of the technical aspects of AI applications, making applications auditable, and maintenance of oversight over third-party vendors. In terms of general operations of a bank using AI applications, compliance with data protection requirements (i.e. ensuring personally identifiable data is only used in the correct situations), maintaining cybersecurity measures, and contingency measures (human-in-the-loop mechanisms, right to human intervention and prudent limits) forms the third aspect of the principles (HKIMR, 2020) (HKMA, 2019).

The HKMA also sees the potential for RegTech and SupTech, specifically through machine-readable regulation and automation in data collection from banks.

Case Study – Canada's RegTech Landscape

The Canadian RegTech Association (CRTA) has seen regulatory stakeholders become increasingly active and its membership expand over 2020. A major realisation of RegTech's capabilities is in the noise-reduction techniques firms can provide to existing financial crime detection through the deployment of new tech. Regulators are pushing this innovation by creating sandbox environments, while regulated entities are working on joining up and preparing data for analysis, all building towards more effective consumer protection and law enforcement (Canadian RegTech Association and KPMG Canada, 2020).

Conclusions and Reflections

In digital economies, Consumer Protection and Law Enforcement will revolve around the unprecedented amount of data being collected, processed and used. To ensure the best possible outcomes, economies must ensure that its regulators have the capabilities to oversee this environment by keeping pace and empowering consumers with knowledge. Furthermore, an increasingly integrated global economy where individual economies actively pursue trade in services requires increased collaboration between cross-border law enforcement to enforce aspects such as AML and KYC. Clearly defined objectives depending on circumstances such as mandate and capacity, combined with the development or adoption of digital infrastructure, will be key to ensuring consumer protection while promoting innovation.

To address the key priority area of Consumer Protection and Law Enforcement in relation to FinTech and RegTech, the recommendations are:

- APEC regulators and policymakers to consider creating streamlined paths to market for innovators, while ensuring consumer protections are in place.
- APEC economies to acknowledge the role and importance of RegTech in supporting the growth and development of a trusted, digital financial ecosystem.

Improving Financial Skills and Literacy

The improvement of financial literacy and skills not only applies to ensuring that the adult population is able to create informed perceptions and make appropriate choices regarding the utilisation of money, but also to improving the decision making that happens in MSMEs and businesses in general. Specifically, the conflation of financial literacy with digital literacy, thanks to the uptake of mobile and internet usage, means new opportunities and avenues to transfer the relevant knowledge[26]. FinTechs and RegTechs have proven to be great facilitators of financial literacy and skills, often able to target specific areas and overcome barriers, and often encouraged in these aspects by regulators[27].

For enterprises that are realising barriers to digital improvement, including legacy systems, lack of necessary skills, and a lack of tools, RegTechs provide a broad range of solutions. These can manifest as tools, software-as-service (SaS), platforms, and technological consulting. RegTechs can enable more competitive prices for important legal and financial advice, patch the gaps in technical skills and tools of businesses, and help enterprises in all sectors and at any stage of maturity maintain and build a culture around compliance[28].

Data Science and Analytics Skills Shortage – A Necessary Part of Modern Financial Decision-Making

In an increasingly digitalised and globalised world, financial decision-making and regulatory compliance for enterprises requires technical skills and tools.[29]

- The 2017 Report "Data Science and Analytics Skills Shortage: Equipping the APEC Workforce with the Competencies Demanded by Employers" by the APEC Human Resource Development Working Group found that the Data Science and Analytics (DSA) talent shortage required up to 400% increase in the workforce in APEC economies to overcome.

- DSA skills are generally required by businesses at earlier and earlier stages of their growth, if not at the outright start.

- Such a skills shortage constrains the establishment of FinTech start-ups, as noted in the 2020 Kalifa Review, as well as a growing number of sectors.

- The Working Group and subsequent Advisory Group identified 10 Recommended APEC Data Science & Analytics (DSA) Competencies. Such definitions can help APEC economies collaborate with academia, industries and each other to help facilitate the flow of people and ideas that are needed to overcome the skills shortage.

Beyond the DSA Skills, skills around data management and governance are also essential for 'defensive' data strategy, which ensures compliance and competent action around security, standardisation, storage, and access[30].

[26] (APEC, APEC Financial Inclusion Capacity Building Package - Synthesis Report APEC #219-SE-01.22., 2019)
[27] (Asian Development Bank Institute, 2019)
[28] (BCG, For Payments Players, COVID-19 Will Accelerate the Pace of Change, 2020)
[29] (APEC Human Resource Development Working Group, 2017)
[30] (DalleMule & Davenport, 2017)

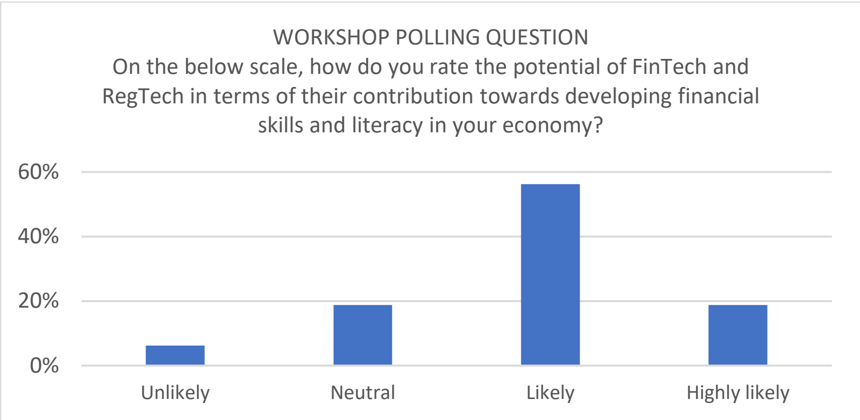
RegTech and Building a Superior Culture of Compliance

The Conduct Risk area, defined any action of a financial services provider or individual that leads to customer detriment, is one of the most commonly serviced areas by number of RegTech solutions[31]. RegTech solutions are able to provide scalable and accessible tools across platforms and languages, possibly adapted to existing systems, to enable the improvement of skills and knowledge. For incumbent institutions and FinTechs, functional purposes such as regulatory reporting, identity management and workforce management can improve the productivity and decision making of individual employees by equipping them with the best tools, ultimately contributing towards a superior culture of compliance that is key to a sustainable enterprise[32]. For FinTechs seeking to scale, RegTech solutions could be key in ensuring data governance standards are met, transactions are being monitored adequately, and getting the most out of areas such as biometrics while covering as much risk as possible. In relation to the notion of 'defensive data strategy', RegTech can directly contribute in terms of providing the best tools and training.

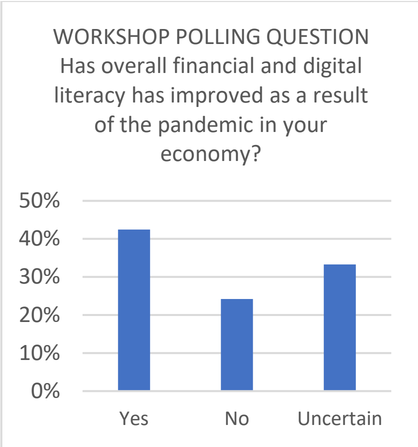
The COVID-19 Pandemic Factor

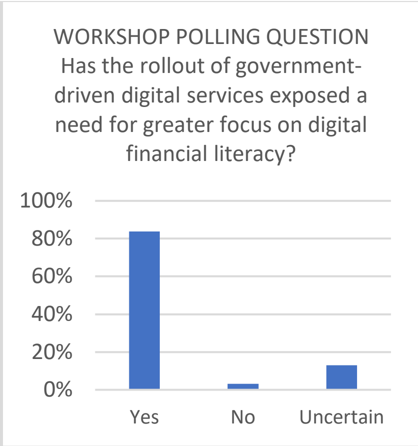
The pandemic has forced individuals and MSME's to turn towards FinTech solutions ranging from micro-credit to alternative investment platforms, driven by increased reliance on digital services[33]. Many businesses have had to adapt to lockdowns by moving to work-from-home setups, often requiring overhauls to their Information Technology systems, and introducing new tools. This environment has accelerated digitalisation of business data, bringing with it risks around data security and data validation[34].

From live polling during the project workshop series, audiences overwhelmingly stated that the uptake of digital services within their economies resulted in an increased need for financial literacy, and most (80%) respondents believed that FinTech and RegTech would have a part to play (with 20% indicating a neutral view). The pandemic's effect on overall digital and financial literacy (related to the uptake of digital services) also appears to be mixed in terms of sentiments, something that makes sense given the continued high uncertainty. This response aligned with the question on government-driven digital services exposing a need to focus more on digital literacy – there was an overwhelming 'yes' to this question.



[31] (The RegTech Association, 2021)
[32] (Deloitte, 2021)
[33] (Cantu & Ulloa, 2020)
[34] (PWC, 2021)





Case Study – Pacific Financial Inclusion Programme

Digital Financial Literacy and AgriTech Training for Papua New Guinea, organised by the APCICT/ESCAP, ITU , PNG University of Technology's Digital Transformation Centre, the Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT/ESCAP), United Nations Capital Development Fund, PNG Digital ICT Cluster, National Information and Communications Technology Authority and West Sepik Provincial Administration, aims to build capacity in government officials, small agri-businesses, NGOs, trainers and lead farmers as future trainers. Objectives include the increased understanding and appreciation of the potential of digital technologies, to overcome gaps and barriers that constrain farmers and MSME's from using tech, and to expand the pool of 'resource persons' who can support ICT capacity development of farmers and MSME's for sustainable growth (APCICT 2021). It has been observed that in an economy such as PNG, agribusiness is a prime area where digital literacy improvement could result in significant development. The digitisation of payments to help farmers save on time on cost, management systems specific to agriculture, analytics, and information services are all possible digital solutions that could empower and financially include individuals, and very much appropriate for PNG (GSM Association, 2019).

Case Study – OJK Digital Financial Literacy

Indonesia is an economy with internet participation rates of over 50%, with clear opportunities that the OJK aims to capture through the Digital Finance Innovation Road Map and Action Plan 2020-2024. The Asian Development Bank indicated in 2019 that Indonesia's 'middle class' would rise from 45 million to 135 million by 2030, with a digital economy being key to ensuring this growth is realised. The Workshop Series saw a presentation from the OJK Digital Finance Innovation Group, which provided insights into how to integrate digital literacy with financial literacy, something that is highly relevant to modern economies that are seeing uptake and distribution of telecommunications infrastructure. Expectations of the digital era, one that is being greatly affected and possibly driven by the COVID-19 pandemic's effect on habits and business models, include remote working, heavier use of smartphones and gadgets, booming phone-based business models, and heavier emphasis on digitalised financial activities.

Initiatives to enhance digital financial literacy include Digital Financial Curriculums built on MoU's with Education Sector stakeholders (Ministry of Education, Culture, Research and Technology, Universities), OJK Infinity for capacity building and Digital Financial Literacy Moduls that deliver financial education through books, e-books, video and interactive games. These contribute towards creating a 'digitally-aware consumer' and a 'cyber-resilient person' that can choose appropriate services (product, scheme, price), have healthy risk awareness, know the FinTech market, and can be better equipped to protect their own data. This move towards consumer empowerment and proliferation of basic skills underpins a recognition that future in-demand talent to sustain development will require technical skills and individuals who can create new jobs while automation displaces others. The OJK has found that 90% of FinTechs feel that there is a lack of suitable talent in Indonesia, with "Tech & Software" being the biggest area of talent shortage, something that has been very common on a global scale. Specific named skills include Programming, ML/AI/Deep Learning, Blockchain, Cybersecurity and soft skills. In such circumstances, collaboration with education sector stakeholders (education authorities, universities) is necessary (OJK, 2020).

Case Study – Philippines Digital Financial Literacy

The Philippines has experienced significant growth in digital payments, driven by more deposit accounts, increasing total loans, more e-money accounts and more banking presence. The Bangko Sentral ng Philipinas (BSP), the Central Bank, is currently pursuing a Digital Payments Transformation Roadmap 2020-2023, with explicit strategic outcomes of achieving key metrics, including making 50% of total retail transaction volume digital, and ensuring 70% of Filipino adults are financially included. Furthermore, the BSP aims to develop innovation-driven use of consumer data for product development, PhilSys-enabled (a national digital-ID project) KYC, and next-gen payment/settlement system. Other digital initiatives include QR Ph Adoption, a project to facilitate interoperability to allow merchants and clients minimise the number of accounts they need to use, and EGov Pay Facility, a project to curb government revenue leaks through efficient collection means and enhanced transparency.

The project workshop series featured a presentation on the BSP's Financial Education Partnership Framework. To empower consumers and create financially literate and healthy individuals, the BSP's Financial Education Partnership Framework aims to identify target audiences and institutional partners to collaborate, capacitate and coordinate, while monitoring and measuring progress. Partnership principles include:

- Ensuring objective compatibility, shared responsibility, leveraged resources
- Adding value to existing initiatives and infrastructures
- Creating sustainable, scalable programs with multiplier effects
- Adhering to clear terms of reference and performance indicators
- Avoiding conflicts of interest and commercialisation

The Fin Ed Partnerships and Potential Reach include:

- Fisherfolk
- Teachers
- Civil Servants
- Armed Forces
- Police
- Firefighters
- MSME's

Conclusions and Reflections

Within the context of FinTech, the clear conflation between financial and digital literacy has pushed several economies and international bodies to incorporate digital delivery into their initiatives. Collaboration between stakeholders from all sectors of the economy can be employed to deliver programmes that address specific historically underserved communities, as showcased in the Philippines and PNG examples. Those examples also reflect the potential of delivering FinTech-driven financial literacy (products and services such as mobile money, digital banking, digital payments) alongside relevant technology such as AgriTech.

To address the key priority area of Improving Financial Literacy and Skills in relation to FinTech and RegTech, the recommendations are:

- APEC to develop a digital services and digital market framework to promote competition in digital markets area, as well as consumer protections.
- APEC to adopt a typology of FinTech and RegTech.
- APEC economies to continue to develop the technical capabilities of their regulators to take full advantage of technologies either developed or adopted.

Ensuring Access to Financial Services

FinTech and RegTech have both impacted how individuals, MSME's and even large companies now interact with financial service providers. FinTechs, specifically digital payments platforms, microcredit providers, P2PL firms, and crowdfunding firms have broken down barriers previously present to mainstream financial institutions (notable examples in Indonesia and Viet Nam) in reaching historically excluded peoples[35][36]. RegTechs, specifically Data Processing/Validation solutions, AML solutions, and KYC solutions, are playing an increasingly relevant role in ensuring regulated firms can maintain compliance. The increased usage of and reliance on consumer credit platforms, new investment platforms, and digital payments, spread across countless different platforms and companies, calls for more efficient processing, clearer communication, and more reliable detection of misconduct. For any enterprise providing digitally-based and data-driven services, including all FinTechs, RegTech solutions can provide competitively priced extra layers of safety when delivering services to consumers (in cases of KYC and data validation solutions, key operations such as application processing can be made more efficient). In a digital era, the goal of 'true' financial access means individuals and enterprises have access to a wide range of financial services that are competitively priced and sufficiently regulated.

FinTechs and Data-Sharing

Institution-backed innovations as well as FinTech start-ups (microcredit providers, P2PL platforms, and equity-based crowdfunding platforms) are key drivers of financial inclusion. Indonesia's OJK has noted that small-scale P2PL platforms have managed to provide financial access to unbanked farmers, overcoming negative perceptions towards governmental and foreign charity aid[37]. In many cases, FinTech solutions are not necessarily high-tech, rather they are able to overcome specific barriers with some help from regulators (i.e. mobile money having KYC requirements loosened up to a capital limit). Mobile penetration has also been a major foundation for financial access for many economies in Sub-Saharan Africa (APEC 2019). In some Latin American economies, banking agents have been incorporated into the increasingly digital financial system (Cantu 2020). These specific examples reflect the ability of innovative enterprise to take advantage of wide variety of existing infrastructure and market, and the importance of regulators and institutions to encourage this.

Regulators have also begun to take note of the effect that these alternative financial services have on the broader population and see them as avenues to link the previously unbanked to the broader financial services market. Encouraging the uptake of mobile money and alternative finance through the scaling down of KYC requirements and promoting data-sharing frameworks allows individuals and businesses to more easily present their data and records to broader markets. To ensure that the core objective of financial stability is maintained, regulatory requirements are generally enforced for accounts past some determined capital limit. Such policies encourage adoption of digital financial services and is a very real pathway to inclusion for the historically excluded in all APEC economies. Examples of this include Australia's Consumer Data Right, and Open Banking/Finance being pursued by a number of global economies. Currently, there is notably a number of principles guiding implementations around the world, with differences around how to integrate entities into the framework, the security and data requirements of participants, and how to best reach a robust level of interoperability.

[35] (CCAF; World Bank ; WEF, 2020)
[36] (KPMG Siddharta Advisory, 2018)
[37] (KPMG Siddharta Advisory, 2018)

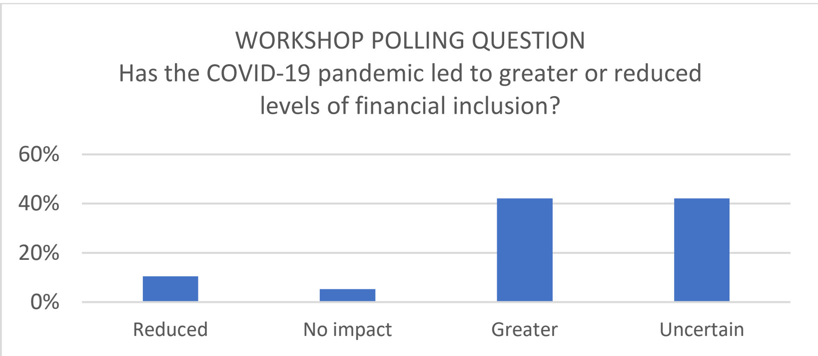
RegTechs as Enablers

RegTech solutions can address key challenges to financial inclusion facing both mainstream and alternative financial services. This includes reducing the time needed for client onboarding, improving detection of anomalies in large datasets, and facilitating digital transformation. This also has a direct application towards facilitating Open Banking, driven by financial institutions, by managing, processing and validating the data and processes used in APIs before data is delivered to firms. RegTechs can enable the knowledge sharing that is needed between regulators, regulated entities, and FinTechs that is needed in a modern financial system, by applying their innovations towards maintaining standards of data governance and data sharing. A key enabler for a secure, digital economy is national digital-ID, something that is becoming a policy focus across APEC [38] [39] [40]. Here, regulator-facing RegTechs could potentially provide the insights and foundations for the necessary digital infrastructure, while enterprise-facing solutions such as KYC would be greatly enabled by it.

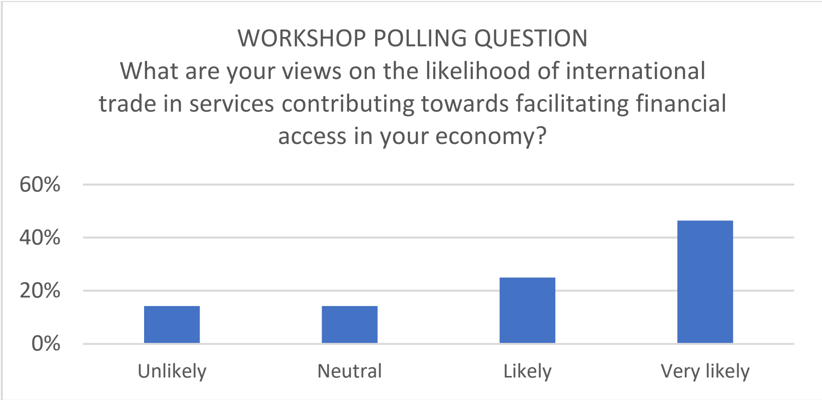
The COVID-19 Pandemic Factor

The pandemic has pushed uptake of FinTech solutions, including digital payments, e-commerce, and alternative financing to new heights across many APEC economies. For many economies, it has further cemented the relationship between digital inclusion and financial inclusion; economies are trending to a state where access to a phone and internet at least means access to some form of digital payment, if not microcredit and alternative investment platforms [41] [42]. The pandemic has also necessitated the roll-out of digital-ID, and there have been clear shortcomings even in the most 'developed' economies. The pandemic experience, although pushing consumers onto digital platforms, has demonstrated that governments must further invest in and build on digital infrastructure to handle rapidly increasing usage.

From live polling during the project workshop series, audiences were generally positive towards the likelihood of international trade in services facilitating financial inclusion. Audiences also indicated that there were cases where the COVID-19 pandemic has led to greater levels of financial inclusion, but there was still a significant amount of uncertainty for some. For those who responded to a question asking about the significant drivers of financial inclusion, the acceleration of digital services backed by government (as a result of the pandemic), the shift of businesses to online platforms, blockchain technology, FinTechs and digital payments all came up as responses.



[38] (Cantu & Ulloa, 2020)
[39] (Autoriti Monetari Brunei Darussalam, 2020)
[40] (Financial Supervisory Commission, 2020)
[41] (Wardhani & Bohmann)
[42] (Financial Supervisory Commission, 2020)



Case Study – Singapore and Data-Sharing

Featured in the Workshop Series, the Monetary Authority of Singapore's principles towards data-sharing have been developed by observing the outcomes of implementations around the world, notably in the United Kingdom. The principles advocated by the Association of Banks in Singapore are based on the PDPA and international benchmarks (The Association of Banks in Singapore, 2019):

- Data sharing must be purpose driven
- Data shared must be proportionate
- Participants must have necessary skill and authority
- Data protection must be aligned with data sensitivity
- Data sharing must have a legal basis

The Monetary Authority of Singapore's Financial Data Exchange (SGFinDex) is a digital infrastructure project developed by MAS and the Smart Nation and Digital Government Group in collaboration with The Association of Banks in Singapore (an industry association), intended to use a national digital-ID (SingPass) and centrally managed online consent system. It is one example of a data-sharing eco-system in the economy. The project empowers individuals with more direct access to their own financial information and is planned to be expanded into insurance and asset holdings. A consent-based system, participating institutions (currently seven major banks) will be able to power their financial planning applications with SGFinDex, and is built on explicitly defined datasets and secure design. Examples of this include datasets that only cover up to four months prior, most recent balances, ensuring data is only retrieved when consent is given, and the incorporation of SingPass (Monetary Authority of Singapore, 2020).

This is a key example of a data-sharing ecosystem that is being developed, with explicit relationship with institution-driven FinTech, and demonstrates the importance of collaboration between relevant authorities and industry.

Case Study – Mexico CNBV and Open Banking/Finance

Mexico's Comisión Nacional Bancaria y de Valores (CNBV) is pursuing an Open Banking/Finance Project built on the exchange of data through API's, creating a central mechanism for exchange of information between FinTech enterprises and technology-driven banks. The project follows from Mexico's FinTech Law, which significantly contained legislation related to the classification of data – Open Data (no personal or confidential information), Aggregated Data (statistical information), Transactional Data. Proposed to be implemented in phases, the first phase came into force in June 2021, and aims to exchange open data information through APIs with particular focus on sharing the location of ATMs. Following phases include the standardisation of transactional data, standardisation of the exchange of transactional information (projected to start in 2022) and further regulation on other types of data, tentatively aggregated data (CNBV, 2021).

Case Study – United States CFPB Key Developments and Outcomes

The United States Consumer Financial Protection Bureau has taken an increasing interest in FinTech, and how its potential relates to financial access. A key task underway is defining the full scope of existing legislation related to consumer access to financial records and usage of these records by third parties. Recent developments include the release of consumer protection principles for consumer-authorised financial data sharing and aggregation, a symposium on consumer-authorised data access to stimulate dialogue across key stakeholders to guide policymaking, and an executive order encouraging the CFPB to commence or continue rulemaking under Section 1033 of the Dodd-Frank Act. This latest development is in conjunction with direction to other authorities, including the Federal Trade Commission and Treasury to report on and address data collection issues. Emphasising that the principles do not establish binding requirements or obligations, the CFPB recognises that consumer data sits at the centre of future financial systems, as a means to empower individuals as well as being key to the creation of new services and innovations. The CFPB was featured in the project workshop series, where notable challenges faced in data-sharing were reflected upon. These included disputes between banks and FinTech disruptors over limitations of API's (which potentially did not present access to the necessary data), issues around accountability when information is shared with a third party, disputes between banks and third-party aggregators, and cases where access to data was cut off without consent. This case showcases the complexities of data-sharing, a vital part of a digital economy to promote innovation and creation of products, and the importance of authorities to recognise that such disputes and challenges are likely to manifest when pursuing digital transformation (The White House, 2021).

Conclusions and Reflections

Within the context of creating 'true' access to financial services, FinTechs and RegTechs have been a driving force behind transformation across the whole scope of financial services. At the core of this is the explosion of data the global economy has seen, allowing innovators to tie financial access to digital access, which is in turn increasingly tied to the daily activities of individuals and enterprises. The case studies presented here showcase the important role that policymakers and regulators have in guiding or overseeing the healthy development of data-sharing, and presents learning opportunities to develop capabilities to settle the likely disputes and challenges that will come with a new system. Going forward, as economies seek to issue their own guiding principles and regulations, knowledge sharing will be relevant for a wide range of stakeholders, as commonalities in challenges and circumstance will be present.

To address the key priority area of Ensuring Access to Financial Services in relation to FinTech and RegTech, the recommendations are:

- APEC economies to provide further funding for innovation support.
- APEC economies to consider the formation of a 'fintech and regtech community of interest' group for regulators and policy makers that have a desire to share information and learn from each other.
- Building on the APEC e-payments readiness index, economies to consider the development of a FinTech and RegTech readiness index.

The FinTech and RegTech Readiness Index

With consideration of the incredibly diverse experiences and circumstances across and even within APEC economies, a FinTech and RegTech Readiness Index could be valuable to all economies. Such an index would measure the readiness of a given economy for FinTech and RegTech solutions (ease of doing business for firms, ensuring that the positive impacts are maximised, maintaining financial stability).

For domestic policymakers, it could measure progress and identify key opportunities and challenges. For external observers, it can provide further information for more targeted and precise trade in services and investment. The following draws on the research conducted during this report, the project workshop series, and publications including the European Commission's Digital Economy and Society Index, APEC Services Competitiveness Roadmap, G20 High-Level Policy Guidelines on Digital Financial Inclusion for Youth, Women and SMEs and the OECD Measuring the Digital Transformation.

The report makes the following suggestions as key measurement areas when constructing a FinTech and RegTech Readiness Index:

- Current Financial and Digital Inclusion
- Skilled Labour
- Existing Financial Services – Methods of delivery (i.e. banking agents, mobile money, digital payments, etc.)
- Technological Infrastructure – Types of technology used by consumers, Coverage, Cyber-Security
- Legal Frameworks – Data governance, Classification and coverage for FinTechs and RegTechs
- Regulatory Capabilities – Technical capabilities, Participation in multilateralism

Possible targets for individual economies could include:

- A percentage of population financially included
- A percentage of transactions being made digitally
- A percentage of FinTech and RegTech firms affirming that regulatory processes and guidelines are clear
- Value from foreign investment or the trade in services

Appendix

The research identified and examined at least one innovation-facing agency or regulator in each of the 21 APEC Economies:

Economy	Organisation(s)	Examples
Australia	Australian Securities and Investments Commission (ASIC) Productivity Commission Australian Prudential Regulation Authority (APRA) Consumer Data Right	Productivity Commission Report on RegTech (2020) ASIC Innovation Hub APRA Submission to the Senate Select Committee on Financial Technology and Regulatory Technology (2020)
Brunei Darussalam	Autoriti Monetari Brunei Darussalam	The State of FinTech in Brunei Darussalam (2020), with initiatives in digital-ID (enabling KYC), data accessibility, regulatory sandboxes, export of services.
Canada	Bank of Canada Competition Bureau Canada	Regulatory highlights following the Competition Bureau's Market Study (2018)
Chile	Financial Markets Commission (CMF)	FinTech Law (APEC 2020, Cantu 2020)
Hong Kong, China	Hong Kong Monetary Authority (HKMA)	High Level Principles on AI Transforming Risk Management and Compliance: Harnessing the Power of Regtech
Indonesia	OJK Bank Indonesia Bank Mandiri	Regulatory Sandbox Mandiri Capital (Established by Bank Mandiri in early 2016 as FinTech Venture Fund) (ADB 2019) OJK Digital Finance Innovation Roadmap OJK Adoption of RegTech and SupTech THE INDONESIAN FINANCIAL SERVICES SECTOR MASTER PLAN 2021-2025 to Recover the National Economy and Enhance the Financial Services Sector Resiliency and Competitiveness (OJK 2020b)
Japan	Cabinet Secretariat	Universal Regulatory Sandbox (APEC 2020)
Korea	Financial Services Commission	Innovative Financial Services (Sandbox)
Malaysia	Central Bank of Malaysia (BNM)	FinTech Regulatory Sandbox (APEC 2020)

Mexico	Comisión Nacional Bancaria y de Valores	Open Banking/Finance Mexico FinTech Law
New Zealand	New Zealand Treasury Reserve Bank of New Zealand	Future of Cash — Te Moni Anamata (Financial inclusion through e-payments)
Papua New Guinea	National Information Communications Technology Authority and West Sepik Provincial Administration	Digital Financial Literacy and AgriTech Training
People's Republic of China	China Banking and Insurance Regulatory Commission (CBIRC) People's Bank of China (PBOC)	FinTech Sandbox Trials
Peru	Central Reserve Bank of Peru	Development of laws, regulation, minimum standards and guidelines for FinTech credit p2pl, electronic deposits, equity crowdfunding, loan-based crowdfunding are being developed or under consideration. E-payments, mobile wallets have seen laws implemented alongside public statements (Cantu 2020).
Russia	Bank of Russia	Development of regulation in the FinTech sector (crowdfunding, marketplace, digital financial assets, etc.), creation of environment for innovation development (the Bank of Russia's regulatory sandbox (APEC 2020), experimental legal regimes), creation of digital financial infrastructure (the Unified Biometric System, the Faster Payments Platform, Digital Profile, etc.), Open API, RegTech and SupTech initiatives.
Singapore	Monetary Authority of Singapore (MAS) Infocomm Media Development Authority of Singapore (IMDA) Smart Nation and Digital Government Group (SNDGG)	API-Exchange (Jointly formed by MAS, World Bank Group's International Finance Corporation and the ASEAN Bankers Association) SGFinDex (formed by MAS, SNDGG, Association of Banks in Singapore) SGTraDex (founders from the IMDA and industry)
Chinese Taipei	Financial Supervisory Commission	FinTech Development Roadmap with Policy principles based on the Key Aspects around Financial

		Technologies and Regulation Policy Report by CEMLA in 2019 — Functional approach — Proportionality — Technological neutrality and flexibility — Level playing field and competition — Cybersecurity and data protection — Coordination among regulators — International cooperation Enabling innovation mechanisms
Thailand	Bank of Thailand	Sandbox and reflections on the challenges (APEC 2020)
The Philippines	Bangko Sentral ng Pilipinas	Digital Financial Literacy
The United States	Consumer Financial Protection Bureau (CFPB) The Office of the Comptroller of the Currency (OCC)	Financial Technology and Sandbox 2015-2019 Legislation (compiled by the National Conference of State Legislatures (NCSL))
Viet Nam	National Agency for Technology Entrepreneurship and Commercialisation Development (NATEC) Ministry of Science and Technology (MOST)	Project 844 - National startup portal to link policy-making agencies, ministries, localities, startup incubators, investors and startup businesses

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