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API "APPLICATION PROGRAMMING INTERFACE" BANKING: A PROMISING FUTURE FOR FINANCIAL INSTITUTIONS (INTERNATIONAL EXPERIENCE)

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Abstract:

The Banks can no longer ignore the necessary digital transformation, If they also want to be economically successful in the future, they need to update their systems and processes as quickly as possible. The API concept originated in the 1980s in the software development community. Open banking through an application programming interface (API) is an integral part of the future of banking. Some in the industry will appreciate this fact.

An application programming interface (API) is a set of functions that allow developers to access the features and data of the software. An API extends functionalities and facilitates integration with third-party software. API banking is becoming a critical step in helping customers and business partners innovate for new technologies. The (API) has become increasingly attractive in financial markets around the world. Countries like the US, UK, Canada, Singapore, and Japan have generally adopted this technology.

Keywords : API "Application Programming Interface" ; Banks; Open banking; API Banking; International Experience.

1- Introduction

The customer today has a different expectation of his financial services provider than a few years ago. Most of the digital natives and increasingly bank customers from previous generations have long seen no bank from within. Since even loan applications or more complex project financing can be handled completely online, the customer's personal commitment to a local institute or employee hardly matters any more. (Der bank blog, 2019)

24 hours, 7 days a week availability of services, omnichannel customer journeys, and easy usability via Smartphone are today's selling points. Many traditional financial institutions, especially in the digital sector, are still in a poor position and are now standing with their backs to the wall, because profits are falling and growth is stagnating. (Der bank blog, 2019)

In today's economy, banks seek to adapt a more customer-centric business model by delivering new services with greater transparency. Traditional banks understand that they must equip themselves with digital capabilities to avoid being disintermediated by new players in the industry. (United states: Oracle defines path to open API banking with an unparalleled array

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of solutions - with regulation and competition challenging banks in unprecedented ways, oracle offers one of the most comprehensive open API banking solutions. 2017)

To bridge the gap between legacy systems and channels, banks need to create an additional layer that integrates legacy systems and also supports the deployment of groundbreaking technologies such as cloud, AI "Artificial intelligence", or blockchain. This so-called digital agility layer is filled with small-scale, domain-specific applications that communicate with each other via programming interfaces (APIs). This creates an API infrastructure that, on the one hand, links the information of all legacy systems and, on the other hand, makes it available to third-party channels and external applications. (Der bank blog, 2019)

Banks can no longer close their eyes to the necessary digital transformation. If they also want to be economically successful in the future, they need to modernize their systems and processes as quickly as possible. Therefore, it is worth making the transition to the platform bank, as it enables the transition to an API ecosystem that allows the use of current technologies without replacing legacy systems. This transformation is accelerated by tools that help people in different roles to jointly develop, implement, and test solutions. Business logic can be modularly modeled, bundled, reused and made available to all channels. (Der bank blog, 2019)

Unisys Corporation Vice President and Global Head of Financial Services Maria L. Allen say : (Success with open banking depends on navigating challenges of open API framework to deliver secure customer experience., 2019, Sep 20)

> "*The potential is clear - but banks need to act now - the digital services and offerings made available by open banking can help financial institutions deliver a better customer experience, build trust and shape the banking model of the future. In effect, the aim of financial institutions must be to serve as a "one-stop-shop" for all their customers' payment and finance needs in order to gain a competitive edge in the market*"

Open banking via application programming interface (API) is an integral component of the future of banking. Some in the industry will welcome that fact. Others will not. But in order to prepare, we must accept that it is a fact. In the brave new world of API, customers will be able to track their payments in much the same way they might track a parcel being delivered by the likes of courier services, Customers will be able to see where a payment is at any single point in its life cycle. They will be able to see who is handling it, who is delaying it and, arguably most importantly, just who is adding to costs. (Euromoney, 2019)

International payments that in living memory often took days to reach the beneficiary via the banking system will be made instantly, as they already are through technology-enabled specialist brokers. Putting this firmly into a broader international context, API will enable the banking world to resume growth after 10 years of shrinkage caused by the global financial crisis that started in 2008. Banks will increasingly team up with strong banks in countries and jurisdictions where they do not have a direct presence, enabling them to deliver more of the services that customers need, quicker, better and more efficiently (Euromoney, 2019). Through this article we will try try to provide an answer answer to the main question: What is the reality of APIs technology in the banking world?

2-“API” Application Programming Interface : beyond the concept

The successful design and high performance of APIs are becoming key points for a variety of applications. The performance of APIs can increase when criteria such as programming methods and programming languages and/or environments are selected appropriately. The applications are often built on application programming interfaces (APIs) based on web technologies such as HTTP (Hyper Text Transfer Protocol), REST (Representational State Transfer), SOAP (Simple Object Access Protocol) and JSON (JavaScript Object Notation), which can be used for other operations. This feature enables the development of increasingly complex third-party applications, which repeatedly use existing content and services. These applications, which convert content from various applications into an integrated experience can be created by developers who are not directly associated with the original developers of reuse services (Kemer, E., & Samli, R. 2019)

An application programming interface (API) is a set of functions that allow developers to access the features and data of the software. An API extends functionalities and facilitates integration with third-party software. Well-designed and well-documented APIs help to ensure developers can extend the software coherently and consistently.An advantage of using an API is the connection to the core of the software without the need to understand the underlying structure. It also reduces the need to rewrite code for common functions and thereby improves productivity as developers can devote more time and effort to extending software functionalities for specific purposes. (Chan, Schilizzi, Iftekhar, & Da Silva Rosa, 2019)

Application Program Interface gains attraction in the financial markets across the world. Countries like USA, UK, Canada, Singapore and Japan have already adopted the technology at large. APIs are benefiting fintechs in many ways especially with more integrations. Fintechs can integrate existing assets from banks and financial institutions to build on top of existing infrastructure to increase the pace of the process. If companies build your own API structure internally, they will be able to deliver products and services much more faster and efficiently on multiple channels like mobile phones, IoT, applications etc and at the same time open it for other partners. Hence, APIs can integrate others to go faster by building on existing infrastructures, they can be built internally to operate on multiple channels and it can enable third parties to build on top of existing infrastructure. (Sharma, B. 2018) Currently, APIs are the alternative to FinTech companies that, for some years now, have displaced banks as financial institutions. The digital development provided by APIs allows growing beyond a structure, which is of great help when you want to reach new customers and gain the loyalty of those already established. (Chakray, 2019)

An application programming interface (API) is a programming style that exposes the inputs, outputs, operations and data types of a piece of code in a standard documented way. In the context of websites, an API is a definition of the generic format of URLs that will return data from a site, as well as information about the structure of the data returned by each URL. This makes it easy for other software developers to interact with a sites API, as they know how to format requests for information and how to process what is returned. (Chalk, S. J. 2015)

The concept of the API originated in the eighties in the software development community. It was used then, and is still used, as a means of exchanging data across organizational boundaries. With the advent of the Web, and particularly since the turn of the millennium, it has also been used to give public access to collection resources, whether for

analysis or to allow the development of interface alternatives. Some popular APIs of this kind are available through Flickr, Twitter, and Google Maps. In terms of technology, the most common way of creating a Web-based API is using Representational State Transfer (REST), where the underlying resources are accessed through a URL that returns XML or JSON rather than HTML. Discussions of APIs tend to focus on methods for measuring the usability and quality of both the software and the documentation. (Ruecker, S., Hodges, P., Lokhadwala, N., Szu-Ying Ching, Windsor, J., Hudson, A., & Rodriquez, O. 2015)

APIs allow technologies to exchange with each other, and the data to flow in real time. They promote innovation as other technologies have allowed in the past, but their impact seems to be predominant today. To the point that banking groups prefer to adopt them rather than being confronted with Data Scraping; indeed, APIs control access to data by allowing access to only certain fields in databases. They are perceived as a lesser evil in the face of wild Data Scraping. But again, no rearguard action: the likely evolution is that it is the consumer who will decide to give access to some of its data and that this movement is irreversible. (Girard, R. 2019)

3-Towards an Open Banking

Banks will soon realize they have a key role to play if they don't want to miss the future opportunities. In the USA players like Paypal or Stripe have been demonstrating their capabilities to deploy and integrate their services very easily, some others like Yodlee or Plaid have been facilitating the access to banking data an leverage them for different services like account opening, real time transfer or income verification .(Soulé, M., 2016)

Open banking is a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs). The Open Banking Standard defines how financial data should be created, shared and accessed. By relying on networks instead of centralization, open banking helps financial services customers to securely share their financial data with other financial institutions. Benefits include more easily transferring funds and comparing product offerings to create a banking experience that best meets each user's needs in the most cost effective way. Open banking is also known as "open bank data" (Jake Frankenfield, 2019)

The role of Open Banking is to: (API evangelist: What is open banking in the UK?, 2018)

- Design the specifications for the Application Programming Interfaces (APIs) that banks and building societies use to securely provide Open Banking
- Support regulated third party providers and banks and building societies to use the Open Banking standards
- Create security and messaging standards
- Manage the Open Banking Directory which allows regulated participants like banks, building societies and third party providers to enroll in Open Banking

The Open Banking Implementation Entity was created by the UK's Competition and Markets Authority to create software standards and industry guidelines that drive competition and innovation in UK retail banking. In 2016, The Competition and Markets Authority (CMA) published a report on the UK's retail banking market which stated that older, larger banks do

not have to compete hard enough for customers' business, and smaller and newer banks were finding it difficult to grow and access the UK banking market. To solve this problem, they proposed a number of remedies including Open Banking, which defines API standards that are intended to help level that playing field. (API evangelist: What is open banking in the UK?, 2018)

4- Banking and it benefited from APIs

What is at stake for financial services giants is not just the digital transformation wave but an imminent complete reboot enabled by technologies (cloud,mobile, Open platforms and API, ...). It will enable financial institutions to better serve their clients and also to better connect financial services to the rest of the world, something especially true for small business and commercial banking activities. Fintech startups are at the vanguard of this shift and are picturing the future of the industry .(Soulé, M., 2016)

The banks earlier had systems that were never meant to be open but with new regulations and market constraints, all of it has changed. Banks have a lot of assets like licenses, infrastructure and data but they cannot address to the main markets. They can however approach the niche markets within a specific area probably known as wealth management. There are huge corporates present in a market worth around $1 Billion. Hence, for all the other million dollar markets that the banks cannot address to directly if opened to smaller actors like startups or fintechs can create the banking infrastructure for other markets. The banks can create a huge ecosystem around their organizations identifying new business models. Banks and financial institutions are said to go a long way and are expected to revolutionize and provide services digitally with the help of APIs. (Sharma, B. 2018)

Axway, a market leader in governing the flow of data, and APIdays, a global conference focused on organizations use of APIs for automating IT and business, today released the findings of a study that highlights the API-centric technologies leading banks and financial services organizations are using to adapt to todays digital economy. Based on interviews with business and IT executives, the study titled Banking APIs: The State of the Market, found that 88 percent of banks surveyed believe internal APIs are essential for regulation and compliance, backoffice systems management, and for leveraging big data. (United states : Axway and APIdays report that 88 percent of banking and FinTech executives find API management essential to excel in industry. 2015)

After the appearance of Open Banking, the new trend of the financial system is only one: to automate its services thanks to the implementation of APIs in banks. While this has generated many unknowns, it is indisputable that this is the only solution to survive in a digital environment, in which they are increasingly displaced. One by one, banks have discovered their benefits and the possibility of combining them with Open Banking. After all, progress is unstoppable. An example of this is that, in Europe, from 2018, banks are obliged by law to provide account information through the use of APIs. (Chakray, 2019)

An API is an interface that allows to synchronize, link and connect the database of service with any application; that is to say, they serve as a kind of bridge that guarantees the traffic of data in a safe way and without involving third parties. Their implementation in the banking system is basically the same: they link a bank’s database (its customers’ information) with different applications or programs, thus forming a network encouraging the promotion of

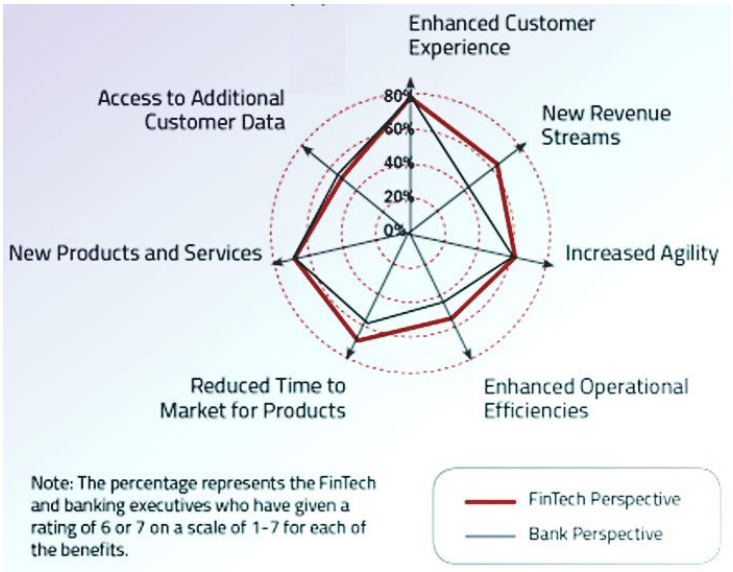
services, payments, and products appropriate to each person. This aggregation of data from a bank works well for private clients, businesses and, above all, owners of financial institutions.Its benefits range from cost reduction, optimization of services, reduction of time spent on transactions, increased revenue and facilitation in all the needs of those who accept it. (Chakray, 2019)

Digital technologies such as API Management are transforming every aspect of the financial services industry. Application Program Interfaces (APIs) are linkages that offer a set of tools and protocols to describe how one software program communicates with another. The definition has broadened recently as new channels, processes and customer expectations emerge to refer to not just the specifics of the API itself, but to networked collaborative services. This is forcing financial services organizations to rethink established business models. According to the survey, financial services organizations are increasingly seeing APIs play an integral role in enabling digital business by providing innovative, customer-centric products and services. (United states : Axway and APIdays report that 88 percent of banking and FinTech executives find API management essential to excel in industry. 2015)

5-Open API technology in European and world banking sector in 2019

Open API technology is literally an application programming interface technology, and its importance and relationship with open banking is not farfetched. Open banking is a system or strategy employed by banks using API technology to provide customers with the privilege to have a network of financial institution data. This privilege enables customers (third-party developers) to develop application and services around the financial institutions using the technology. Financial transparency is upheld higher by account holders because of this technology.

Fig.1 benefits of implementing bank APIs

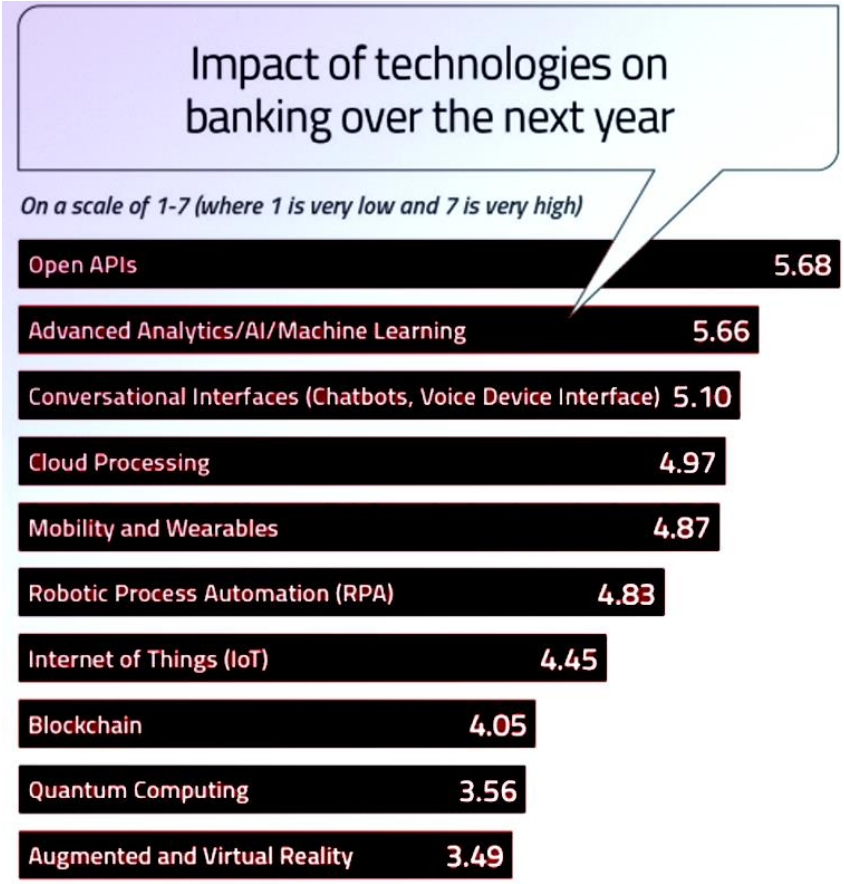


Source: (FSBT.TECH “Open API Platform”, 2019)

The acceptance and use of open API technology in European countries and the world at large varies, and this is as a result of the earlier traditional banking method adopted by the

country. The U.S. is in the early stages of having an ecosystem built around open banking, while Europe has had PSD2 [the revised Payment Services Directive]. There is open banking in the U.K, and European banks have a head start on the U.S. in terms of getting the frameworks and the technology in place. There is now so much more competition to be customers’ primary financial institution. If financial institutions can organize themselves around customer outcomes, they will be able to retain that primary financial institution status. However, if they continue to cross-sell a bunch of products, then it’s going to be downhill for them. To avoid this downhill, they must adopt the more open API technology banking. (FSBT.TECH “Open API Platform”, 2019)

Fig.2 Impact of technologies on banking over the next year (2020)



Source: (FSBT.TECH “Open API Platform”, 2019)

The API can also look at customers’ transaction data to identify the best financial products and services for them, Through the use of networked accounts, open banking could also help lenders get a more accurate picture of a consumer’s financial situation and risk level in order to offer more appropriate loan terms. It could also help consumers get a more accurate picture of their own finances before taking on debt. Lastly, open banking can help small businesses save time through online accounting, and help fraud detection companies to be more effective in monitoring customers’ accounts and identify problems more expeditiously. (FSBT.TECH “Open API Platform”, 2019)

6- International experiences in field of API banking

6-1. Hong Kong Monetary Authority (HKMA)

The Hong Kong Monetary Authority (HKMA) introduced the Framework in July 2018, which aims to facilitate the development and wider adoption of APIs by the banking sector. The Framework adopts a four-phase1 implementation approach. Since the launch of Phase I in January 2019 as scheduled, the 20 participating retail banks have made available more than 500 Open APIs, offering access to information of a wide range of banking products and services. Websites and mobile apps are increasingly making use of these Open APIs in the provision of various services such as foreign exchange rate information. (MENA Report, 2019).

The 20 participating retail banks will further launch Phase II Open APIs by end of October 2019 as scheduled to process applications for banking products and services. However, as in Phase I, it may take time for new applications using these Open APIs to gradually emerge in the market, depending on the complexity of the API design of individual banks.Since Phase III and IV Open APIs involve access to customer data and processing of transactions, their implementations are more complex and require stronger control measures. Having discussed with the relevant stakeholders, and taken into account the experience in the implementation of Phase I and II as well as relevant international practices, the HKMA considers it desirable to define a more detailed set of standards for Phase III and IV Open APIs to facilitate secure and efficient implementation across the industry before setting out a concrete implementation timetable. By standardising data definitions and transfer processes, accurate data aggregation can be achieved and customer trust in using the related services can be enhanced. In this connection, the HKMA will work with the industry on details of API standardisation in the next few months with a view to publishing a set of technical standards in 2020. Meanwhile, some banks and third-party service providers are already collaborating on a bilateral basis for early adoption of Open APIs under Phase III and IV. (Hong kong : Open API framework for the banking sector: One year on. 2019)

6-2. Klarna Group

Klarna, one of Europe's leading payment providers and the global market leader in payment initiation services, announces the launch of its own Open Banking Platform. This platform will enable access to more than 4,300 European banks through a single Access to Account (XS2A) API in line with Payment Services Directive (PSD2). Klarna's XS2A API is the most established and proven solution that has been developed at scale across markets for almost 15 years through the Klarna Group company Sofort. This platform provides a fully proven and mature infrastructure, superior market coverage and connectivity, with access to 99% of online banking consumers currently across 14 European markets. By opening up its own advanced technology and capabilities, Klarna is simplifying and democratising access to APIs securely. Both established and newer banks and fintechs as well as other licensed businesses, will be able to build smart and personalised offerings that meet the evolving needs of consumers across Europe. Klarna has been one of the leading proponents of the PSD2 legislation and believes high-quality APIs will drive innovation and competition but most importantly will empower consumers across Europe with increased choice, control and clarity on their finances, and ability to access better products. (Klarna launches open banking platform to access 4,300 european banks through one API. 2019)

European payment provider Klarna has announced the launch of its Open Banking Platform that enables access to more than 4,300 European banks through a single API, the company said.This platform provides a fully proven and mature infrastructure, superior market

coverage and connectivity, with access to 99% of online banking consumers currently across 14 European markets. By opening up its own advanced technology and capabilities, Klarna is simplifying and democratising access to APIs securely. With Klarna's platform, other fintechs, banks and businesses, will be able to develop offerings to enable consumers to have a complete overview of their financial lives and help people understand and engage with their finances in a more meaningful way. (M2 Banking & Credit News, 2019)

6-3. Ninth Wave Company

Ninth Wave, a leading provider of software products for enterprise customers and Fintech enablers, has announced it is the first company to support the entire Financial Data Exchange (FDX) API specification within its product, the Ninth Wave Platform. Ninth Waves products enable open banking by leveraging best-in-class proven software, best practices, and industry standard APIs to enhance existing digital offerings as well as bring new offerings to market. The Ninth Wave Platform empowers Financial Institutions by giving them fine-grained data delivery and control over Fintech applications, aggregators, third parties, and customer account data. The Platform includes support for Consumer & Commercial Banking, Wealth Management, Tax Services, and the Open Finance API. (Ninth wave first to enable open banking with full support for financial data exchange “FDX” API. 2019)

6-4. FIS Company

FIS “Fidelity National Information Services” (a global leader in financial services technology, with a focus on retail and institutional banking, payments, asset and wealth management, risk and compliance, and outsourcing solutions. Through the depth and breadth of our solutions portfolio, global capabilities and domain expertise, FIS serves more than 20,000 clients in over 130 countries) announced that its Code Connect application programming interface (API) gateway has been named "Most Advanced API Strategy" in a new report by leading industry research and advisory firm Aite Group. (FIS code connect named “Most advanced API strategy” in new aite group core banking report. 2019)

6-5. France

For many speakers of the Paris Fintech Forum (the 2019 edition which was marked by the emergence of the concept of Open Banking, which reflects a deep movement with multiple consequences on banking models.), The PSD2 is the only origin of Open Banking in France and Europe. This is only partially the case. Indeed, although this European directive on payment services requires the opening of access to internal data on the cash activity of banks, but PSD2 was only one of the leaders of a deeper movement. The French State has understood this fundamental movement. The administration is currently testing the opening of some data to companies and partner platforms that show white paws. The site (api.gouv.fr) presents this approach. Access to these data, after authorization granted by the consumer (in this case the citizen), makes it possible to obtain information at the source by the partner company. (Girard, R. 2019)

6-6. Emirates NBD

Emirates NBD (ENBD), a leading bank in the region has enabled open banking collaboration with the launch of its API (Application Programming Interface) Sandbox. This makes Emirates NBD the first UAE bank to introduce such a platform in the region, as part of the Dh1 billion ($272 million) investment it has committed to its digital transformation. A front-runner in banking innovation, the API Sandbox marks a critical milestone in Emirates NBD’s

journey to transform the way it collaborates within its digital landscape. The open banking sandbox environment will be a game-changer and will enable, simplify, and accelerate innovation for the bank's employees, and partnerships with FinTechs, start-ups, creative developers, academia and SMEs, ensuring faster speed-to-market on digital banking products and services,The API Sandbox makes Emirates NBD more accessible to developers with API technology boosting the bank's role in accelerating the region's innovation ecosystem as well as creating increased for value for its customers and partners, while contributing to the economic growth of the region. (ENBD enables open banking with API sandbox. 2018)

6-7. Virtusa Corporation

Virtusa Corporation, a global provider of digital strategy, digital engineering, and IT outsourcing services, that accelerates business outcomes for its clients, announced its collaboration with the Banking Industry Architecture Network (BIAN) to launch BIAN's API Exchange. BIAN's API Exchange, developed collaboratively by a group including Virtusa, BIAN member banks, and IT businesses, is an open, flexible, enterprise-grade computing platform built on the Microsoft Azure cloud infrastructure. The exchange currently features over 65 standardized API definitions that allow banks to reduce the complexity of building and delivering open banking capabilities by providing clear guidance on how to implement innovative and intuitive digital services across both back-end and customer-facing functions. Further, the API Exchange will allow banks to modernize their critical legacy infrastructure and adopt standardized frameworks to facilitate more open and easy collaboration with FinTechs and RegTechs. BIAN's API Exchange also consists of community-building collaboration tools such as wikis, forums, and ideation billboards where API and microservice creators and consumers can collaborate dynamically to create and use BIAN-based API implementations. (Virtusa, BIAN collaborate to develop API exchange to support the open banking movement. 2018)

6-8. Mizuho Bank

Japan`s Mizuho Bank is implementing API interfaces to third party personal financial management apps through a collaboration with IBM. The bank will run IBM Japan`s FinTech API interface, as well as IBM API Connect on the IBM Cloud and IBM Data PowerGateway.(Mizuho prepares for API banking. 2017)

"API banking becomes a crucial step that helps drive open innovations by new technologies for customers, business partners, and Mizuho Bank," says Masahiko Kato, sSenior technical officer, Mizuho Bank. "Instead of competition, Mizuho continues to collaborate with business partners to create and provide innovative, secured services for customers." He says IBM`s tech suite will enable the bank to create, run, and manage APIs for both on-premise and cloud environments. IBM Japan says it will also collaborate directly with Mizuho Bank to offer advanced IoT Payment services to its customers all within the IBM Cloud.In February 2017, Mizuho kicked off research and development on the creation of a platform for secure payments using IoT devices such as smart home kits, connected cars, and wearables. (Mizuho prepares for API banking. 2017)

6-9. Idaho Central Credit Union

ICCU (Idaho Central Credit Union) has added CardNav by Co-op to its mobile banking application, giving members a way to control credit and debit card use and protect themselves from fraud. the app lets members specify when, where and how their cards are used. It also

offers near real-time alerts and push notifications, and allows the user to turn cards off or on with a single touch. Originally released as a stand-alone app, CardNav is now available as an API, which allows credit unions to integrate its functionality into their own mobile apps. CardNav offers seamless backend integration for simple management and connectivity to existing programs, the release said. Credit unions have the option to deploy only those parts of the suite that meet their members' needs.(ATMmarketplace.com: Idaho CU expands mobile banking functionality with co-op API, 2016)

7- Conclusion

Open Banking also known as "open bank data" designs the specifications for the Application Programming Interfaces (APIs) that banks and building societies use to securely provide Open Banking, and supports regulated third party providers and banks and building societies to use the Open Banking standards, add to that creates security and messaging standards. Benefits of Open banking include more easily transferring funds and comparing product offerings to create a banking experience that best meets each user’s needs in the most cost effective way.

The acceptance and use of open API technology differs in European countries and around the world, and this is the result of the country's traditional banking methodology. There is open banking in the U.K, and European banks have a head start on the U.S. in terms of getting the frameworks and the technology in place.

The **HKMA** will work with the industry on details of API standardisation in the next few months with a view to publishing a set of technical standards in 2020. Meanwhile, some banks and third-party service providers are already collaborating on a bilateral basis for early adoption of Open APIs. **Klarna** is simplifying and democratising access to APIs securely. With Klarna's platform, other fintechs, banks and businesses, will be able to develop offerings to enable consumers to have a complete overview of their financial lives and help people understand and engage with their finances in a more meaningful way. **FIS** announced that its Code Connect application programming interface (API) gateway has been named "Most Advanced API Strategy".

France is currently testing the opening of some data to companies and partner platforms that show white paws. The site (api.gouv.fr) presents this approach. Access to these data, after authorization granted by the consumer (in this case the citizen), makes it possible to obtain information at the source by the partner company. The API Sandbox makes **Emirates NBD** more accessible to developers with API technology boosting the bank’s role in accelerating the region’s innovation ecosystem as well as creating increased for value for its customers and partners, while contributing to the economic growth of the region.

The API Exchange launched by **Virtusa**, will allow banks to modernize their critical legacy infrastructure and adopt standardized frameworks to facilitate more open and easy collaboration with FinTechs and RegTechs. BIAN's API Exchange also consists of community-building collaboration tools such as wikis, forums, and ideation billboards where API and microservice creators and consumers can collaborate dynamically to create and use BIAN-based API implementations. **Mizuho Bank** is implementing API interfaces to third party personal financial management apps through a collaboration with IBM. In February 2017,

Mizuho kicked off research and development on the creation of a platform for secure payments using IoT devices such as smart home kits, connected cars, and wearables. CardNav That was released by **ICCU** offers seamless backend integration for simple management and connectivity to existing programs, Credit unions have the option to deploy only those parts of the suite that meet their members' needs

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