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US Fintechs and Cybersecurity

Understanding the cybersecurity challenges faced by the world's largest fintech market and how to solve them

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Summary

Overview

The US fintech sector is booming. Considered the world's largest fintech market, it continues to draw increasing levels of investment, with the COVID-19 pandemic providing a particular boon for the sector in driving digital channel uptake. The market is now starting to mature, with a number of companies becoming listed entities or finding buyers in the last year.

Of course, the US market is not one homogenous block. There are a number of key fintech hubs, from the world's number one fintech hub in San Francisco to the flourishing fintech scene in Boston, and each of these has its own characteristics. From a regulatory perspective, there are also notable intra-US differences. In the absence of an overarching fintech regulatory framework, fintechs have to contend with a variety of regulations, both at a federal and state level.

Cybersecurity and data privacy are key focus areas of both federal and state regulators, not least because financial services companies are naturally appealing targets to cybercriminals. Yet, while fintechs consider security important, securing mobile apps can often fall through the cracks. The focus of most fintechs is on creating friction-free user experiences and often only standard mobile security protocols are used. This puts the organization at risk of data breaches, cyberattacks, and the resulting reputational fallout that this brings. However, in employing a number of specific techniques, fintechs can significantly improve their mobile app security.

Key messages

- The largest fintech market in the world, US private fintechs attracted $17.9bn in funding in 2020, while 2021 looks set to surpass 2020 investment levels.
- The market is maturing with a number of private players exiting the market through acquisition or going public. The high-profile IPO of trading app, Robinhood, in July 2021 is a case in point.
- The US fintech market is dispersed across a number of hubs, with San Francisco and New York being the largest, but 20 other US cities feature in Findexable's Global Top 100 Fintech Cities.
- US fintechs must contend with a mix of federal and differing state regulations. There is no overarching fintech framework.
- Cybersecurity and data privacy is a key focus of regulators, both federal and state, yet many fintechs take a standard security approach to mobile app development, which leaves them open to data breaches, security hacks and, as a consequence, reputational damage.

Lifting the lid on the world's leading fintech market

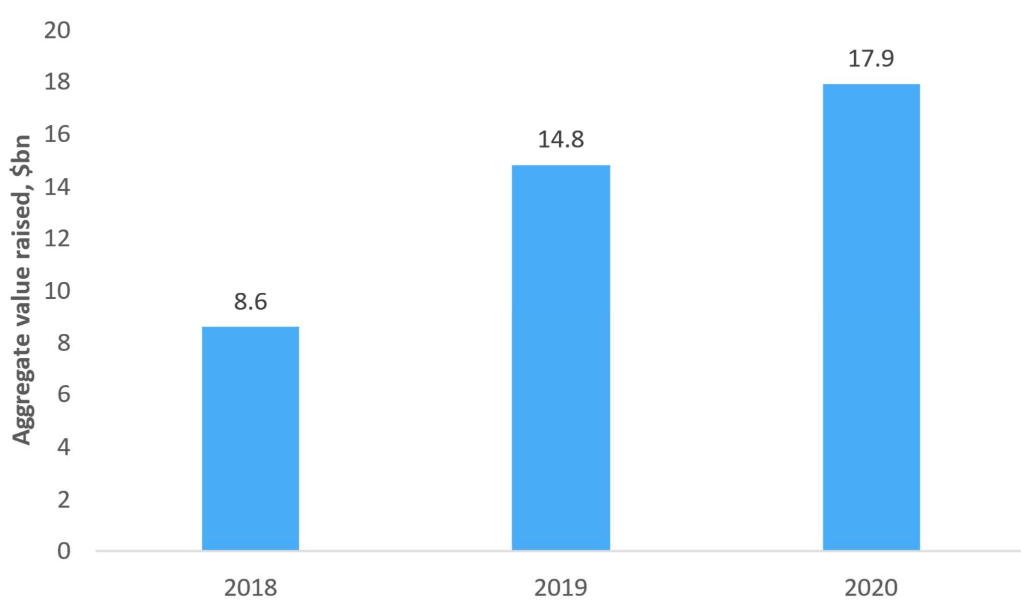
The US is the world leader in fintech

Consistently ranked as the world leader in fintech, the US fintech market continues to go from strength to strength. Once again, the US topped Findexable's Global Fintech Index in 2021, with 22 US cities also featuring in the top 100 ranking of global fintech cities.

Investment in US fintechs is on a strong upwards trajectory

The success of the sector is clearly demonstrated by the growing investment levels in US fintechs. Data from S&P Global Market Intelligence shows that investors placed $17.9bn via 681 transactions into private fintech companies during 2020, surpassing 2019's figures of $14.8bn and 539 transactions.

Figure 1: Investment in private US fintech companies reached $17.9bn in 2020



Source: S&P Global Market Intelligence

Although there was a sharp dip in funding in the second quarter of 2020 due to the COVID-19 pandemic, ultimately, the pandemic has proven to be a boon for the sector. The acceleration in the use of digital channels, coupled with the low interest rate environment, has drawn investors and accordingly investment in the sector has risen sharply. 2021 investment data is already looking very promising, with funding levels set to surpass those of 2020 thanks, in part, to large-scale fundraising by trading app, Robinhood ($3.4bn), and payments specialist, Stripe ($600m), in the early part of the year.

Capital markets, payments, and insurtech dominate investment activity

S&P's data also shows that most US fintech investment activity during 2020 was focused on capital markets, payments and insurtech. Notable fintech unicorns such as Stripe (considered the world's most valuable fintech), Robinhood, and Lemonade hail from each of these sectors respectively. Activity in all of these areas is expected to remain strong; for instance, soaring interest in cryptocurrency investments is likely to be a key driver of activity in the capital markets space. However, there is notable activity in other areas, with the B2B space considered to be ripe for opportunity in particular.

The US fintech market is starting to mature

As the most established and active fintech market, it is no surprise that the US fintech scene is also the first to mature. A number of the sector's most valuable companies are exiting the market, either through becoming a public company or an acquisition. In publishing its 2021 edition of the Fintech50 (a ranking of private fintechs registered in the US or with significant US operations), Forbes noted that six of the companies included in the top 10 in 2020 had since disappeared off the list. For instance, credit scoring provider Credit Karma was acquired in December 2020 by Intuit, while AI lending specialist Upstart went public with an IPO in the same month.

2021 has seen a number of US fintech companies go public. Notably, a number of fintech companies are choosing to go public through mergers with special purpose acquisition companies (SPACs), which in itself is likely to drive further fintech exits. SPAC listings tend to be cheaper and faster than traditional IPOs and enable companies to go public sooner than they might do through an IPO. As such, SPAC listings are particularly preferred by smaller companies that are seeking to raise funds from the markets.

Figure 2: Key US fintech exits, 2020–21

Date	Company	Subsector	Exit
July 2020	Lemonade	Insurtech	IPO
October 2020	Root Insurance	Insurtech	IPO
December 2020	Credit Karma	Credit score tracking	Acquired by Intuit
December 2020	Upstart	AI lending	IPO
December 2020	Opendoor	Property sales	SPAC merger with Social Capital Hedosophia Holdings Corp II
January 2021	Clover Health	Insurtech	SPAC merger with Social Capital Hedosophia Holdings Corp III
January 2021	Affirm	PoS credit	IPO
March 2021	Oscar Health	Insurtech	IPO
April 2021	Coinbase	Crypto-exchange	Direct listing
June 2021	Divvy	Corporate spending management	Acquired by Bill.com
June 2021	SoFI	Lending	SPAC merger with Social Capital Hedosophia Holdings Corp V
July 2021	Robinhood	Trading	IPO
August 2021	Hippo	Insurtech	SPAC merger with Reinvent Technology Partners Z

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Source: Omdia

The nature of the US fintech scene varies considerably between the different city hubs

The US fintech market is, however, not one homogenous block. As Findexable's Global Fintech Index showed, a remarkable 22 cities in the US featured in its rankings of the top 100 Global Fintech Cities. From the world's number one fintech city San Francisco to Detroit in 96th place, the different US fintech hubs each have their own characters and strengths. Here we take a look at some of the leading centers and how they compare.

Figure 3: Leading US Cities in Findexable's top 50 global fintech city rankings

City	Global Rank	City	Global Rank
San Francisco	1	Denver	27
New York	3	Charlotte	28
Boston	7	Houston	33
Los Angeles	8	Minneapolis	35
Atlanta	15	Columbus	39
San Diego	16	Austin	40
Chicago	21	Miami	41
Seattle	22	Dallas Fort-Worth	49

Source: Findexable Global Fintech Rankings 2021

San Francisco Bay Area is consistently rated as the world's leading fintech hub

Synonymous with technology and startup culture, the San Francisco Bay Area is the world's top fintech hub. It is home to nine of the 10 largest fintechs in the US, including Stripe, digital bank Chime, and cryptocurrency exchange Kraken. Its proximity to Silicon Valley means it has a strong engineering talent pool to draw on, as well as ready access to the venture capital markets. There is a strong fintech infrastructure, with numerous accelerators and incubator programs such as those offered by Y Combinator and Plug and Play Fintech, as well as industry associations such as Global

Chamber San Francisco. The drawback to being the world's number one is that it is expensive both in terms of office space and recruiting talent.

New York is the US's second key fintech hub

The US second home of fintech in New York, the Big Apple's fintech scene, is considered to have a very different feel to the West Coast vibe of San Francisco. Firstly, the city is not just about technology and has a long-standing heritage in other sectors, most notably financial services. In particular, it has developed a reputation for insurtech, with leading players such as Lemonade and Oscar calling the city home. There is a strong accelerator and incubator scene, with a number of dedicated fintech programs through the Fintech Innovation Lab, Barclays TechStars, and Startupbootcamp Fintech. Yet, while New York is considered much more traditional in its approach to financial services than San Francisco, others point to its benefits of being located in one of the world's leading financial centers, as well as its cheaper operating costs relative to San Francisco.

Los Angeles and Boston have flourishing fintech scenes

While San Francisco and New York may grab the headlines, other US cities have prominent fintech scenes. Boston and Los Angeles both rank within Findexable's global top 10 fintech cities, while Atlanta and San Diego feature in the top 20.

Boston, in particular, already has a noted financial services scene and is home to companies such as State Street and Fidelity Investments. It is also renowned for being the home of world-leading education establishments such as Harvard and Massachusetts Institute of Technology (MIT). This foundation coupled with startup accelerators such as MassChallenge and the annual Boston Fintech Week has seen a number of successful fintechs emerge, with examples including payments companies Flywire and Plastiq.

While known more for its media and entertainment industry, Los Angeles, for its part, offers a cheaper West Coast alternative to San Francisco. Although it may not have the same level of fintech infrastructure as San Francisco, it does have some financial services pedigree, with noted investment companies such as OakTree Capital headquartered in the city. There is also a strong broader technology accelerator scene, including players such as Amplify LA and Founder Institute Los Angeles. Noted local fintech players include microfinancing company, Tala, and automated savings platform, Albert.

Fintech regulation also varies by state, presenting compliance and security challenges

US fintechs are subject to a complex combination of state and federal laws

Just as the nature of the US fintech market varies according to the different hubs, so too does the nature of regulation. There is no fintech-specific regulatory framework in the US. Instead, fintech companies are subject to a mixture of state and federal laws depending on the area of financial services in which they operate. At a federal level, fintechs can fall under the licensing regimes of a number of bodies. For example, any fintech serving consumers falls under the purview of the Consumer Financial Protection Bureau (CFPB), while fintechs targeting investments space may come under the jurisdiction of the Securities and Exchange Commission (SEC). At a state level, licenses are typically required for activities such as consumer lending and money transmission, and the requirements for these vary from state to state.

Efforts to create national fintech and payments charters have encountered significant opposition

There are efforts underway to create national charters for fintechs and payment companies but these plans have been beset by controversy. The Office of the Comptroller of the Currency (OCC) first revealed its plans for a special-purpose national bank (SPNB) charter for banking fintechs in 2018, which would grant eligible fintechs a national banking license. The New York Department of Financial Services (NYDFS) successfully challenged these plans in 2019 on the grounds that granting non-depository institutions a national banking license would be in violation of the National Bank Act. This decision was reversed in June 2021 by The Court of Appeals for the Second Circuit. However, the path ahead is far from clear-cut. The courts have not specifically ruled on the OCC's authority to issue SPNB charters; as such, if any such charters were issued, further litigation from state regulators would no doubt follow. For now, the OCC and the NYDFS have publicly agreed to co-operate to address areas such as consumer protection and safety and soundness issues. The OCC is continuing with plans, first revealed in June 2020, for a separate payments charter. However, this too has met with significant opposition from state regulators and trade associations.

Cybersecurity and data privacy are a particular focus of regulators

One of the key focus areas for regulators, both at a federal and state level, is cybersecurity and data privacy. By their very nature, financial services companies are attractive to cybercriminals and as the fintech sector grows, so too does its appeal to fraudsters and hackers. Fintech companies are no longer small enough to escape the attention of cybercriminals, as Asian payments fintech unicorn, Pine Labs, found out in August 2021 when 500,000 customer records were exposed.

From a US regulatory perspective, fintechs must comply with the cybersecurity demands of any national regulators applicable to their sector. For example, the CFPB monitors the handling of consumer personal data. Fintechs that are not compliant run the risk of fines and the accompanying reputational damage. A case in point is the legal action that the CFPB took against payments company Dwolla in 2016 for misrepresenting its data security practices and the security of its online payments system.

In addition to federal regulations, there are also some state-specific requirements relating to cybersecurity. Notably, most firms licensed by the NYDFS will also be subject to NYDFS Cybersecurity Regulation (23 NYCRR 500), which has been phased in since 2018. Then there is the California Consumer Privacy Act, which came into effect in January 2020 and brought in a number of requirements relating to data privacy.

Mobile security is naturally a concern to fintechs but often security does not go beyond standard security protocols

Most financial institutions, including fintechs, agree that security is a key concern of their organization. They also recognize the importance of securing the mobile channel; a Verimatrix survey of security professionals in financial services in early 2021 showed that 82% agreed that mobile application security was important or very important to their institution. However, this awareness does not necessarily translate through to a robust mobile application security strategy. For example, 35% of the security professionals surveyed by Information Security Media Group

(ISMG) did not know what the annual spend on mobile security was, while 19% did not know who in their institution was responsible for vulnerability analysis and penetration testing of mobile apps.

This disconnect between the strategic importance of the mobile channel and mobile security is concerning and puts organizations at increased risk of cybercrime, regulatory breaches, and reputational damage. Fintechs in particular can be vulnerable. Typically, they take a mobile-first approach, but for the most part their development teams tend to take a standardized approach to app security. The focus of most fintechs is on providing a fast, friction-free process to users and, beyond standard security protocols, more detailed evaluations often fall through the cracks. Even for those fintechs that have more robust processes in place, there is the challenge of scaling security processes as the company grows and ensuring compliance with the legal requirements across all states.

By taking some key practical steps, fintechs can ensure apps are secured and significantly reduce their cyber risk exposure

Overcoming the challenges surrounding mobile app security need not be a complex or overly onerous exercise. In following some key practical steps, such as code obfuscation and environmental checks, fintechs can ensure apps are protected and significantly reduce the risk of hacking, data breaches, and the resulting fallout these events can bring. Yet, ultimately, the key lies in recognizing that mobile financial services apps bring specific security challenges that go beyond standard mobile app development. For those fintechs that can bridge that disconnect, the solutions to protect mobile apps are there for support.

Figure 4: Key defensive techniques for protecting mobile app codes

Code obfuscation

- Taking a code and making it hard for an attacker to understand

Environmental checks

- Checking the code is operating where it should be and not on an attacker's device

Tamper prevention

- Building a network of micro-checks to prevent modification, as well as ensuring the code only executes in the context of the app

Jailbroken and rooted device detection

- Ensuring apps can detect when they are being used in vulnerable conditions, such as jailbroken devices, and respond accordingly

App security monitoring

- Real-time oversight of the install base of apps provides valuable insights for risk management systems

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Source: Omdia

Appendix

Methodology

This report is based on secondary research from the following sources, notably:

- CFPB (2016), *CFPB Takes Action Against Dwolla for Misrepresenting Data Security Practices*
- Findexable (2021), *Global Fintech Index 2021*
- Forbes (2021), *The 11 Biggest Fintech Companies in America 2021*
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- ISMG (2021), *The State of Mobile Banking App Security*
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- The Regulatory Review (2020), *A Fintech Charter by Another Name*

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