

Community Paper

Innovation in Payments and Fintech: A comparison of the Chinese and Indian ecosystems

Global Future Council on Financial and Monetary Systems

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Introduction



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As innovation in digital currencies and mobile payments – both public and private – is transforming traditional ideas of money at a rapid pace, the World Economic Forum’s Global Future Council on Financial and Monetary Systems tasked itself with exploring opportunities and challenges the current “money evolution” presents. Council Members, representing all parts of the financial system, seek to contribute to the ongoing debate over which of the many models being developed is most beneficial for all stakeholders, and thus will contribute to making the global financial system more stable, accessible and efficient.

When trying to predict the direction of travel when it comes to globally accepted “new money”, two markets in particular provide important clues: China and India are not only home to the two largest populations, but have also both experienced rapid urbanization, an immense modernization and digitization of their economies, and wildly outpaced much of the rest of the world in terms of GDP per capita growth over the past 15 years. At same time – driven by a need to bring large numbers of formerly underserved into the formal financial system – they have developed innovative, digital payment and money transfer technologies.

Council Members Sarah Zhang Jiachen, Founder and Chief Executive Officer, Guangzhishu Technology, and Laurent Le Moal, Chief Executive Officer, PayU, Naspers, have unique insights into these two financial markets as a function of their organizational and personal focus and passion. Their observations as summarized in this insight paper are an important contribution to the exploration of what globally accepted new money may look like.

The Global Future Council on Financial and Monetary Systems invites readers to share reactions and thoughts as the Council continues to support the efforts of the Forum and wider financial community to foster more inclusive payment systems and, at the same time, design a framework for the governance of digital currencies.

About the authors

Sarah Zhang is the founder and CEO of Points Technology (Guangzhishu), a 2019 World Economic Forum Technology Pioneer company. She received her MBA degree from Harvard Business School and Master in Public Policy from Harvard Kennedy School of Government. Laurent Le Moal is CEO of PayU, the payments and fintech division of the Naspers group. Laurent is an executive, entrepreneur and investor with two decades of experience in payments and fintech in high-growth markets around the world.

China and India: A comparison of the two largest market opportunities in payments and fintech





In just a few years, China has become the global leader of mobile payments, with a record \$27 trillion of transactions in 2018.¹ While much has been said about the factors behind this explosive growth and the emergence of new business models, such as those of Ant Financial and Tencent, less has been done to assess the applicability of the Chinese fintech model to other markets, in particular India.

China and India have the two largest populations, together making up approximately a third of the global population. Both countries have experienced tremendous urbanization and modernization of their economies, leading to

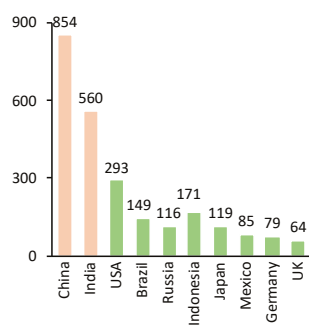
staggering growth in GDP per capita over the past 15 years, growing more than seven times and three times² in China and India, respectively.

Given their limited penetration of financial services and poor credit coverage, these two markets provide the right incentives to new entrants to target these untapped populations by leveraging three assets: the rapid expansion of mobile phones to access internet services; the consequent creation of huge data sets available for credit scoring; and a developing regulatory framework that provides more certainty and transparency for new and foreign entrants.

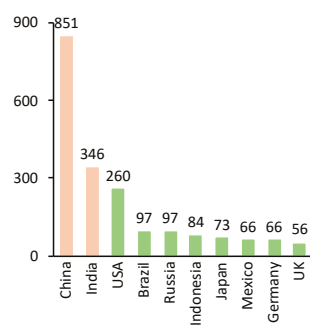
Figure 1: Market drivers supporting digital financial services³

- 
High internet penetration
 - 60% in China
 - 41% in India
- 
Smartphone penetration
 - China is racing ahead with 5G
 - India expected to have 60% coverage by 2022
- 
Limited credit coverage
 - 650mn+ credit cards in China vs. 40mn in India
 - 100% Bureau coverage in China vs 20% in India
- 
Large unbanked population
 - Banking driven primarily by state-owned traditional banks

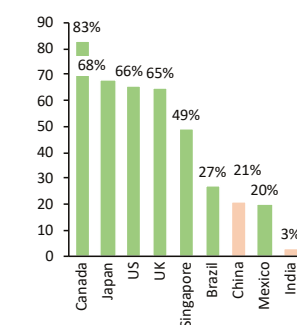
Internet Users (2019, in millions)



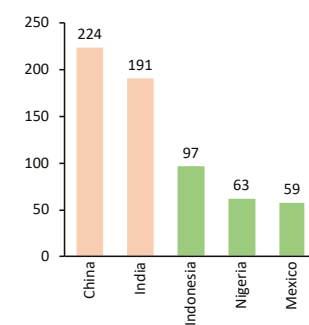
Smartphone Users (2019, in millions)



Credit card ownership (% age 15+) (2017)



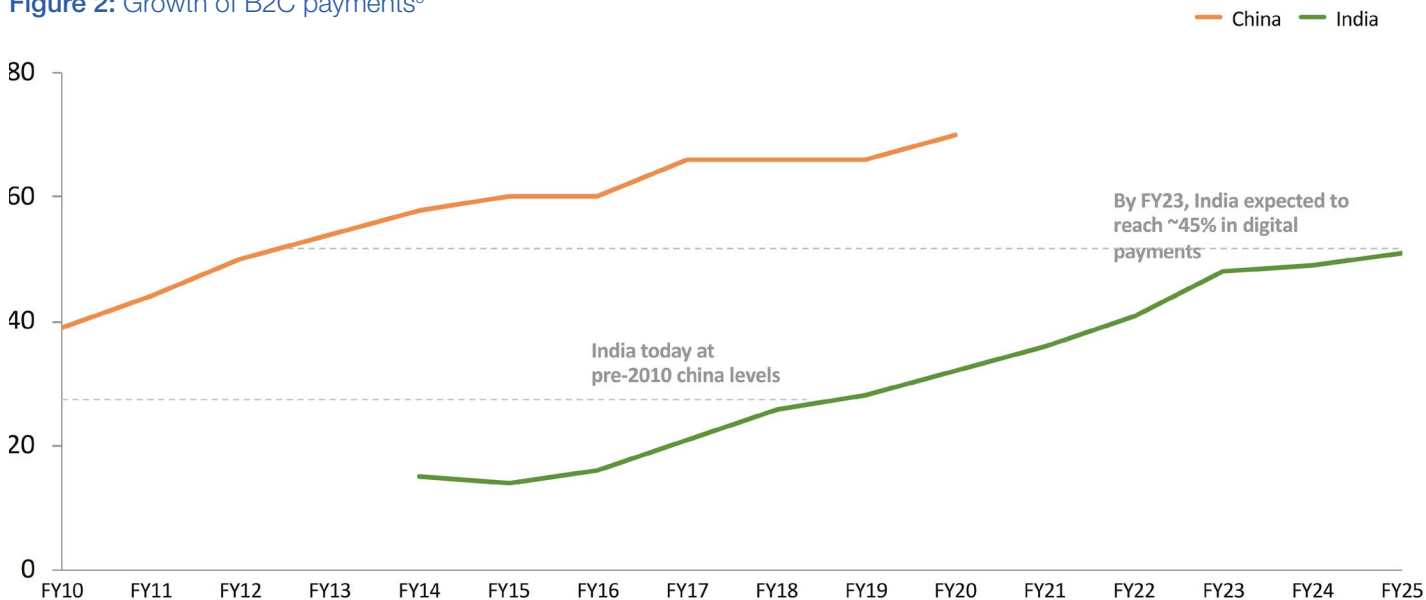
Unbanked adults (2017, in millions)



For digital payments, India in 2023 might be very similar to where China was in 2015.

Digital transactions per capita in both economies saw exponential growth over the past three years, with three times and two and a half times⁴ growth in India and China, respectively. However, even at this rate, India offers a significant upside in terms of digital payments, as penetration rates lag roughly 10 years behind China.

Figure 2: Growth of B2C payments⁵



China will be known for its ubiquitous QR code mobile payments and its formidable growth story.

When exploring the evolution of the Chinese payments ecosystem, at first, it seems to follow the classic model of Western countries, with incumbents promoting card-based instruments and creating local networks, such as China UnionPay, with massive adoption among the banked population.

It took two players to completely disrupt this landscape: Ant Financial and Tencent. Each has a unique origin, Ant Financial with its roots in e-commerce with Alibaba, and Tencent as a social network with a suite of gaming services. As a result, both players have a large and deeply engaged base of customers.

Offering mobile payments through their apps was first seen as a way to serve their ecosystems. For Ant Financial, it is a way to facilitate e-commerce transactions on their platform, and for Tencent, a P2P (peer-to-peer) service boosted by the huge success of their “red envelope” service around the Chinese New Year.

Mobile payments were not seen as an end per se, but rather as a way to create high-frequency transactions and deepen engagement across their massive user bases. Once this new habit was established, mobile

payments became the backbone to develop a wider fintech ecosystem, where cross-selling of more complex financial services is prevalent. For instance, close to 70% of Alibaba’s active users in China now use three or more types of financial services.⁶

This cross-selling strategy allowed money to stay within the platform. The final element to create a strong closed-loop ecosystem was to build different use cases on the platform to circulate capital. Currently, whether to find a job or to just commute, WeChat has become ubiquitous, with the ability to either build in-house or invest in third-party companies in order to offer a comprehensive set of financial products.

Both players have become some of the largest and most active corporate investors in the entire fintech ecosystem, providing not only capital but also instant access to hundreds of millions of captive consumers.

Closed-loop ecosystems have been pivotal to the emergence of “super apps”. Alibaba and Tencent together account for an estimated 94% market share⁷ in the mobile payment market in China in 2018.

The success of QR code payments is not so much linked to form factor itself, but is rather due to these two systems investing aggressively to push it across their network of merchants while promoting user adoption.

Figure 3: Super apps in China⁸



After strengthening their positioning in payments, lending and wealth management within China, they are now both looking to tap into overseas fintech opportunities.

Their investment thesis is twofold: first, service overseas payments of Chinese outbound travelers, and then export their payments and fintech playbook to serve local users in overseas markets, specifically in India and South-East Asia (e.g. Paytm in India, PayMaya in the Philippines, and many others).

China's central bank digital currency could be the change factor going forward.

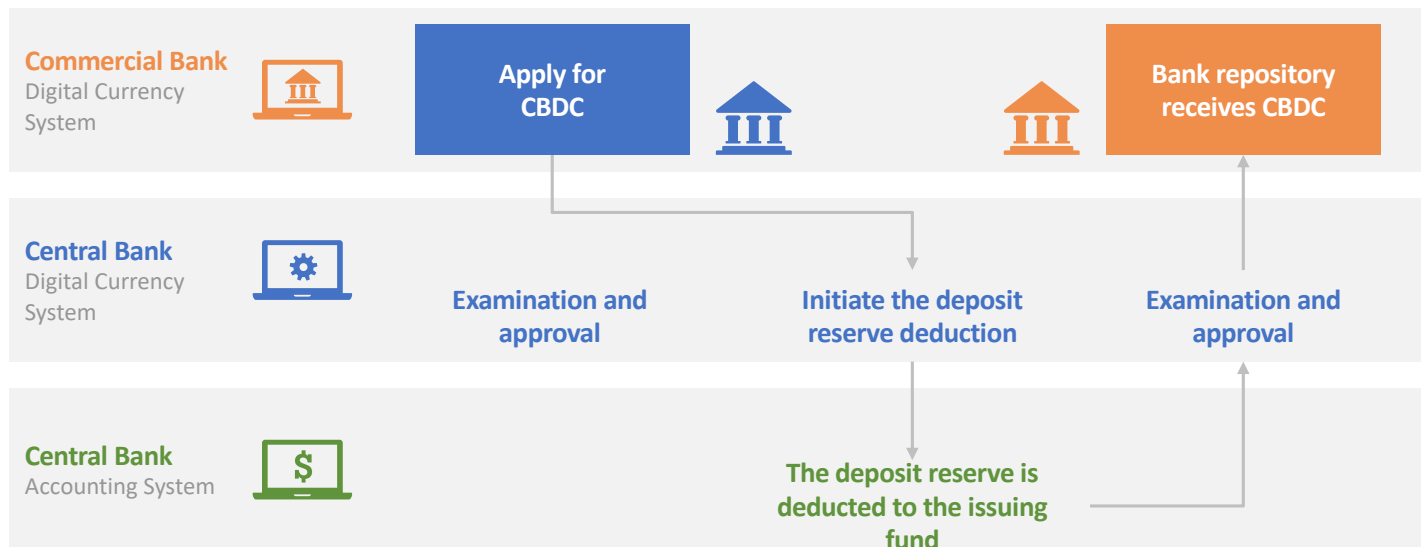
What is also worth noticing is that the People's Bank of China (PBoC) has been researching and developing the Chinese Central Bank Digital Currency (CBDC), which is named DC/EP, since 2014, filing a total of 74 patents

to date. A recent address by the vice governor of the PBoC, stated that DC/EP (Digital Currency Electronic Payment) is ready to be launched very soon as an important part of M0 and the PBOC launched internal tests of a digital currency in our cities in April 2020.

According to the officially released plan by the Central Bank, CBDC is expected to play two roles: digital currency and electronic payment, i.e. the digitalization of paper currency.⁹ As it shares main properties and features of cash, China's CBDC would meet both the needs of portability and anonymity.

Many in the industry believe the introduction of the RMB digital currency may bring substantial changes into the duopoly landscape of the Chinese mobile payment industry given the change in infrastructure technology and user experiences.

Figure 4: An illustrative two-tier prototype operating system of PboC's CBDC¹⁰



India will be hailed for its open-platform approach with its UPI infrastructure.

The turning point for payments in India was in 2016. First, the Indian government introduced a law to push for demonetization in India and drive adoption of digital payments by invalidating 86%¹¹ of the currency in circulation. This enabled the country to leapfrog the adoption of online payments, specifically the use of wallets.

In parallel, the National Payments Council of India (NPCI) launched a “Unified Payments Interface (UPI) in 2016. UPI is an open and interoperable direct bank transfer platform that powers multiple bank accounts into a single mobile application.

In India, the government played the role of the market disruptor, not only through regulation (demonetization) but also by choosing a deliberate open-platform solution to drive incumbents and startups alike to embrace digital payments.

For the consumer, the UPI platform allows for online P2P transfer via a mobile number or a UPI handle, a unique handle created by each consumer when signing up to the service with their bank. When combined with an interoperable QR code (BharatQR), this becomes a hugely attractive proposition for consumers and small merchants alike. In fact, close to 1.3 billion¹² transactions via UPI were processed alone in December 2019, a growth of ten times over two years.

However, a couple of high-profile homegrown startups, such as Paytm (supported by Ant Financial as its main shareholder) and PhonePe, initially tried to replicate the Chinese super app model and closed-loop ecosystems using QR code as a form factor and investing a huge amount of capital to attract customers. But as UPI gained traction with consumers and with the regulator mandating interoperability among wallets, new entrants came to the game, such as Google or WhatsApp, who could plug directly into the UPI platform and start offering their payments services.

Supported by the open infrastructure built by the regulator and government, India’s fintech ecosystem has become a multi-player market and is likely to remain so.

Regulators in China and India have very different approaches, but are converging on some issues.

In China, it can be argued that the success of Ant Financial and Tencent is in part due to a fairly flexible regulatory regime at the beginning of the digital payments era. At this point, there were minimal KYC (know your customer) requirements, which allowed for quick mass onboarding, and also favourable conditions to rapidly cross-sell more complex services to an engaged userbase.

But with large amounts of money now being saved and invested outside of the classic banking system, the regulator is looking to get more information on the money flow. For instance, a centralized clearinghouse called NetsUnion was created to process all third-party online transactions.

Meanwhile, the Indian regulator decided early on to play a very pro-active role in the market by standardizing the payment system through UPI and has continued to emphasize India’s preference for a multi-player market. Recently, the Reserve Bank of India (RBI) even proposed the creation of a new digital retail payments organization to prevent a monopoly of NPCI, which is deemed too successful with its UPI platform.

But both regulators converge on the need to regulate the ownership and usage of the huge wealth of data being created by digital payments.

At this stage, it is clear that the Indian and Chinese markets have some structural differences, which has led to radically different business models. The next section explores what lessons can be drawn and how they can be further transposed to other markets.

Figure 5: India’s competition landscape



Lessons learned from the India and China playbooks

Payment is a strategic asset only if it leads to a bigger play.

While payments have traditionally been viewed in mature markets as a B2B (business-to-business) play – if not just an “infrastructure play” – the success of Chinese and Indian players demonstrate that the value of payments is derived from its value as a platform and is a non-linear function of the number of users it can attract, including both consumers and merchants.

This is why billions of dollars have been pouring into payment companies in India and China, in the race to scale as quickly as possible the respective ecosystems and platforms of each player, thus driving down the cost of payment transactions in the meantime, to further drive volumes.

This is a game of scale and investment that few international investors can play with conviction over time.

The second lesson, drawn from India, is that “interoperability” of payments infrastructure has been essential for mass adoption of digital payments and creating a level playing field across players. This is a more managed approach to market disruption, more aligned to the European approach (PSD2 for instance) than the US one, with a clear intent from the regulator to intervene directly to shape the industry and avoid market concentration at the outset.

Last but not least, in these two markets, the difference between online and offline was blurred from the beginning, from the moment smartphones were the defining factor and not the card. What is the difference between online and offline transactions when consumers use their phones in each situation and the transaction is processed using cloud architecture?

We can predict a much higher and faster adoption of “omnichannel” solutions in India and China, since there are relatively fewer legacy issues in bringing online and offline together.

Open platform as a more disruptive approach than wallets.

Since the first days of PayPal 20 years ago, “wallets” were seen as the new model for payment companies to break the classic “four-party models” of the card networks and create value by intermediating consumer and merchant directly.

In truth, wallets have been the first step in both countries towards a digital payments journey, and P2P the main use case for consumers to try and adopt it. However, in a short time wallets morphed from payments to full-fledged financial services plays in China.

India took it one step further by replacing wallets with direct bank-connection models like UPI. What remains is a consumer interface, while the whole backend is an open platform accessible to a wide range of providers. We believe this is an approach that can be followed by many regulators when opening up their markets to digital payments and looking for ways to encourage level playing field innovation.

The evolution of payments apps into digital banks.

China is home to some of the largest banks in the world. The “big-four” state-owned banks, account for 7 million business clients and over 600 million retail customers.¹³ They have all been in a race to digitize their operations either organically or via partnerships with technology players. For instance, last year, ICBC entered into a strategic partnership with Ant Financial.

Super apps in China have acted as a primer for digital banking. China has licensed four online-only banks since 2014, including Alibaba offshoot MYbank, Tencent-backed WeBank, Baidu-backed AiBank, and China Citic Bank. The combined assets of the four online banks stands at \$56 billion at the end of 2018 (0.15% of China’s total banking assets).¹⁴

Digital banking in China will be a landscape that traditional banks and new-age companies will shape together – traditional banks with their large databases and the new-age companies with their technology. In that respect, India is lagging behind China and pure digital banks in India are still in their infancy. Currently, digital banking is being driven by traditional banks digitizing operations or the fintech players addressing a niche in the fintech spectrum of services, still “unbundling banking”. Over time, however, some players will put together a comprehensive set of services by piecing together several providers’ APIs and investing in creating a financial services ecosystem.

In the end, compared to mature markets, it is clear that no payments player wish to stay as such, but rather rapidly evolve into more complex, diversified and profitable full-stack financial services provider. Again, this requires long-term commitment and capital to fund this transformation.

The future competition will be shaped by new technologies in data, digital currency and AI.

The entrance of big tech and fintech into payments may drive competition, enhance product offerings and lower transactions costs. Meanwhile, it brings risks as well as benefits.

The integration of payments with a variety of consumer services that rely intensively on user data raises the urgency of questions surrounding data security, how

consumer's financial data is used and the circumstances under which data is disclosed to third parties.

In the US, Facebook's data and privacy protection practices has been one of the major challenge points in their recent congressional hearings. In China, regulators and consumers are now also moving data privacy to a much higher place in terms of priority. What is interesting is that big techs in the payment industry are actively embracing this trend, as the emergence of the new technology suite of privacy-preserving artificial intelligence (AI) not only can help the tech giants to address the upcoming regulatory requirements, but also provides a brand new way to commercialize their data assets without exposing them.

What is privacy-preserving AI? Privacy-preserving AI (or Private AI) is a suite of technologies

that allow data controllers to collaborate on developing AI models and performing data analysis without exposing raw data to each other.

In China, Ant Financial and WeBank are investing heavily in these new technologies while the country's central bank has also listed this technology area as a strategic technology investment priority for the banks. The banking regulators see the potential of such technology to enable a wide range of open-banking initiatives that could protect consumers and improve service coverage by better leveraging critical, but not sharable, data across institutions. Hence, large banks are seeking out independent technology startups that specialize in this technology in order to catch up with the tech giants in this new field of competition.

Figure 6: Chinese tech giants and fintechs investing into privacy-preserving artificial intelligence

	Product	Technologies applied	Development stage	Product type
Alibaba	Morse secure computing platform	MPC (secret sharing, etc.) +	Basic functions under iteration and trusted hardware added since 2019	Software platform
Baidu	MesaTEE/trusted secure computing, Rust SGX SDK	Trusted hardware	Development started in 2018 and still in early-stage releasing	Cloud platform built-in service/ frastructure+software development kit
WeBank	FATE	Federated learning	Released in February 2019	Software platform
Ping An Technology	Honeycomb	Federated learning	Released in September 2019	Software platform
Huawei	Trusted server based on ARM8	Trusted hardware (ARM Trustzone)	ARM8 version has been released and the software ecosystem is continuously being upgraded	Hardware infrastructure
Points Technology (Guangzhishu)	Points confidential computing framework YunFL federated learning platform	Trusted hardware, federated learning, enterprise-level zero-knowledge verification	Development started in 2017 Trusted computing framework released in August 2019	Software platform + solution

In addition, digital currencies, especially those driven by central banks such as the PBoC, may increasingly become a change factor to shape a new ecosystem linking super apps, digital banks and regulators. Payment players also need to address the upcoming structural changes early by participating in the technological and business architect iteration, as shown in the case of CBDC.

Lessons for US Tech Giants: Looking East for innovation

Is it too late for US tech giants to win in the Indian market? Why can't Facebook build its own "Alipay"?

Such questions are a testament to the success of the Chinese and Indian players as models to emulate. But as Western players often say, being a copycat is not a strategy.

To the first question, we would answer, it depends. The Chinese model of closed ecosystems would make it difficult for any new foreign entrant to overcome huge barriers to entry. However, cross-border payments are leaving the door open to possible success. Enabling small merchants from China to sell abroad and Chinese consumers to buy using their preferred local payments method is a huge opportunity. PayPal seems the best positioned to capture this. But we should watch out for Alipay and Tencent's rapid progress outside of their core markets and their deep pockets to make necessary investments.

India is a more open field for new entrants, due to the nature of UPI. Here, local champions and US tech giants will fight directly over consumer payments and consumers growing financial needs. While an open platform seems to create a level playing field, winning in these markets will also require

companies to localize all their services and infrastructures. This will be a challenge for US corporations, in particular, as they would have to set up local processing centres and agree to local data-related regulations.

Finally, can these models be imported to Europe or the US? While mobile payments are gaining traction, the direction of travel in these markets is more an evolution of the classic card experience than a true revolution of QR code. While tech companies are all engaged in a variety of payment efforts, digital banking has been largely left to a series of startups like Revolut. However, these startups lack the scale of Alipay or WePay.

For mature markets, we certainly believe that Facebook is best placed to fully integrate payments across all its services, similar to the super apps in China, but with more limited scope. We believe that the fear of regulation will force other players to make a more aggressive push into digital banking, and possibly partner with incumbents.

As for UPI, we believe it could certainly be a model imported into new markets willing to boost their digital payments and drive inclusion beyond the classic card adoption model.

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Endnotes

1. Source: iResearch report on 'China's Third-Party Mobile Payment Market', RMB / USD = 0.14
2. Source: World Bank. GDP per capita (current US\$) increase from 2003 to 2018
3. Source: World Bank, Internet worldstats, Newzoo smartphone report, CISCO forecasts for smartphone penetration
4. Source: BIS data on payments, World Bank population data, RBI, Report of the High Level Committee on Deepening of Digital Payments. Growth from 2015 to 2018
5. Note: China data based on CY but shown as FY and shows retail transaction value; India line excludes P2P payments to be comparable with China but may include some non-retail consumption
Source: China Internet Watch; RBI; NPCI; Bain research; Expert interviews
6. Source: Alibaba's September Quarter 2018 Results
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