

UNLEASH YOUR REVENUE POTENTIAL WITH THE POWER OF AN INTELLIGENT WALLET



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THE MOBILE FINANCIAL SERVICES IMPERATIVE

MOBILE COMMERCE AND FINANCIAL SERVICES ARE PART OF THE DIGITAL TRANSFORMATION DRIVE

Communications service providers (CSPs) must embrace digital transformation from the bottom up if they want to remain relevant and competitive, and indeed those that have not already started on this path are at risk of being left behind. Operators are facing declining revenue from core communications and connectivity services while competition is proliferating on every front, but particularly from the big internet service providers and consumer tech players (often one and the same). These rivals have the scale, technology smarts, and the ability to innovate and execute at speed that is hard for operators to match—but match it they must. Forward thinking operators have diversified their traditional business model mix by introducing a wider range of digital services with priority areas including TV & video, smart home, IoT, digital financial services, payments, and commerce. The latter services, often collectively called mobile money services or digital wallets, are the focus of this report.

But diversification is never easy, and in Omdia's 2020 ICT Enterprise Insights survey, CSPs said that launching new digital services is one of the biggest business challenges they face (just over 78% ranked this very important or important), second only to the improvement of security operations. Introducing new digital services is doubly difficult if those propositions are not part of a CSP's DNA, which is certainly the case for digital wallet services. The job becomes harder still if a CSP is moving into a highly competitive market, as is the case with mobile financial services and commerce where a growing roster of rivals are converging, including traditional and challenger banks, fintech start-ups, consumer tech players, and online commerce giants.

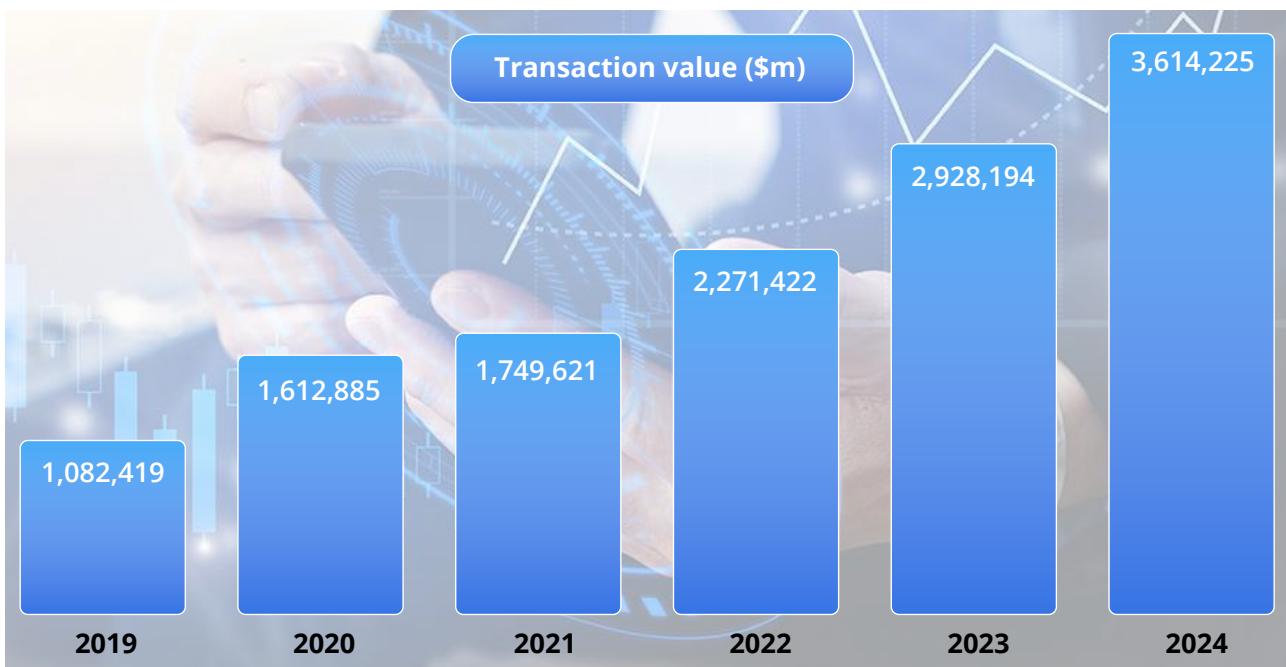
A GROWING MARKET WITH MUCH TO PLAY FOR

GLOBAL MOBILE COMMERCE REVENUE WILL SURPASS \$1TN BY THE END OF 2020

In emerging markets, cellular networks and mobile payments are playing a critical role in growing underdeveloped e-commerce ecosystems and revenue. Mobile payments have allowed people in emerging markets to buy online physical goods and services that were previously out of reach for the majority due to lack of internet access via broadband and PCs/laptops, low credit/debit card penetration generally, and large unbanked populations (among other things).

Mobile commerce (m-commerce) was showing strong growth before the pandemic and will become even more robust owing to impacts from COVID-19. Total global transaction revenue for mobile payments for physical goods and services will grow from just over \$1tn in 2019 to over \$3tn by the end of 2024, as shown in Figure 1. Lockdowns, travel restrictions, and social distancing has had a catastrophic impact on physical retail, but has benefitted e-commerce and m-commerce as more consumers shop online. Although online shopping levels will normalize post pandemic, we expect to see many consumers maintain increased e-commerce levels post pandemic. Omdia's 2020 COVID-19 consumer survey revealed that 42% of the 3,157 respondents in China, the UK, and the US had increased online shopping for groceries during the pandemic, while 53% had augmented online shopping for non-grocery products.

Figure 1: Mobile commerce revenues are soaring



Source: Omdia

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P2P MOBILE MONEY TRANSFERS ARE MORE IMPORTANT THAN EVER BEFORE

Person-to-person (P2P) domestic mobile money transfers have been a mainstay of mobile money services in emerging markets for years, initially in the form of transfers between friends and families and then in the context of person-to-business (P2B) transfers for bill payments and online purchases. P2P transfers have assumed even greater prominence in emerging markets during the pandemic, with governments harnessing these applications as a means to address challenges posed by COVID-19. During the pandemic, mobile money transfers have helped reduce people's reliance on cash and helped social distancing, while providing the government and other agencies with a highly effective way to distribute financial aid. Examples of various government initiatives are captured in Table 1 (a far from exhaustive list).

Table 1: Governments harness mobile money to help people during the pandemic

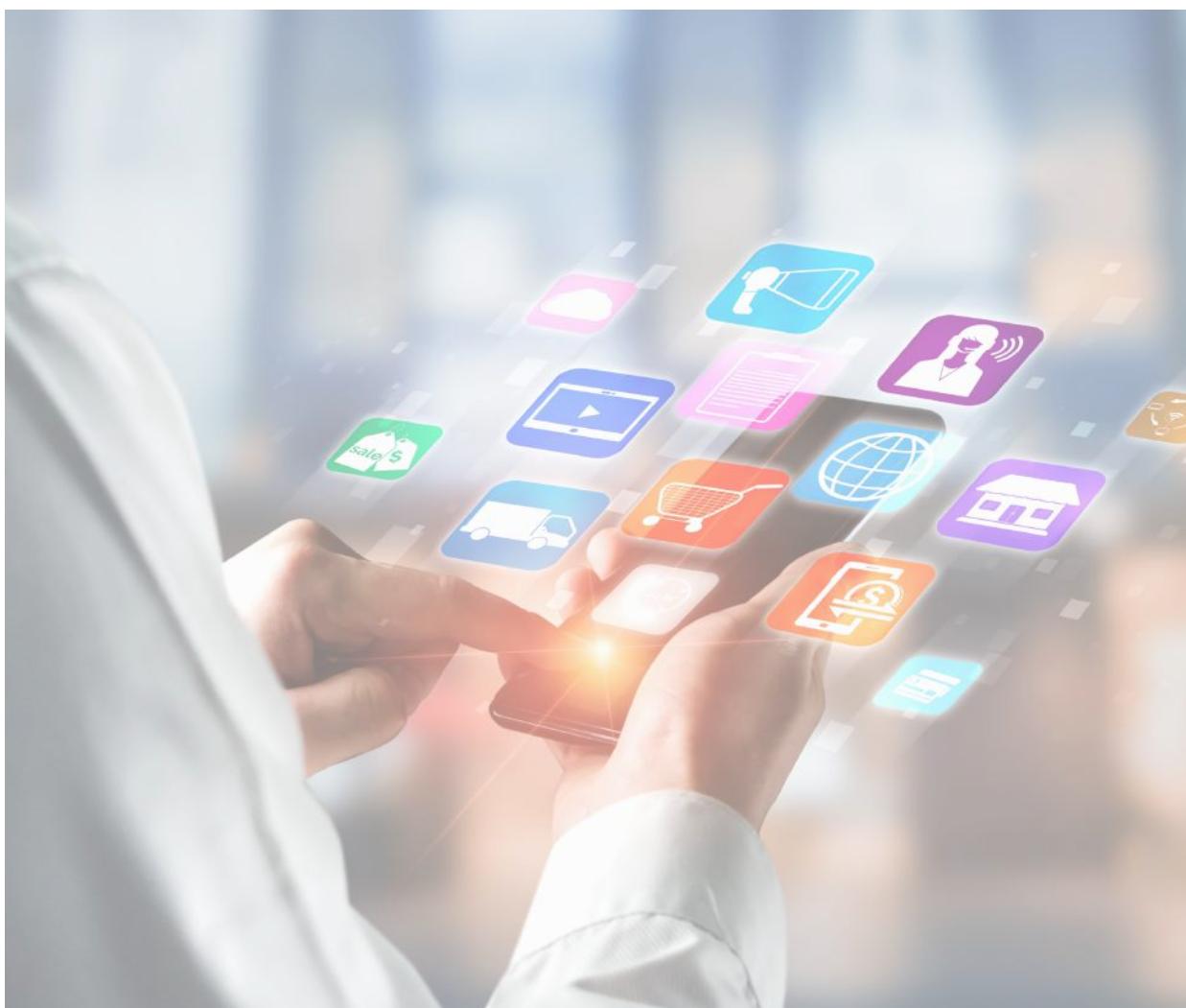
Initiative	Countries
Reduction in mobile money transfer fees	Uganda, Bangladesh, Cameroon, the Democratic Republic of Congo, Ghana, Kenya, Mozambique, Pakistan, Rwanda, Senegal, and Zambia
Increased ceilings on the size of transactions	Egypt, Liberia, Myanmar, Bangladesh, Cameroon, the Democratic Republic of Congo, Ghana, Kenya, Mozambique, Pakistan, Rwanda, Senegal, and Zambia
Expanded agent network (e.g. via new licenses)	Ecuador
Government financial aid disbursements	Brazil, Togo

Source: Omdia

ALTHOUGH MOBILE MONEY STILL TRAILS BEHIND IN-PERSON PAYMENTS

The use of mobile applications to pay for goods and services in person (e.g., in stores and cafes, on public transport) is experiencing steady rather than spectacular growth, and still trails well behind the use of cards and cash in emerging markets, and also many mature markets. This is strongly evidenced by Omdia's 2019 consumer survey that showed, by way of example, that 50% of respondents in Brazil preferred either cards or cash for in-person payments compared to 18% for mobile applications (e.g., NFC, QR codes). This is only a modest increase on the findings in Omdia's 2018 survey, where 12% of Brazilian consumers used mobile applications for proximity payments.

However, there is no doubt that the COVID-19 pandemic has driven greater usage of contactless cards and mobile payments, particularly in mature markets where many governments have raised the ceiling on the permitted size of contactless transactions. Contactless payments are a powerful tool in the fight against COVID-19, protecting consumers and retail assistants alike by minimizing the need to handle card terminals (i.e., as per chip and pin entry) and completely removing the need to handle cash (notes and coins) that have passed through many hands. We expect to see the momentum behind contactless card and mobile apps continue post pandemic.

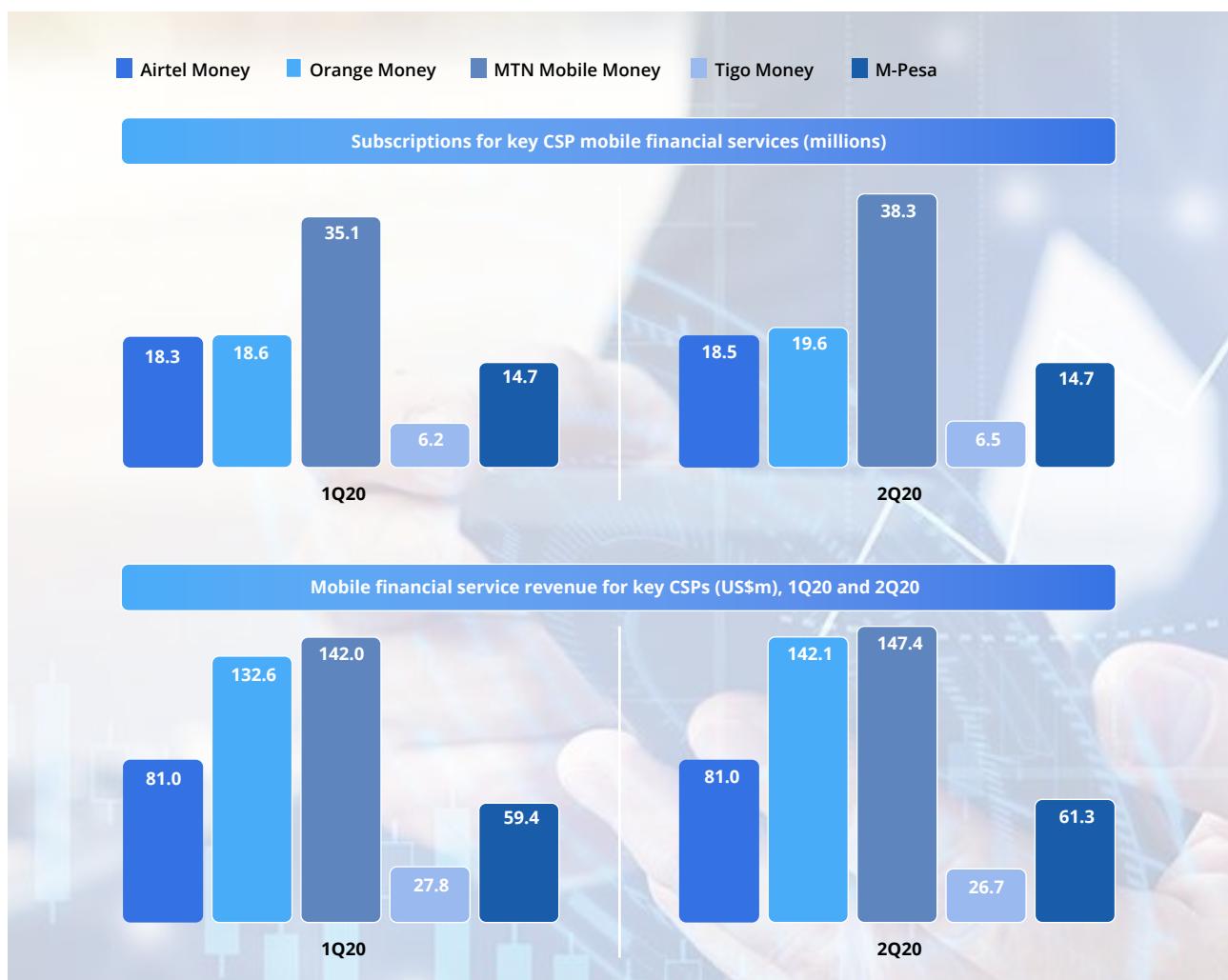


OPERATOR POSITIONING IN A COMPLEX, FAST MOVING MARKET

THE RISE OF DIGITAL WALLETS IN EMERGING MARKETS

CSP mobile money services, or digital wallet services as we will call them for the purposes of this report, have been operational for well over a decade, starting in Asia around 2005 with initiatives from Globe Telecom and Smart Communications in the Philippines. This was followed by Africa a few years later when Safaricom launched M-Pesa (2007) in Kenya. Digital wallets have subsequently proliferated in emerging markets and around the globe, and at the end of 2019, there were over 290 mobile money services in 95 countries across emerging market regions (GSMA). Many of these services are proving successful, notably Safaricom, Orange, and MTN in Africa; Etisalat in the Middle East; and Airtel, Axiata Digital, and Telenor in Asia. The leading digital wallet CSPs in sub-Saharan Africa, where services are well established, report impressive key performance indicators (KPIs), even during challenging times shaped by the COVID-19 pandemic (as shown in Figure 2 below). However, digital wallets are not a triumph in every market, and for every success story there is one of struggle. It is noticeable that digital wallet services in Latin America have not taken off in the same way as many equivalents in Africa and Asia.

Figure 2: Selected African operator mobile money KPIs



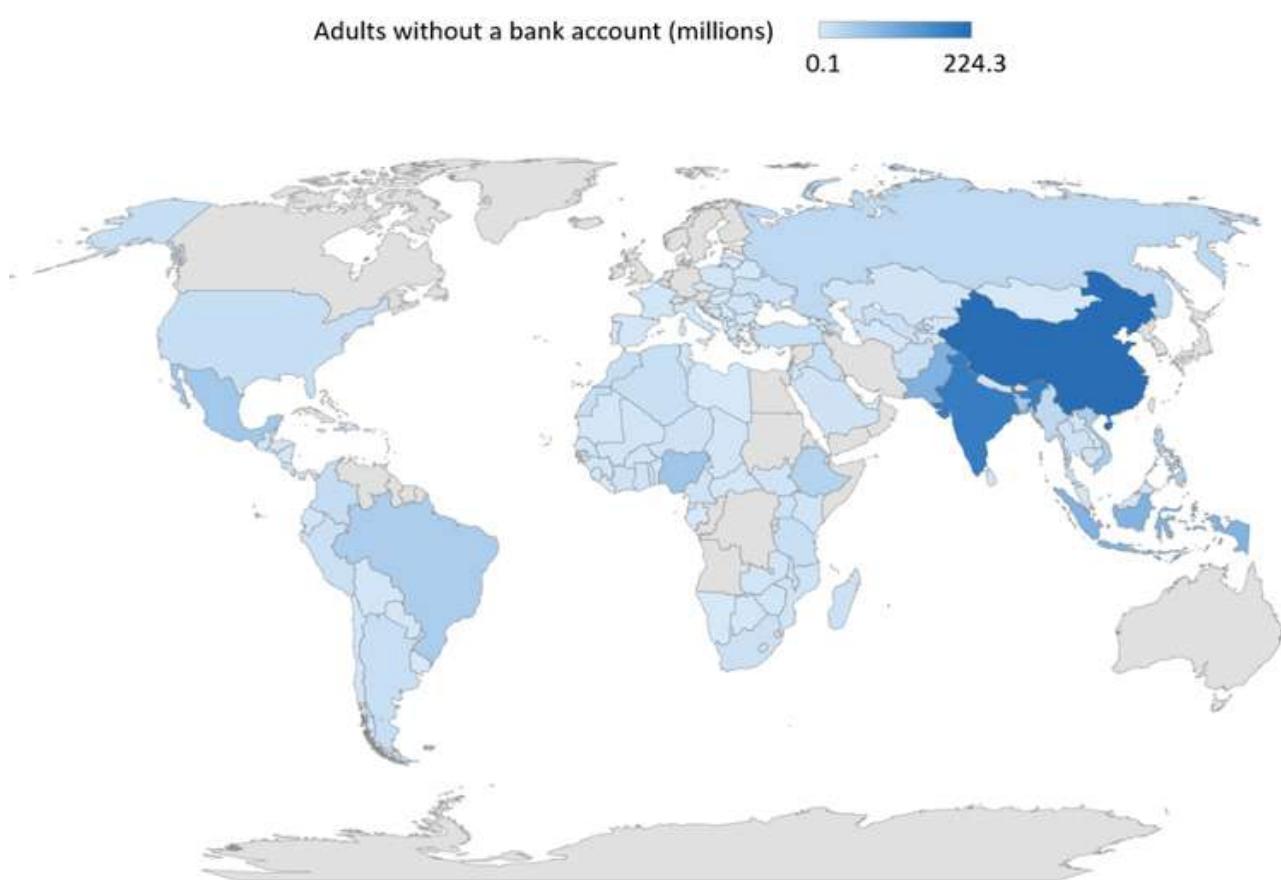
Source: Omdia

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EMERGING VS. MATURE MARKET DYNAMICS

Emerging markets have characteristics that have made them fertile ground for digital wallet services. Unlike mature economies, emerging markets have large unbanked populations with no access to formal financial services. In this situation, the need for digital wallets is acute and when given, is life changing. Digital wallet accounts give formally unbanked people access (and the means) to afford products and services that would have previously been outside of their grasp. Mobile payments and microfinance products also stimulate local business and give entrepreneurs the tools they need to get off the ground. This can have a positive impact on the economy, and bring wider societal benefits. Mindful of this, many governments in emerging markets have been pro-active in supporting digital wallets. Taken together, these are all positive developments that have helped drive financial inclusion. But despite these gains, there are still 1.7 billion adults globally that remain unbanked (World Bank, 2017), as shown in Figure 3. The need for digital wallet services is as urgent as it ever was.

Figure 3: Despite the progress of digital wallets, much of the world remains unbanked



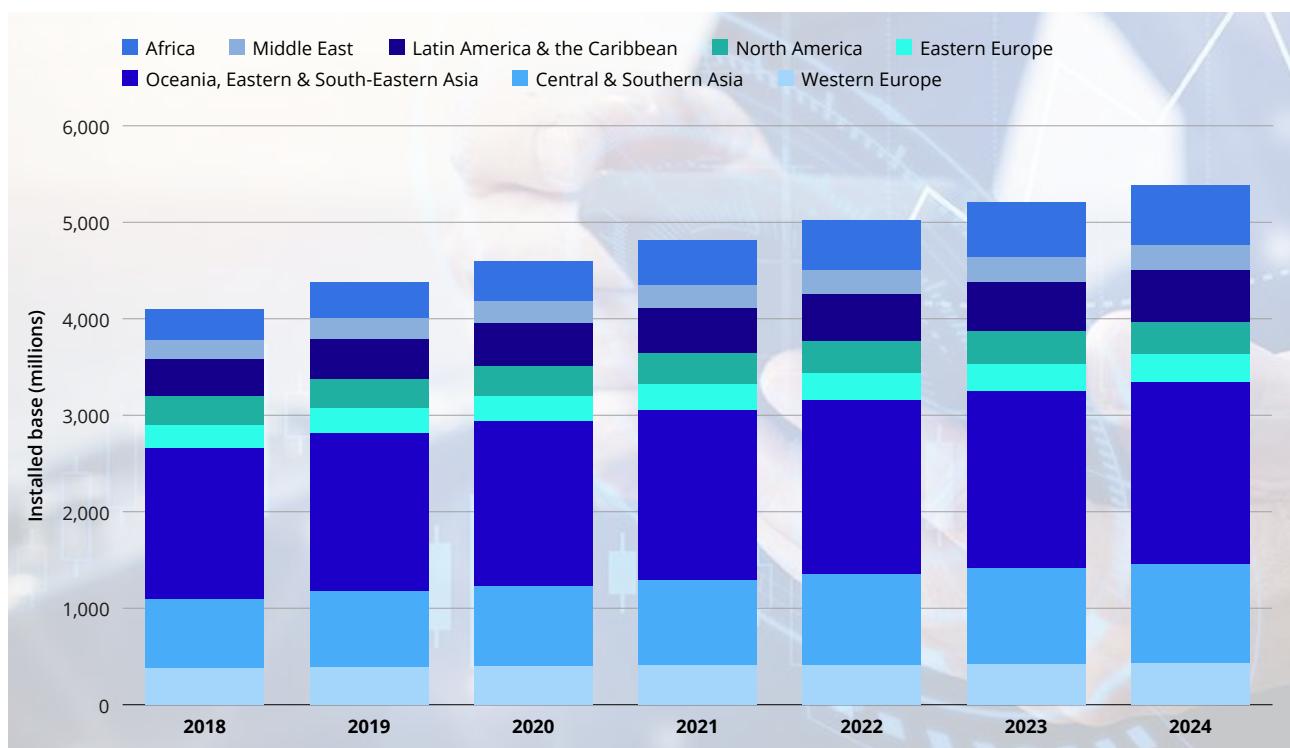
Source: World Bank (2017), Omdia

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The nature of banking versus cellular infrastructure has proved instrumental in the rise of digital wallet services in emerging markets. In these regions, cellular networks are widespread compared to traditional banking infrastructure, particularly in rural areas where formal banks are thin on the ground or completely absent. Moreover, cellular network coverage is constantly improving in terms of reach, density, capabilities, and quality, while smartphone penetration is ramping up as shown in Figure 4.

In mature regions, the dynamics for mobile financial services, payments, and commerce are almost the inverse to those found in emerging markets, and as a result, CSPs in mature economies have moved more slowly. Mature markets have established banking infrastructure and predominantly banked populations that have enjoyed good access to fixed broadband for many years. Taken together, this has made the case for mobile money services in mature markets less immediate. However, dynamics in mature markets are changing in ways that favor mobile banking and commerce. Consumers in mature markets have a sharpening appetite for online and mobile media services with the growing expectation that all things banking should be digital, particularly among millennials and the generations that follow them. Sensing an opportunity, CSP Orange has launched its own pure play mobile banking service (Orange Bank) in France and Spain.

Figure 4: Emerging markets lead global smartphone growth



Source: Omdia

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AN ATTRACTIVE PROPOSITION—BUT WITH MANY CHALLENGES ATTACHED

There are some compelling reasons for CSPs to embrace mobile payments and financial services that can bring value to the business on multiple fronts. But the benefits must be balanced against some significant challenges from a service, operational, and technology perspective. Indeed, failure to address the challenges will dissipate the benefits at best; and at worst, wipe them out entirely. A snapshot of the major benefits and challenges of digital wallets are summarized in Figure 5 below.

Figure 5: The pros and cons of digital wallet services must be kept in check



Source: Omdia

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VALUE EXTENDS BEYOND DIRECT REVENUE CONTRIBUTIONS

- Digital wallets can make a significant contribution to CSP service revenue. For example, in its 2020 results (ending March 31, 2020), Safaricom reported that M-Pesa YoY revenue grew 12.6% from KES74.99bn (\$701.5m) to KES84.44bn (\$790m).
- Well executed mobile payments and financial services can improve competitive differentiation for CSPs, helping to reduce churn and increase loyalty.
- In many markets, the penetration of m-payments and financial services are still relatively low (e.g., in Latin America), presenting good growth opportunities going forward.
- Mobile money services and digital wallets can help CSPs bring unbanked people into the formal economy, improving livelihoods and spending power. This has a positive impact on GDP, as it will enable previously unbanked consumers to afford operator services.
- Besides being a way to address unbanked and underbanked consumers, digital wallets can be targeted to specific segments, either existing or new. This includes millennials, different types of B2B/2C enterprises (e.g., micro-, small, and medium-sized enterprises (MSMEs)) or industry verticals (e.g., health, agriculture, energy).
- Mobile money services can act as a driver for other CSP services, for example stimulating messaging as friends or family text each other before and after making a mobile money transfer.
- There are opportunities to create service bundles that include mobile payments and financial services with other CSP services (e.g., with connectivity and comms, or in the case of MSMEs, business applications).
- The greater speed, capacity, and lower latencies provided by 5G enable more efficient m-payments and better digital wallet experiences.

HURDLES REMAIN THAT CANNOT BE IGNORED

- The cost of developing digital wallets can be high, as they need continual investment to support the enhancements that keep services attractive and drive efficiencies. Costs are mitigated as digital wallet services achieve scale and start to generate significant revenue, but for some operators this is not happening fast enough. Alongside this is the high cost of supporting agent networks in emerging markets, particularly agent commissions.
- The regulatory framework for payments and financial services presents an ongoing challenge and includes fundamentals such as regimes that prevent CSPs from taking a central role in the value chain. Alongside this are more fluid developments such as changing “know your customer” (KYC) requirements and anti-money laundering (AML) rules. And to make it even more complex, regulations vary in different markets.
- Technology and integration issues: This covers a lot of ground and includes the challenge of integrating digital wallets with existing legacy solutions and core BSS processes. CSPs can also struggle with AI in terms of where and how to start in the context of digital wallets. All the aforementioned are critical in taking digital wallets to the next level; a subject explored in detail in the section of this report titled “From digital wallet to intelligent wallet.”

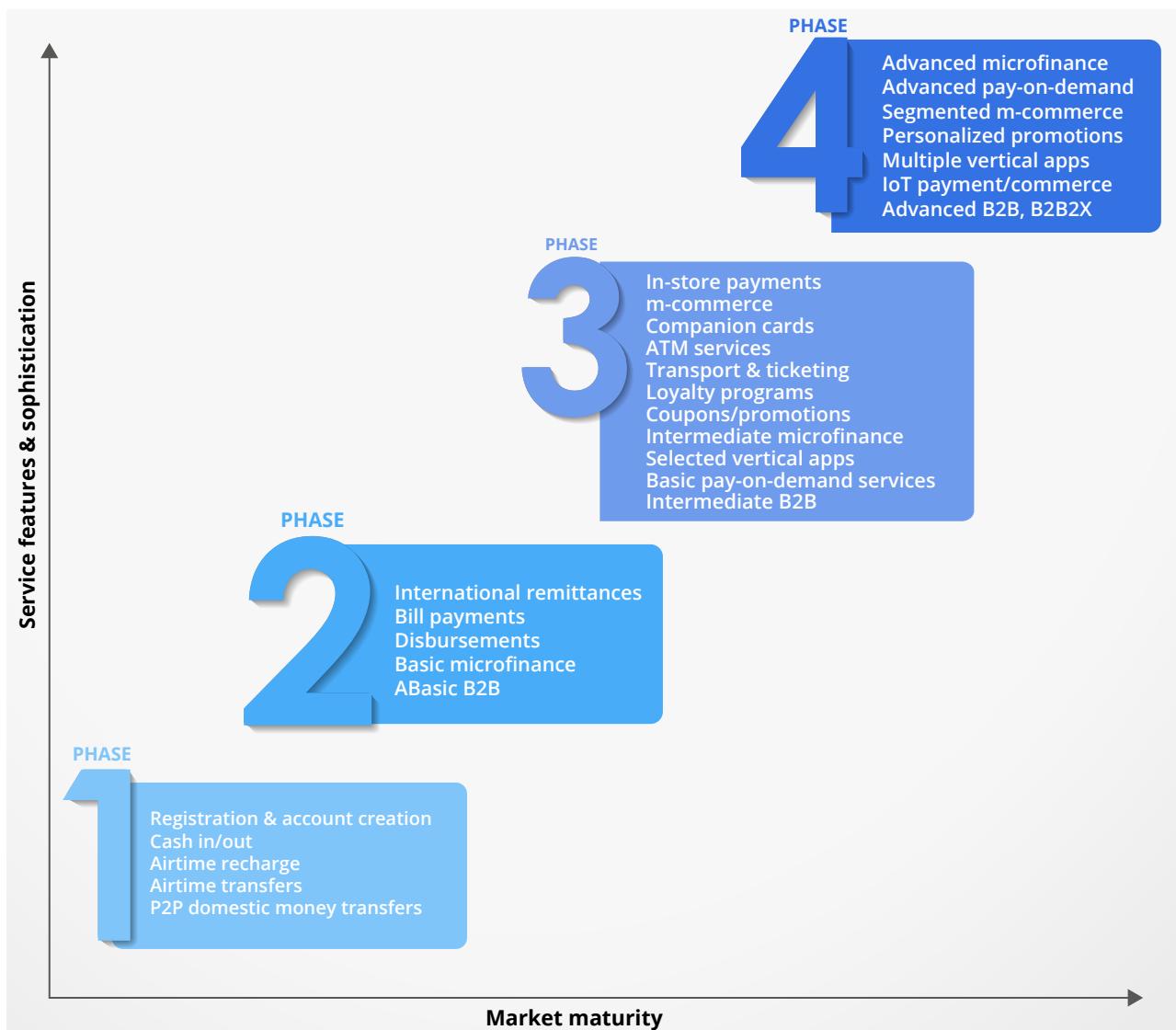
- More widespread usage of mobile payments and banking services is positive but does raise the stakes for security. Moreover, this has been an ongoing concern for consumers and is one of the biggest factors deterring adoption of mobile payments. In Omdia's 2019 consumer survey, almost half of respondents said that due to the above, they didn't use mobile payments.
- Physical agent networks continue to play a key role in supporting mobile money services in emerging markets, particularly in rural areas. But supporting agent networks is onerous due to agent recruitment and monitoring, training, incentives, commissions, and agent liquidity (i.e., float management).
- There is still heavy reliance on cash for payments transactions in emerging markets, particularly in the informal economy. In mature markets, consumers often use cash for smaller ticket items in stores, cafes, and other similar places. However, as noted at the beginning of this report, the COVID-19 pandemic is encouraging greater use of contactless card and mobile payments.
- There are ongoing challenges in driving active usage of mobile payments and other digital wallet services, particularly in countries where cash still dominates. In Omdia's 2019 consumer survey, only 18% of respondents used a mobile payment application once a day, while 14% used mobile payments once or twice per week. Moreover, these results are inflated by the inclusion of China in the survey—a market that is ahead of the usage curve for m-payments.
- Competition in mobile financial services and commerce is intensifying as a multitude of players converge on this domain, including traditional and digital-first banks, consumer tech giants, online marketplaces, independent app providers, and social/messaging platforms. For a deeper look at this trend, please see the section of this report titled "Competition is reaching boiling point."

SERVICE EVOLUTION: THE STORY SO FAR

The evolution path for digital wallets is summarized in **Figure 6**, which maps four key phases in terms of the features, functionality, and use cases supported by digital wallets and corresponding levels market maturity.

- Phase one.** Early launch phase with simple B2C use cases of which airtime recharge and P2P domestic mobile money transfers are the building blocks.
- Phase two.** Steady, incremental evolution with support for a wider range of B2C services including international remittances, disbursements, and basic microfinance products. This phase is also characterized by early stage, unsegmented B2B use cases.
- Phase three.** By now, CSPs have the experience and customer base to broaden and deepen the B2C services portfolio. There is a stronger focus on segmented B2B/2C use cases. Wallets are integrated with BSS, although how closely varies by service provider. Advanced technologies are being deployed (including AI) but typically for selected use cases and functions only. If developed to its full extent and potential, this phase sees digital wallets start to move to the next level and become an intelligent wallet proposition.
- Phase four.** This is the most advanced phase where few CSPs have yet to make significant inroads. It is characterized by highly segmented, personalized services in multiple domains (B2C, C2C, B2B/C). Services are enhanced by widespread use of AI solutions, and blockchain in certain use cases. 5G deployments have enhanced core payment services, and enabled new uses cases in industry/enterprise verticals, and in the wider IoT domain (B2B2X). By this phase, intelligent wallets are the name of the game.

Figure 6: Digital wallet service evolution



Source: Omdia

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DIGITAL WALLETS ARE STRUGGLING TO MOVE TO MORE ADVANCED PHASES

Digital wallet services have moved through phases one and two of the development curve, and have transitioned into phase three, but this last transition is proving difficult for CSPs, and for most the result is only a partial achievement. On the positive side, CSPs usually enter phase three with a good balance of low-value/high-volume services (e.g., mobile money transfers) and high-value/low-volume services (e.g., insurance and loans) to maximize margins. But further progress is inhibited by point solutions and light touch integration with BSS systems that contain assets that are critical to enhance digital wallets. This limits what CSPs can do and makes for a fragmented service portfolio that fails to carry users along the adoption curve.

CSPS MUST BE ON TOP OF THE EVER-EXPANDING OMNICHANNEL MIX

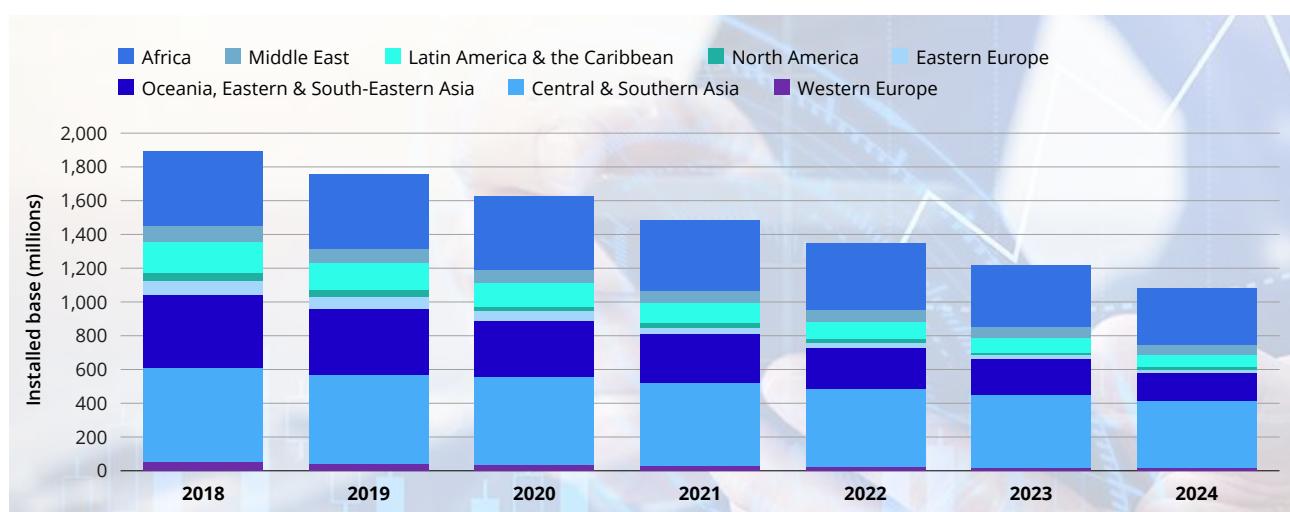
To be successful, digital wallets need to be available across multiple channels and consumer touchpoints. But this is becoming a moving target as channels expand, meaning CSPs have a growing number of touchpoints to manage. Physical agent networks are a foundational channel for digital wallets in emerging markets, but what's interesting is that operator retail stores in mature markets can also play a role, with well-trained in-house staff and facilities to showcase and promote CSP banking services and digital wallets. Orange France uses its physical stores in this way for its dedicated Orange Bank operation.

Other established elements in the omnichannel mix include online websites/stores, which can be in the form of popular app stores and an operator's own online store. CSPs can further support customers by integrating digital wallets with ATMs, which gives customers another cash-in/cash-out facility and is a useful tactic in emerging markets where agent networks are not available around the clock. ATMs can also help with liquidity, as unlike agents, ATMs are able to securely store significant amounts of money at most times.

Consumer AI voice assistants (e.g., Apple's Siri, Amazon's Alexa, and Google Assistant) are an emerging channel for mobile banking and commerce. AI assistants are already a familiar feature on smartphones and are finding increasing traction on wearable devices and in the connected home (e.g., smart speakers, TVs, and appliances). It is still early days for AI voice assistants in the financial services and commerce domain, but CSPs in South Korea have taken the plunge, as has Orange France, which uses its AI assistant Djingo to support its mobile banking service.

In emerging markets, CSPs still need to focus on more basic channels. Although smartphone penetration is growing in emerging markets, non-smartphones still account for a significant proportion of the installed base, as shown in Figure 7 below. Non-smartphone use will decline over time, but in the meantime, CSPs still need to support them along service menus based on SIM Application Toolkit (STK) and Unstructured Supplementary Service Data (USSD).

Figure 7: Non-smartphones remain an important part of the distribution mix in emerging markets



Source: Omdia

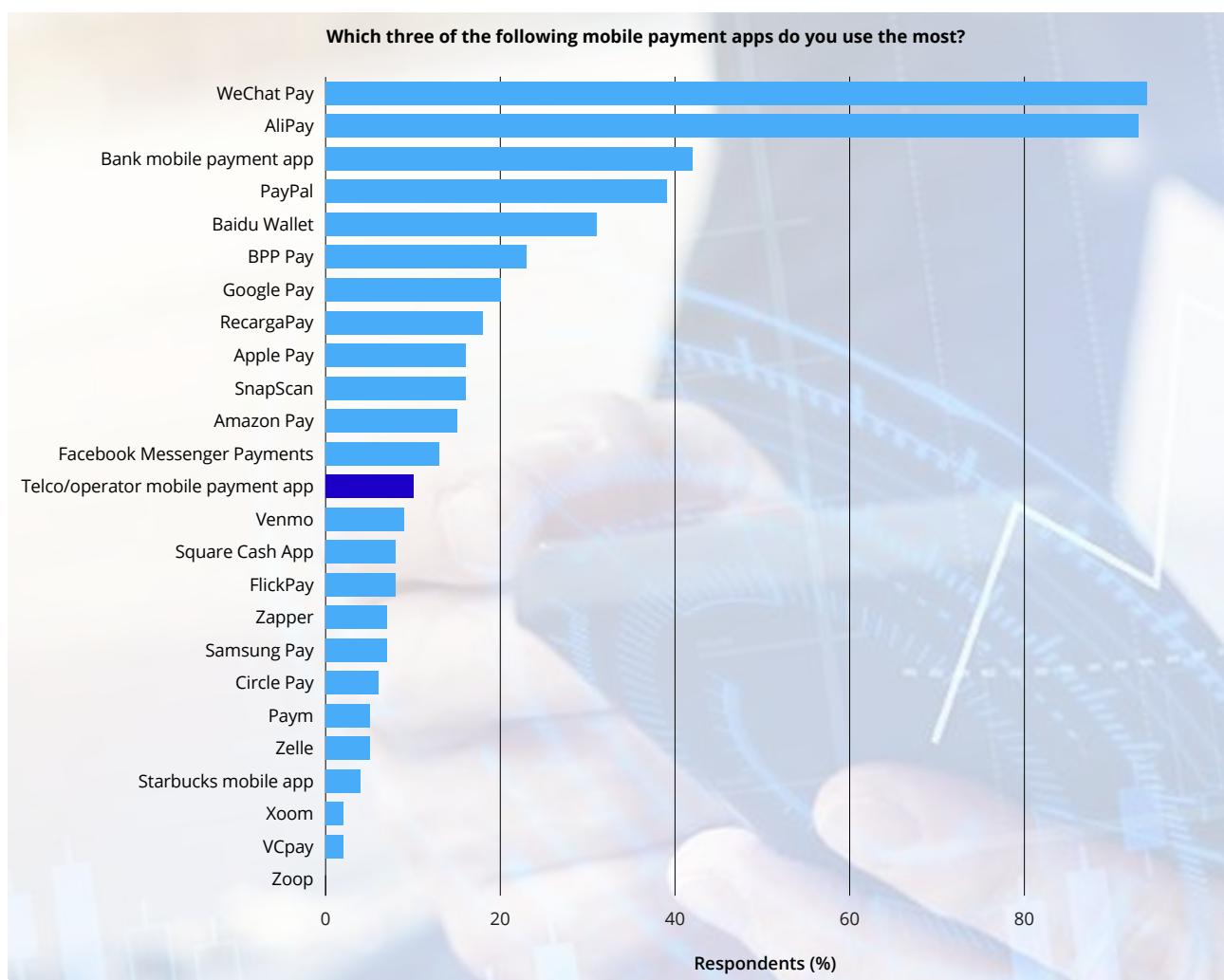
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COMPETITION IS REACHING BOILING POINT

OPERATORS MUST WORK HARDER TO STAND OUT TO BE ABLE TO DIFFERENTIATE

Although the case for well executed digital wallets is compelling, the reality is that there are a growing range of alternatives available to consumers, and CSPs will not always be the preferred provider, as shown in Figure 8 below. CSPs seeking to stake a claim in the mobile payments, commerce, and fintech domains are competing against an ever-expanding list of players. This includes traditional and digitalfirst banks, highly innovative and disruptive players including tech giants such as Google and Apple, e-commerce behemoths such as Amazon and Alibaba, plus a multitude of independent players small and large (PayPal, Cash App, Paytm, PalmPay, Paga, Grab Pay, LINE Pay, MercadoPago, Gojek, and more). China is an extreme example of a market where OTT consumer tech players dominate, with Alipay (Alibaba) and WeChat Pay (Tencent) carving up the mobile payments market with around a 95% share between them. Both AliPay and WeChat Pay are now diversified platforms that as well as online, in store, and peer-to-peer payments, offer access to range of financial services and commerce apps from a wide supporting ecosystem.

Figure 8: Operators are not top of the list of preferred consumer payment apps



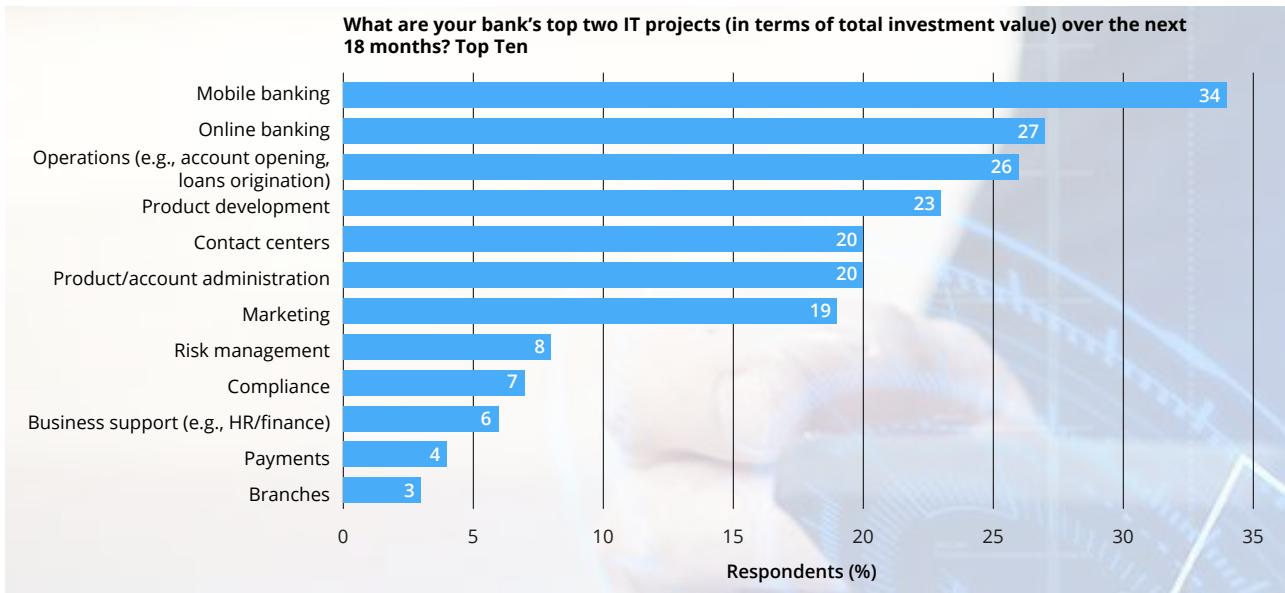
Source: Omdia Consumer mobile commerce/payments survey,
Omdia
n=3,040 (China, Brazil, South Africa, US, UK)

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BANKS AND CSPS ARE CONVERGING ON DIGITAL WALLETS

Traditional banks, just like CSPs, are embracing digital transformation. Banks are already shifting their business from dependence on physical branch networks to digital channels, with mobile banking to the forefront of their omnichannel strategy and a top investment priority, as shown in Figure 9 below. But offering "me too" mobile banking services is not enough and to be successful, banks need to ensure that their mobile development plans are ambitious enough to provide differentiation.

Figure 9: Banks place mobile top of their investment priorities



Source: Omdia ICT Enterprise survey: retail banks. N=303

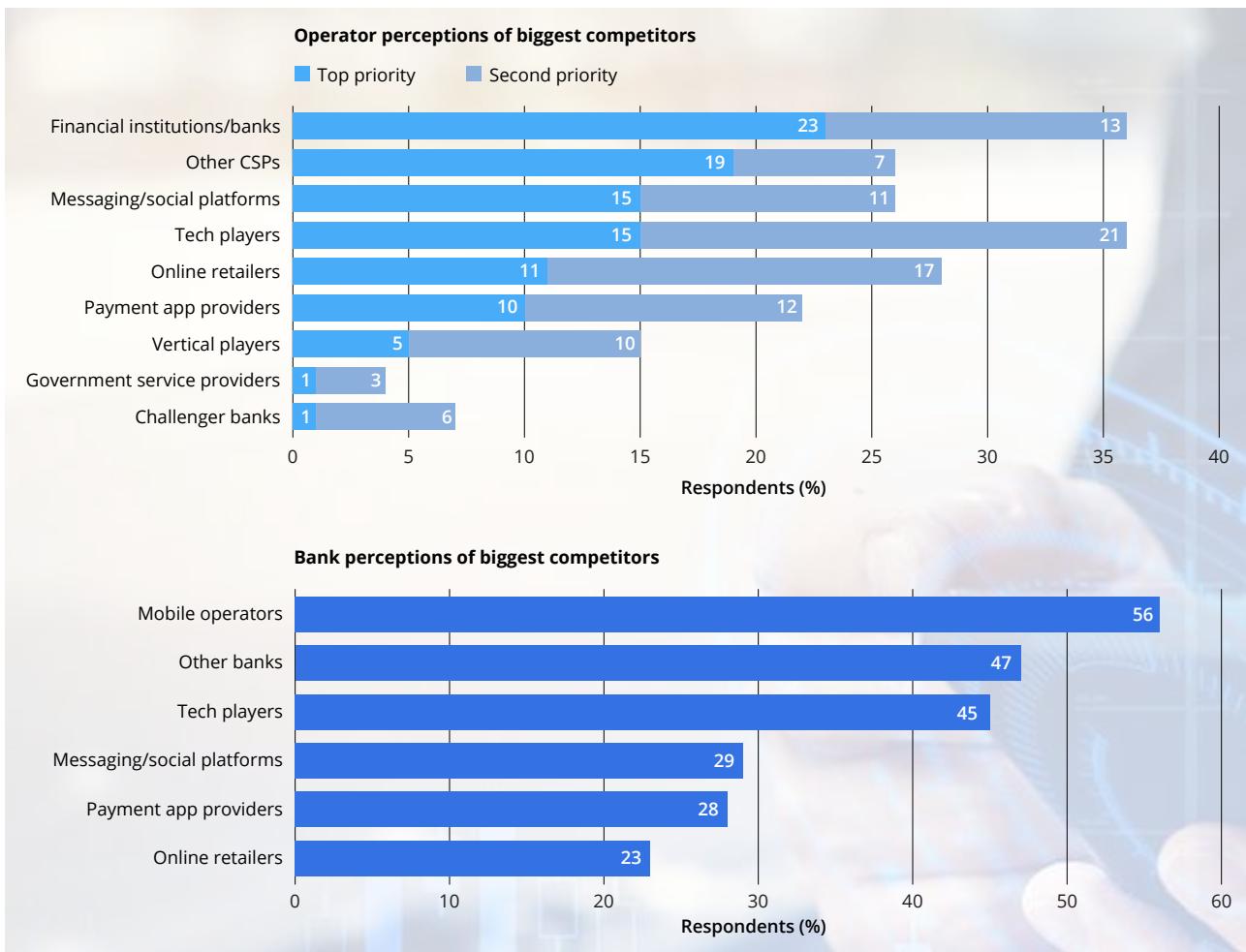
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AN ONGOING TALE OF COMPETITION AND COLLABORATION

In emerging markets, both CSPs and the bigger, leading banks have been early movers in mobile money services and are as such longstanding competitors, with both sides seeing each other as key rivals, as shown in Figure 10. However, CSPs and banks also have a track record in collaboration that is being driven not just by regulatory stipulations but also by shared objectives and the realization that they can achieve more by working together. Collaboration provides opportunities to leverage complementary skills and resources that can help reduce risk. Moreover, collaboration does not have to be in the form of a strategic alliance or joint venture: banks can benefit by being a third-party partner in a CSP's wider digital wallet ecosystem. The latter approach will be particularly useful to smaller banks and/or second/third and tier banking providers in emerging markets that may feel they have already fallen behind the leading mobile money CSPs.

From a bank's perspective, operators bring advantages in terms of their extensive mobile expertise, network reach and scale, carrier billing solutions, established distribution channels for mobile devices and services, and strong relationships with key consumer segments, plus associated data/insights that can be invaluable for credit scoring (among other things). From a CSP perspective, banks are the premier experts in financial services, have strong security credentials, deep knowledge of financial regulations, and strong relationships with merchants and enterprises. Banks and operators can tap into these respective capabilities to offer compelling converged services, and also leverage richer data seams than if they were going it alone.

Figure 10: CPS and banks view each other as key competitors



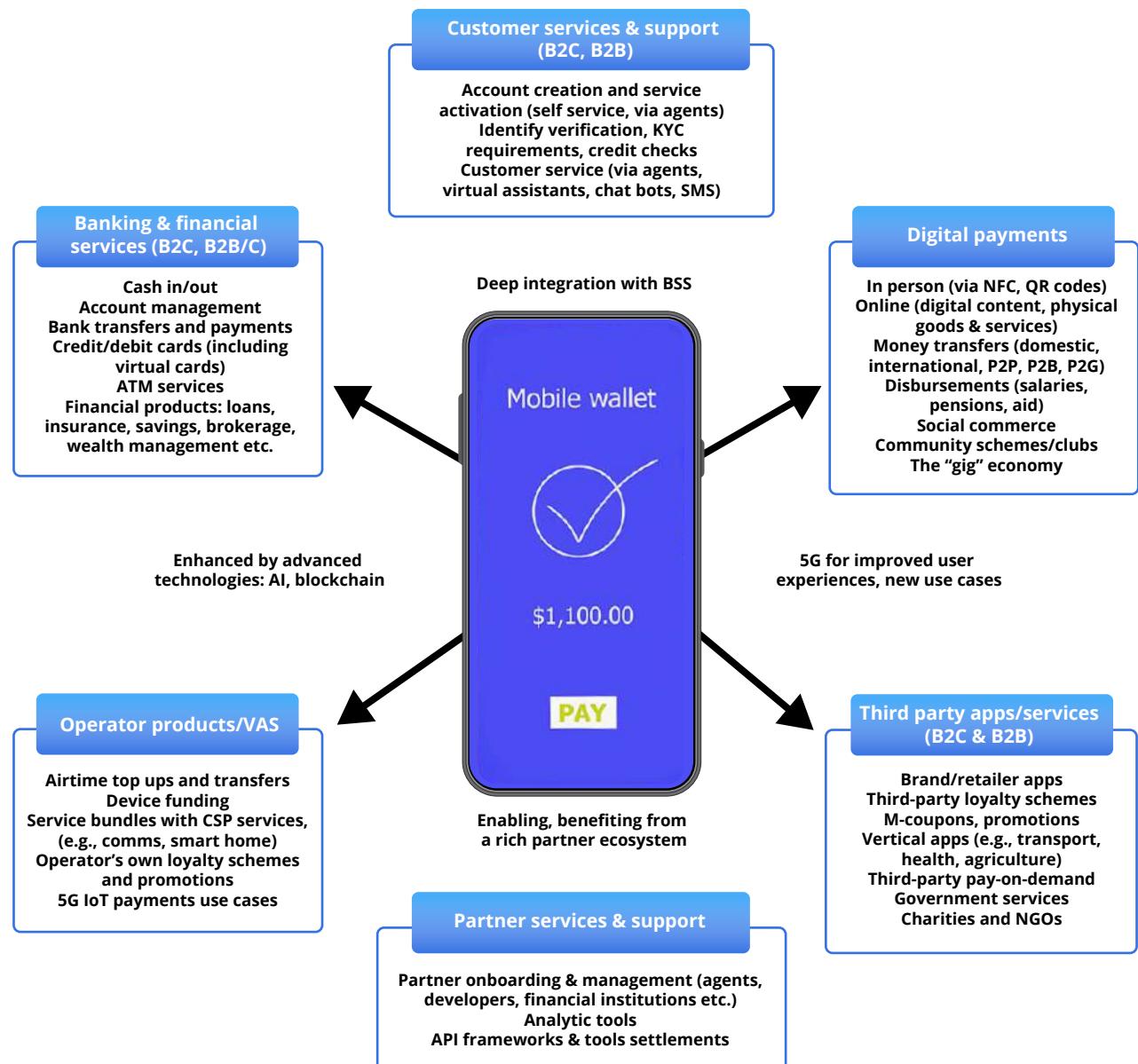
Source: Omdia Left – Omdia African operator survey, n=300. Right - Omdia African bank survey, n=200 © 2020 Omdia

THE ROAD AHEAD

FROM DIGITAL WALLET TO INTELLIGENT WALLET

Earlier in this report we looked at how digital wallets are progressing, and how CSPs are struggling to fully articulate all the attributes that mark phase three on the development curve. Phase three is an inflection point where CSPs should be transforming existing digital wallets into an intelligent wallet proposition, without which operators cannot move to phase four and beyond. The core characteristics of an intelligent wallet are shown in Figure 11 below, and what jumps out is that these are complex, demanding offerings comprised of multiple moving parts in terms of service capabilities, technology, and the supporting ecosystem.

Figure 11: Key elements of an intelligent wallet



Source: Omdia

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DEEP INTEGRATION FOR ENRICHED CAPABILITIES

One of the biggest problems with existing digital wallets is that they continue to operate in what is essentially a siloed environment. Digital wallets are often housed in standalone departments with a “needs must” approach to integration with other CSP services and BSS, which is a mistake. BSS contains assets and functionality that when fully integrated with digital wallets can take these services to the next level. BSS covers a lot of ground, but core elements include carrier billing, price optimization, customer relationship/experience management operations (e.g., customer onboarding, customer segmentation modelling, loyalty programs) the product catalogue, customer profiles (e.g., credit history, service usage) data assets, and analytics.

A typical point of intersection between digital wallets and BSS today is the use of carrier billing as a means to fund wallets, for example by using air-time credits to augment wallet funds. Conversely, wallet funds can be used to recharge airtime. Another example is the way CSPs use a network subscribers’ service history to determine credit worthiness for advances and loans, and pay-on-demand schemes. These are all highly beneficial use cases to both CSPs and customers, but with deeper BSS integration it could go further and be a lot more innovative. For example, the unified onboarding and bundling of digital wallets with other services in the product catalogue (smart home payments, device financing schemes, a wider range of pay-on-demand services). A value add in this scenario would be more flexible digital asset conversion with greater mix and match capabilities; for example, buying airtime with a combination of funds from loyalty programs and savings.

Deep integration between digital wallets and BSS also enables more effective use of customer data assets and insights that drives more personalized services and tiered segmentations models for services and loyalty programs.

GET THE POSITIONING RIGHT: THINK JOINED UP SERVICES, NOT STANDALONE APPS

An intelligent wallet should offer consumers a compelling selection of complementary, high-utility applications rather than a vast number of standalone apps. This should be self-evident, but the desired outcome is still not happening in the way it should, with the result that many wallet applications are used once, and then abandoned. The worst-case scenario is that people simply don’t see value or benefit in digital wallets, period. Deeper integration with BSS is part of the solution (as discussed above) but CSPs also need to position digital wallets as a lifestyle platform, not just an occasional service that allows them to pay for things. Consumers do not have an unmet craving for something called a digital wallet, but what they do need is an intelligent platform that makes their lives, easier, safer, and more enjoyable. For example, intelligent wallets could become a secure depository for receipts and product service warranties, pulling up receipts if proof or purchase is needed for a return, or reminding users when a warranty is about to expire.

INTELLIGENT WALLETS NEED A PLATFORM MODEL AND STRONG ECOSYSTEM

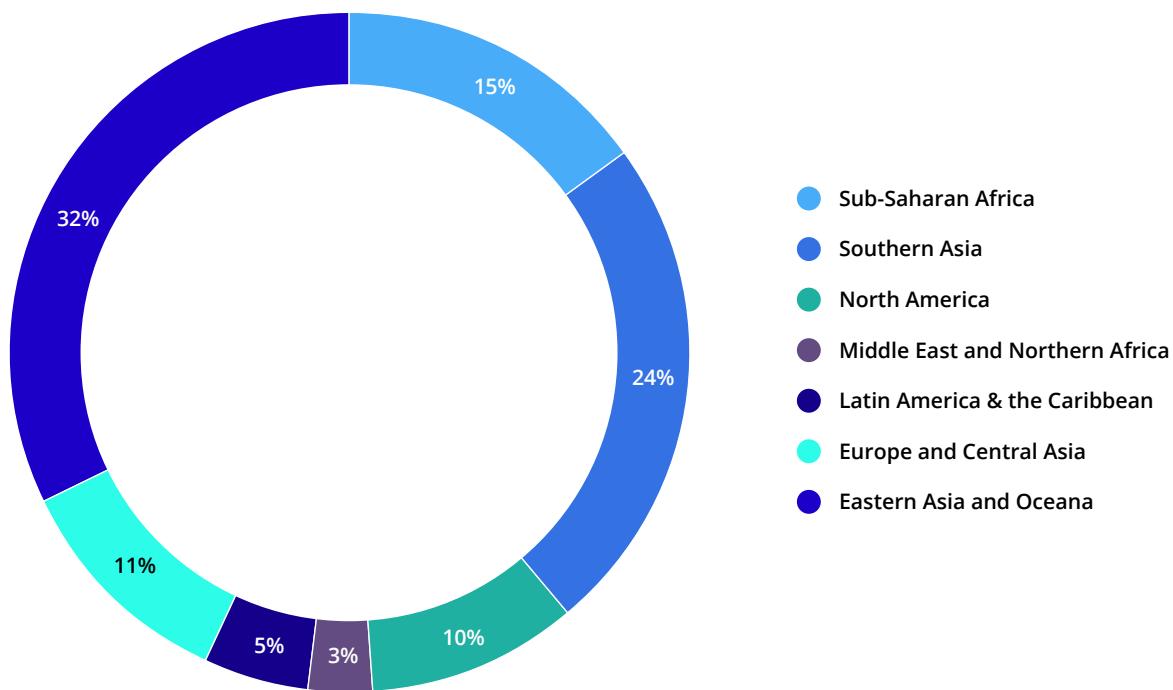
A critical success factor for an intelligent wallet is a strong supporting ecosystem of partners that includes application developers, financial service institutions, brands and merchants, governments, not for profit organizations (NGOs), and more. A strong service ecosystem requires an open platform approach enabled by solutions that support open API frameworks and tools, real-time settlements, and microservice architectures. A platform model (sometimes called payments as a platform) creates flexibility and is the foundation for building a strong partner ecosystem, fast service deployments, new business models, and ultimately, revenue.

Open banking also gives financial institutions the opportunity to adopt a platform strategy, allowing them to offer new products beyond their core portfolio that can strengthen engagement with existing customers and help to attract new ones.

THE RISE OF BESPOKE SOLUTIONS FOR MSMES

MSMEs are an anchor of the global economy, overwhelmingly so in emerging markets where they dominate the enterprise landscape, as shown in Figure 12. MSMEs account for almost 99% of all businesses worldwide and are important contributors to job creation and global economic development. According to the United Nations, MSMEs account for more than 50% of employment worldwide and formal MSMEs contribute to 40% of GDP in emerging economies, a figure that will be considerably higher if informal MSMEs are included.

Figure 12: MSMEs by region, World Bank Data 2019

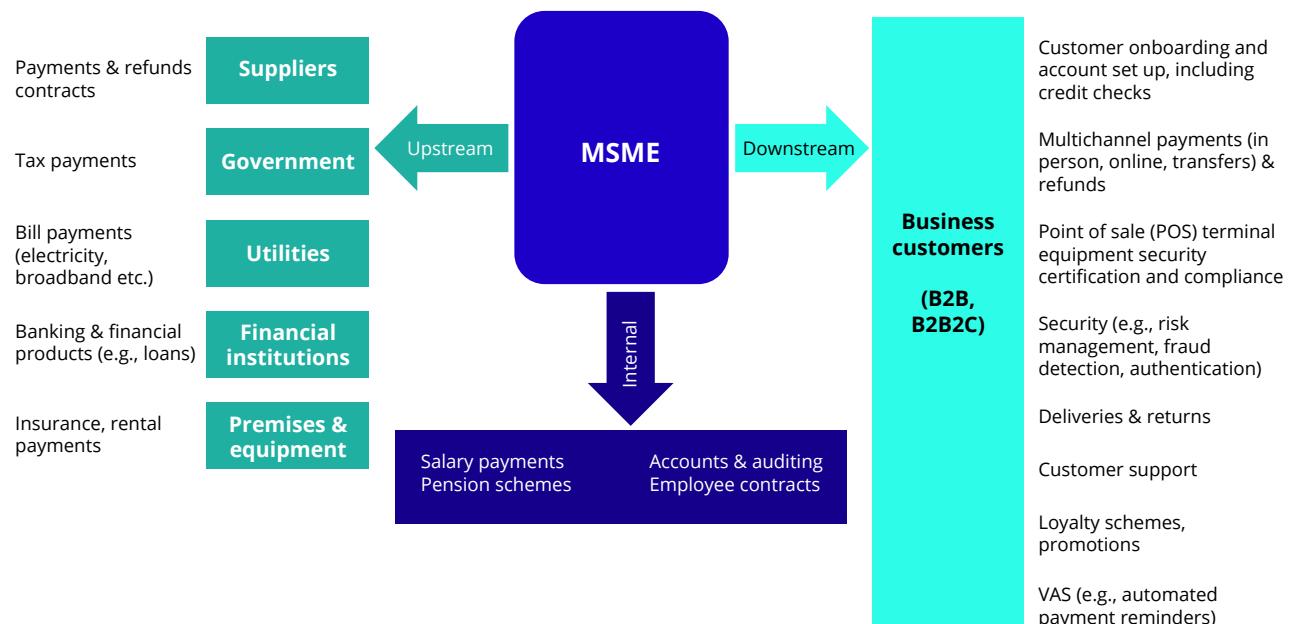


Source: World Bank, 2019

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Despite being the backbone of the global business economy, small businesses are not as well supported as they could be by the traditional banking and financial services industry. In emerging markets, MSMEs typically must use mobile payments and financial services services that have been developed for consumers rather than their needs. In mature markets, solutions are often a modified version of what is offered to large enterprises. MSMEs are still a largely untapped opportunity for operators and addressing this sector would help operators expand the intelligent wallet customer base and generate additional revenue from B2B/C services, for example interest on loans, premium insurance products, and payment processing transaction fees. MSMEs need better support for the services and functions summarized in Figure 13, which is by no means an all-inclusive check list.

Figure 13: MSME's operate in a complex ecosystem with multisided needs



Source: Omdia

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PLAN FOR THE 5G OPPORTUNITY

5G WILL HAVE A POSITIVE IMPACT ON PAYMENTS

5G network rollouts are gathering momentum and this will continue going forward, creating new possibilities for payments, financial services, and commerce. The faster speed, greater capacity, and lower latencies enabled by 5G will enable more efficient m-payments and better digital wallet experiences, which should in turn boost usage and transactions. 5G networks will:

- Improve mobile shopping via faster internet access and browsing.
- Support enhanced shopping features such as the ability to virtually try on clothes thanks to augmented reality apps.
- Provide better personalization features and services via the sharing of permitted customer data in real time (e.g., tailored promotions on the fly, location-based marketing).
- Drive more rapid payments processing and better security. For example, real time, pro-active fraud detection, instant cross-reference of merchant IDs, transaction amounts, biometrics, and more.

- And associated with the above, accelerated, simultaneous checks to streamline authentication for big ticket purchases (e.g., customer/user verification, credit checks, funds available, loans available etc.).

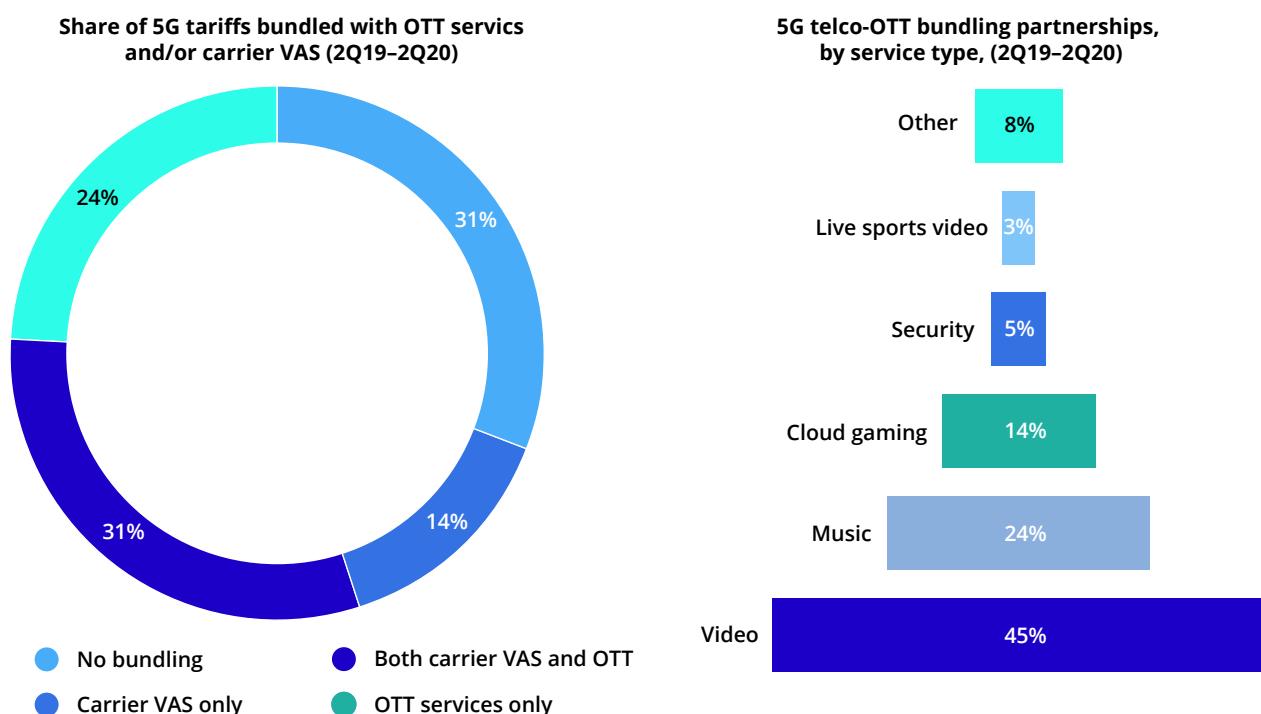
These improvements will benefit both consumers and third-party participants in an operator's intelligent wallet ecosystem (merchants, brands, insurance companies etc.). MSME's will also gain value from all the above advances that 5G brings, along with faster and better inventory management in their B2B/2C supply chain.

5G DIFFERENTIATED PLANS AND MEDIA BUNDLES

Mobile operators are spending billions on 5G networks and need ways to monetize the investment and stand out from competitors—beyond just competing on price and megabits per second. One approach is to have differentiated pricing based on 5G quality parameters (i.e., tiers according to speed levels, latency, and reliability). Another approach is to offer 5G subscriptions with own-brand or third-party-rich media services, which is already starting to happen as evidenced by findings from Omdia's 5G Consumer Broadband Pricing Tracker shown in Figure 14 below. An operator-intelligent wallet service could be part of a 5G media bundle given the positive impact that 5G can have on payments. This type of bundling tactic should make it easier for operators to upsell 5G at a premium, with the bundled services acting as both a perk and a demonstration of what the new network is capable of.

Supporting these 5G-differentiated tariff and bundled offerings will require highly flexible, integrated charging frameworks. Solutions will also need to standardize as much as possible the back-end integration required between both operators and third parties to enable the seamless activation and billing of bundled services.

Figure 14: More than half of 5G tariffs come bundled with OTT services



Source: Omdia

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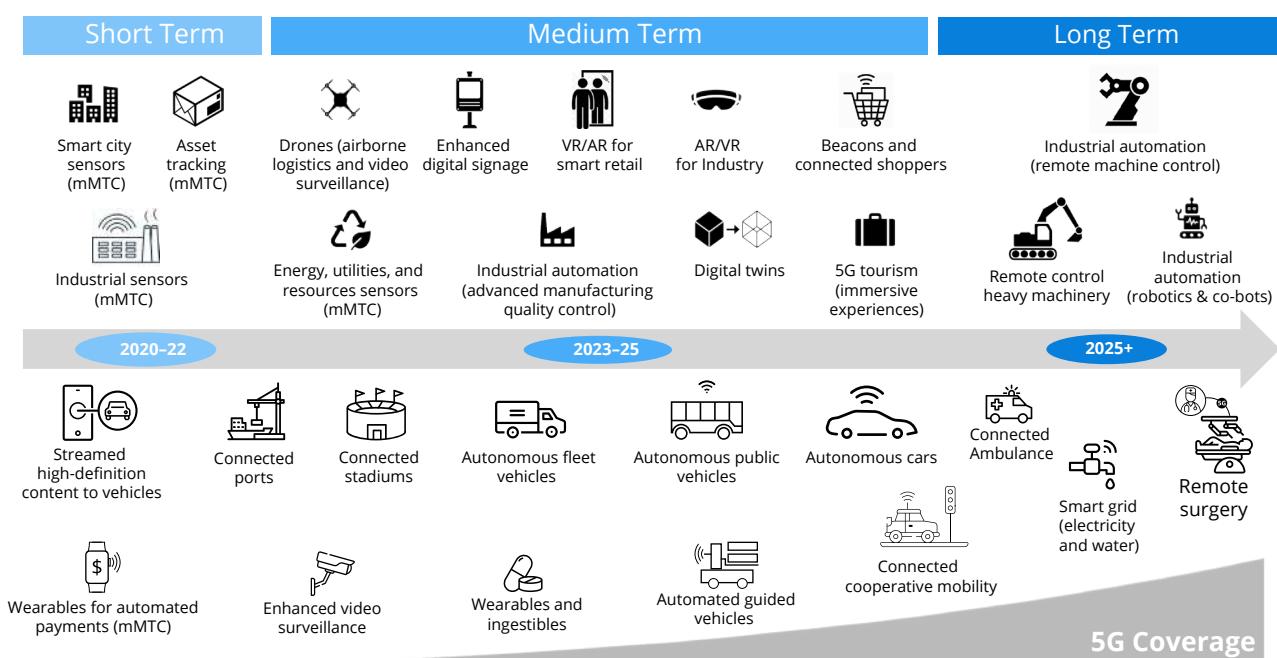
NEW PAYMENT USE CASES ON THE HORIZON

5G will open new B2B2X use cases and business models in industry verticals and the IoT domain, and we have summarized a wide selection of potential use cases in Figure 15 below. There will be a need for connected payments in a good many of these scenarios, for example:

- Automated ordering via digital replenishment services embedded in smart home appliances; smart security maintenance payments to service providers.
- Automated payments triggered by smart meters in homes and commercial establishments.
- In-car payments and commerce applications for fully autonomous driverless vehicles.
- Smart city connected payments for parking, mobility services, tourist venues, entertainment, and sports venues.
- Automated ordering and payments in manufacturing.
- Automated payments via wearables.

Most of the use cases captured in Figure 15 are longer term plays, dependent on the pace of 5G deployments. However, CSPs should plan for the future today and assess B2B2X use cases to determine where the best opportunities lie based on their individual capabilities and the needs of their verticals in their market. B2B2X models are built on partnership ecosystems, and CSPs will need to build deep partnerships outside of the traditional mobile space—in many ways a continuation of the trend that the IoT market has already driven.

Figure 15: 5G IoT use case timeline to commercialization



Source: Omdia

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RECOMMENDATIONS: BUILDING THE INTELLIGENT WALLET

HOW TO EXCEED EXPECTATIONS

Figure 16: The intelligent wallet checklist



Source: Omdia

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PUT THE USER EXPERIENCE AND ENGAGEMENT CENTRE STAGE

- Consumers are becoming used to curated, personalized digital content experiences and will increasingly expect the same from financial services, payments, and commerce applications. AI solutions can greatly assist on this front. For example, machine learning (ML) algorithms can facilitate faster, more accurate identification of user intent that results in better recommendations; matching relevant services with customer needs, plus potentially creating new types of product offerings.
- Focus on improving the onboarding experience for customers (including MSMEs). This should include self-service account opening options that can be streamlined and automated via digital selfies, biometrics, and scans of ID and similar. We recommend that contact center staff are still notified when applications are complete, and encouraged where appropriate to contact customers to discuss product needs.
- Identity management is a part of the user experience that can be enhanced by leveraging AI solutions. For example, biometrics (e.g., fingerprints, facial, iris, voice recognition) can be used to streamline the verification and authentication process for users—for both payments and with KYC compliance.
- Provide support for multiple payment scenarios (remote, in person) enabled by a mix of technologies that best support your market and customers (e.g., the use of QR codes for in-store payments in emerging markets). In the same spirit, CSPs should allow consumers to engage with intelligent wallets across all those channels and touch points that are relevant to them. In emerging markets, this will include continued support for SIM Application Toolkit (STK) and Unstructured Supplementary Service Data (USSD).

MAKE MSMES YOUR BEST FRIENDS

- Provide bespoke upstream and downstream solutions and services for MSMEs. Although they have certain needs in common with consumers, do not assume all MSME needs will be met with an existing consumer proposition or a cut down version of those provided to larger enterprises.
- MSMEs need support with payments set up and integration, refunds processing, connectivity to card schemes, and assistance with POS terminal and security compliance.
- Provide MSMEs with end-to-end capabilities spanning customer authentication and onboarding, payment processing, and settlement. Alongside this, MSMEs require robust risk management and fraud detection capabilities.
- Tools that provide insights into business performance will be highly valued by SMEs; for example, unified reporting and analytics tools. Other high-value tools could include those that help with customer invoicing and reminders, taxes, and accounts.

ADOPT FLEXIBLE SOLUTIONS THAT OPTIMIZE INTEGRATION AND A PLATFORM STRATEGY

- This strategy requires access to plug-and-play APIs for easy third-party service integration. Associated with this, focus on best-in-class developer/partner frameworks. For example, tools that allow partners to view, test, and innovate with your API assets.
- Focus on a modular microservice-based architecture that enhances flexibility and scalability. A microservice-based architecture also makes it easier to customize the intelligent wallet platform from the outset, and have adaptions as and when needed going forward.
- Solutions should have the flexibility to be implemented on-premise or in the cloud.
- Intelligent wallet architectures should be able to easily integrate with legacy solutions and CSP BSS functions, along with a CSP's own and third-party digital services. This is the only way that intelligent wallets can effectively benefit from a unified view of customers and processes (e.g., payments, the service/product catalogue).

EMBRACE ADVANCED TECHNOLOGIES TO DRIVE INNOVATION—AND FUTURE PROOFING

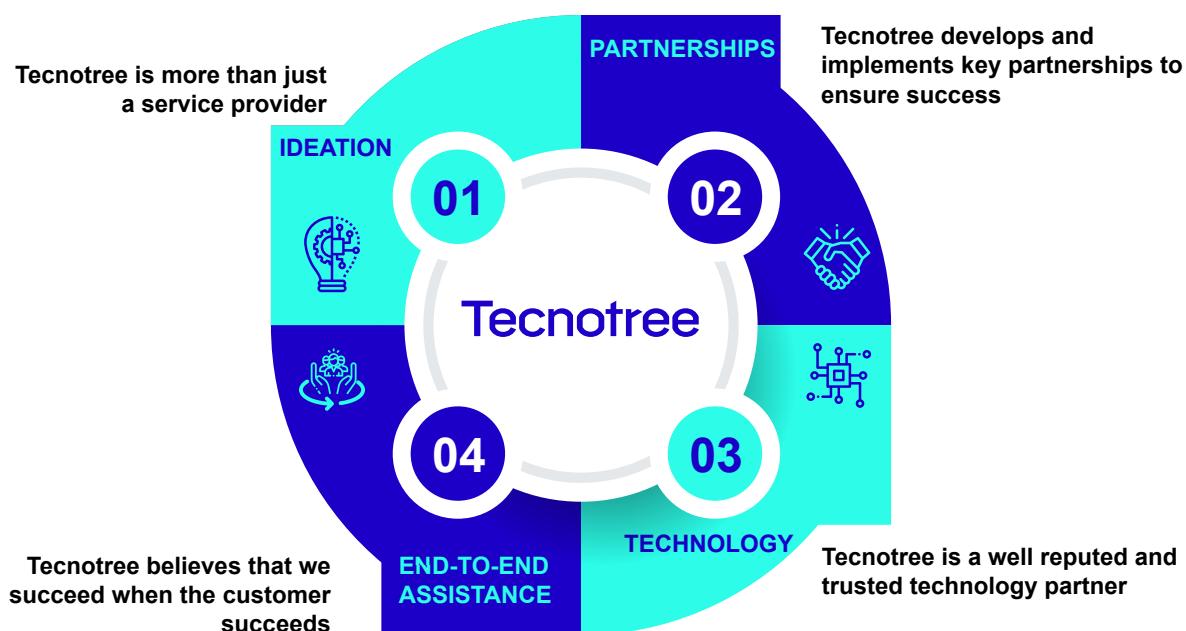
- We have already looked at how biometrics can be used to improve user identification and authentication. ML algorithms can also be used to monitor behavior to detect anomalies that are indicative of potentially fraudulent activity on transactions, and can tell when a new deviation is not associated with fraud.
- AI automation can be used to improve the speed and efficiency of the payment process at the back end; for example, by automating workflows and providing decision support.
- The application of advanced AI analytics and modelling to intelligent wallet and other data assets held by a CSP can provide insights that can be used for more granular segmentation modelling and to create more targeted personalization offers and service bundles.
- AI can be used to help agent networks, which are the backbone of mobile money services in emerging markets. For example, the use of machine ML-powered data analytic solutions could help float management by predicting and forecasting inventory demands, therefore helping agents to maintain adequate levels of liquidity.
- Blockchain supports a range of compelling use cases beyond cryptocurrencies. For example, blockchain can provide secure, tamper-proof infrastructure for audit logs and transaction records that are essential for financial transparency and reducing fraudulent activities. Blockchain can also be used for smart contract management, for a service provider's own needs, and/or for MSME customers.
- AI can bring significant enhancements to intelligent wallet customer support. This can be in the form of self-service chat bots on websites, or in messaging apps powered by ML algorithms that enable these smart chat bots to learn from interactions to provide contextually relevant and increasingly accurate support. AI tools can also support human agents by providing guidance in real time.

ABOUT TECNOTREE

The Tecnotree Intelligent Wallet is the platform to reshape and modernize the digital payment and financial services ecosystem. The three key components of this platform are:

1. **Digital Wallet:** an end-to-end wallet management solution to digitize payments and launch an intelligent digital wallet.
2. **Digital Banking:** a comprehensive fintech solution with core banking integrations to provide a wide range of financial products and services.
3. **Surge Microservices Accelerator:** a platform to quickly define and deploy innovative products and services using a low-code definition of UI, workflows, and smart contracts that integrate with both legacy and digital services on a microservices-based architecture with robust API management.

Tecnotree believes in ensuring the success of the service provider with its proven technology deployment track record, as well as legal and business consulting expertise.



APPENDIX

METHODOLOGY

This report is based on conversations with stakeholders and secondary sources in the public domain, along with Omdia's ongoing research into mobile financial services, commerce and payments. Additional support came from engagement with Omdia analysts from complementary practices and from the wider Omdia industry network.

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