



Telecoms and banks connect

Tapping into transactions and tech to grow revenue

In association with

GSMA™

J.P.Morgan PAYMENTS

IBM

Experts on this topic



Jennifer Acosta

Managing Director, Global Head of Media
and Telecommunications
North America Head of Enterprise Technology
J.P. Morgan Payments
[linkedin.com/in/jennifer-acosta-payments/](https://www.linkedin.com/in/jennifer-acosta-payments/)
jennifer.b.acosta@jpmchase.com

As a leader in the corporate and investment banks' payments business, Jennifer manages the sales strategy and execution for a team that serves the complex needs of some of the largest clients in the telecommunications space. Jennifer and her team leverage their expertise and thought leadership to drive end-to-end payments and liquidity solutions that support corporate clients' needs globally. As a co-chair of Women-on-the-Move for J.P. Morgan Payments, she remains passionate about advancing career mobility and diversity across the business. She has been with the firm for 15 years.

Stephen Rose

General Manager
Global Industries
IBM
[linkedin.com/in/thestephenrose](https://www.linkedin.com/in/thestephenrose)
stephen.rose@ibm.com

As a general manager at IBM, Stephen is driving multibillion-dollar P&L delivering technology, products, and solutions to CSPs and enterprise clients. He has spent the last 20 years working in technology, media, and telecommunications (TMT) strategy consulting. He is active across academic and industry forums that are instrumental in shaping the future of TMT sector growth.

John J. Duigenan

General Manager
Financial Services Industry
IBM
[linkedin.com/in/duigenan](https://www.linkedin.com/in/duigenan)
John.Duigenan@us.ibm.com

As the general manager for the Financial Services sector within IBM Global Industries, John's mission is to align the value creation from IBM Technology with current industry imperatives that span clients across the sector. As an IBM Distinguished Engineer, John also leads by example as a hands-on technologist.

Priya Kurien

Global TME Leader
IBM Institute for Business Value
[linkedin.com/in/priya-kurien](https://www.linkedin.com/in/priya-kurien)
priya.kurien@ibm.com

Priya leads the telecommunications, media, and entertainment (TME) research area for the IBM Institute for Business Value. She is a telecommunications engineer by training and has worked with over a dozen CSPs across four continents. She brings her deep and broad understanding of the telecom value chain, partnerships, competition, regulation, automation, and advanced technologies to help clients understand the business value of technology.

Foreword

Widespread smartphone usage has put digital payments at the fingertips of a growing number of consumers. Mobile applications are empowering them to complete financial transactions with retailers, restaurants, entertainment vendors, healthcare providers, educational institutions, insurance providers, and more.

Behind the scenes of surging mobile transactions are newly formed partnerships between the banking and telecommunications industries. Early accomplishments include delivering banking services to people in rural and remote areas of the world where traditional banking services may not be easily accessible.

These financial inclusion initiatives have set the stage for banks and communications service providers (CSPs) to combine their capabilities for future cooperative endeavors. This report, *Telecoms and banks connect*—written in collaboration with experts from J.P. Morgan Payments—explores the opportunities including:

- ***Enhancing customer experiences.*** CSPs and banks can team to provide a more seamless and integrated experience for customers accessing banking services through their mobile phones, making transactions and financial management more convenient.
- ***Promoting digital payments.*** Collaboration can support development and promotion of digital payment methods, such as mobile wallets and contactless payments. These tools help reduce the reliance on cash transactions and encourage adoption of digital payment systems.
- ***Enabling innovative financial products and services.*** By pooling resources and expertise, CSPs and banks can develop leading-edge financial products and services that cater to the evolving needs of customers. Examples include microloans, insurance, and savings products tailored to specific demographics or regions.
- ***Strengthening cybersecurity.*** As both industries deal with highly sensitive customer information and transactions, they can share best practices and work together to develop robust security protocols, helping better protect customer data, reduce cyberthreats, and prevent fraud.

As the synergy between CSPs and banks continues to grow, the benefits to their customers promise to be significant. At the same time, both industries gain advantages in their increasingly competitive markets. We are pleased to join with the IBM Institute for Business Value and J.P. Morgan Payments in outlining the steps leaders can take to advance creative mobile finance solutions.

Richard Cockle

Global Head of IoT, Identity, and Big Data
GSMA



Mobilizing telecoms and banks for growth

Online payments are now mobile. As consumers increasingly use their smartphones to shop for goods and services, bank, and settle bills, the global mobile payment market reached an impressive \$2,127.1 billion in 2022 and is expected to be nearly triple that by 2028.¹

This surge of digital financial services presents an urgently needed opportunity for the telecommunications industry to extend into new markets and generate additional revenue streams. Some communications service providers (CSPs) have transformed landscapes with mobile money in emerging markets, including countries across Africa.² Others are exploring an Economy of Things, where IoT devices complete transactions.³ Yet some have been taking a wait-and-see approach to mobile financial services.

The waiting period is over. Fast-moving fintechs and startups can gain the edge if CSPs don't move quickly. Enterprise telecom customers are also enamored: nearly two in three (63%) said they are interested in payment solutions from their CSPs in recent research from the IBM Institute for Business Value (IBM IBV).⁴ This is unsurprising given the brand trust with CSPs.

But CSPs cannot deliver these solutions alone. They must partner with banks, which can help ensure mobile transactions are seamless, secure, and successful (see Perspective, "Banks as payments playmakers"). The growth of technologies such as cloud and open application programming interfaces (APIs) clears the way for banks and CSPs to collaborate and create real-time financial solutions.

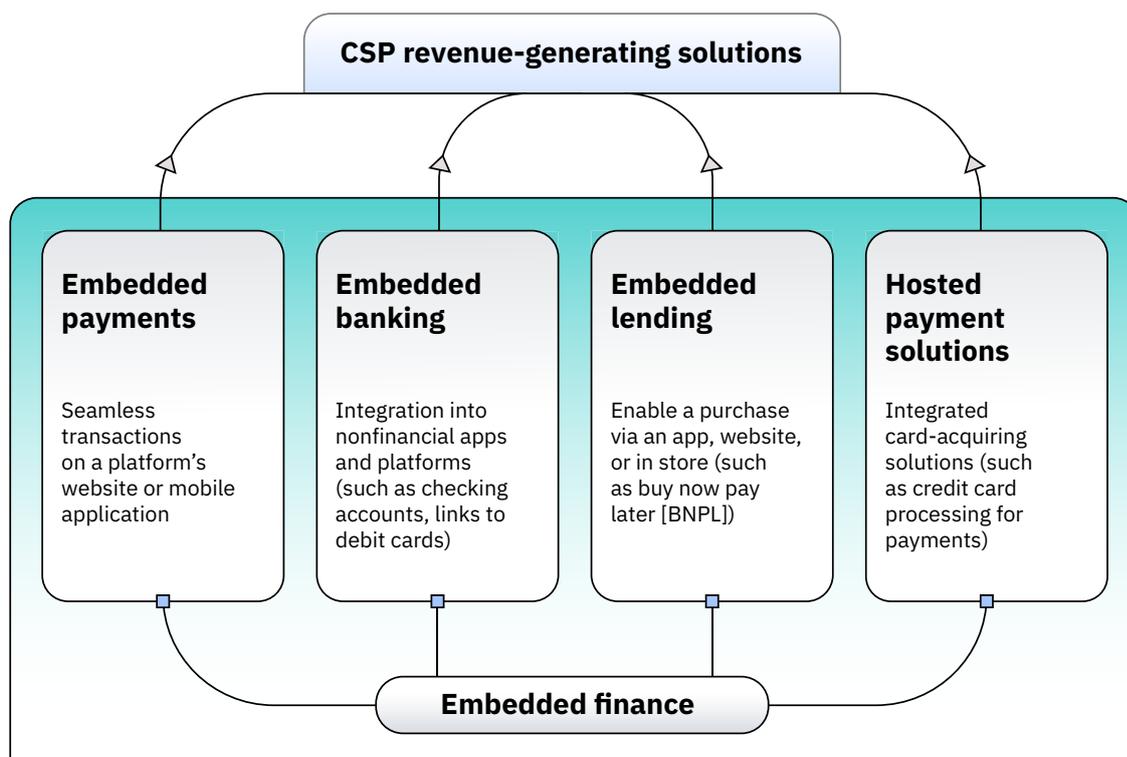
In this report, we look first at four pillars of potential opportunities; then why CSPs and banks are natural partners; and finally, three critical steps for successful revenue-generating partnerships. We end with a detailed action guide offering specific measures that telecom executives can pursue.

Pillars of potential

Together, CSPs and banks can deliver embedded finance solutions, which directly integrate financial tools or services into nonfinancial platforms or business models.

FIGURE 1

CSPs can plug into the four pillars of embedded finance to build new revenue-generating solutions that enhance customer loyalty.



Embedded payments

Embedded payments allow customers to complete transactions seamlessly without leaving a platform's website or mobile application. These types of simplified buying experiences can build customer loyalty and deepen CSP-consumer relationships.⁵ For instance, CSPs can partner with consumer electronics retailers to offer rebates to their customers. In this case, the CSP customer gains added benefits and offers through the CSP ecosystem.

Embedded banking

Embedded banking solutions are integrated into nonfinancial applications and platforms and enable businesses to provide slimmed down banking services to customers in a single client experience. A popular example is Lyft Direct, which offers a checking account and linked debit card exclusively to Lyft drivers. Drivers can immediately access their earnings after every trip, improving the overall worker experience and promoting loyalty to the brand.⁶

Embedded lending

Embedded lending solutions are designed to offer consumers more seamless access to financial products and services that enable a purchase through apps, websites, or in store. One example: buy-now-pay-later (BNPL) options from providers such as Klarna or Clearpay are prevalent across ecommerce sites.

Hosted payment solutions

These services permit a company to have a fully integrated card-acquiring solution, offering credit card processing for payments. Payment solutions in this space offer business management tools to help small businesses get up and running as well as take payments for their services. An example is Toast, which provides a single platform combining many of the systems needed to run a restaurant, including point-of-sale, payment processing, and online ordering.⁷

How might these embedded finance pieces come together? Consider smart home products and services, an area in which telecom consumers are keenly interested, according to an IBM IBV survey.⁸ A CSP could build a digital marketplace to meet this demand, enabling consumers to pay or finance their purchases, as well as add insurance or extended warranties, all without leaving the platform. For smart home service/product providers, the platform could include payment processing, currency conversion, credit checks, and other banking services.

Where banking and telecom industries intersect

With jointly delivered financial services, CSPs and banks can place themselves at the core of revolutionary cross-industry solutions, leveraging their strengths to extend their reach to more customers.

Each industry brings individual and shared advantages to the drawing board, including high-speed connectivity, consumer app development experience, trusted brands, troves of data, and secure banking services (see Figure 2).

Combining data insights is one nexus. CSPs have network and call-detail information, customer service usage and payment histories, plus detail from billions of IoT devices. Banks have information on consumers' buying behaviors, spending patterns, credit scores, loan details, and more. Robust analyses of these unique types of data can uncover customer struggles, needs, and opportunities to spark imaginative service ideas.

FIGURE 2

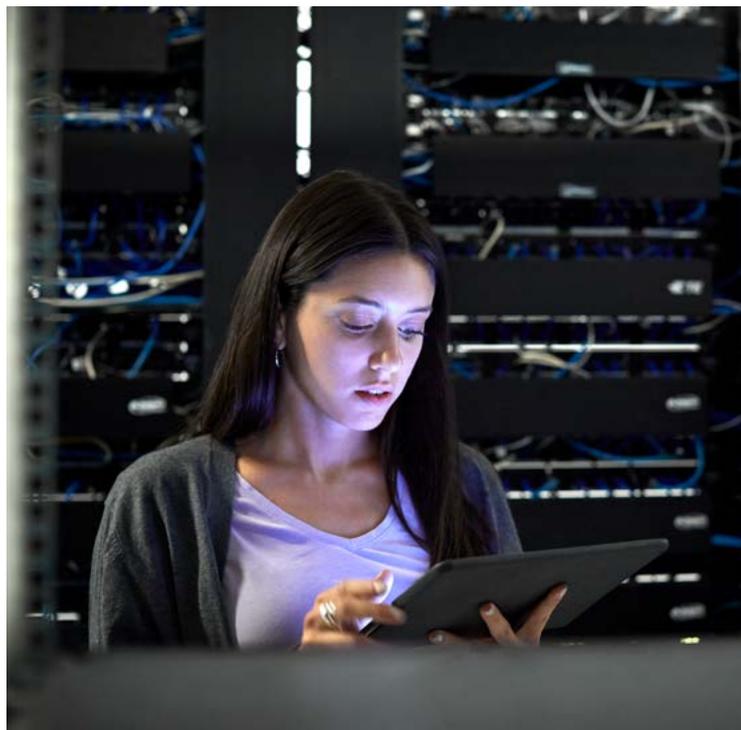
CSPs and banks bring individual and shared advantages to new financial solutions.



Robust analyses of banking and telecom data can uncover customer struggles, needs, and opportunities.

Both industries also have steadfast customer bases and trusted brands. In recent IBM IBV research, 80% of global banking consumers said they prefer to deposit their salary and keep their savings in a traditional bank versus a branchless, fully digital option.⁹ Similarly, an IBM IBV survey showed that telecom consumers are mostly loyal, satisfied, and trusting of their CSPs. 73% had been with their mobile provider for more than two years, 62% were either satisfied or extremely delighted with their provider, and 74% had moderate or complete trust of their provider.¹⁰

Combining their assets positions CSPs and banks for productive partnerships. And banking executives are willing: respondents in a recent IBM IBV banking survey ranked telecoms as a top five partner for embedded finance opportunities.¹¹



Perspective

Banks as payments playmakers¹²

A less-than-optimal payments experience can be devastating, which is why businesses building these experiences need banks and financial service providers to act as “payments playmakers.” Rather than playing a starring role in online commerce, such playmakers serve as referees to make sure good transactions get through and service standards live up to consumer expectations.

To deliver friction-free payment experiences at scale, telecom enterprises need to partner with financial services providers that can handle the payment administration required—including collecting card details, enabling refunds, and facilitating cross-border transactions. The regulations and technologies—and the pace at which they change—are demanding, but the right partnerships put the critical details in the hands of the experts and lead telecom businesses down the path to seamless payment solutions.

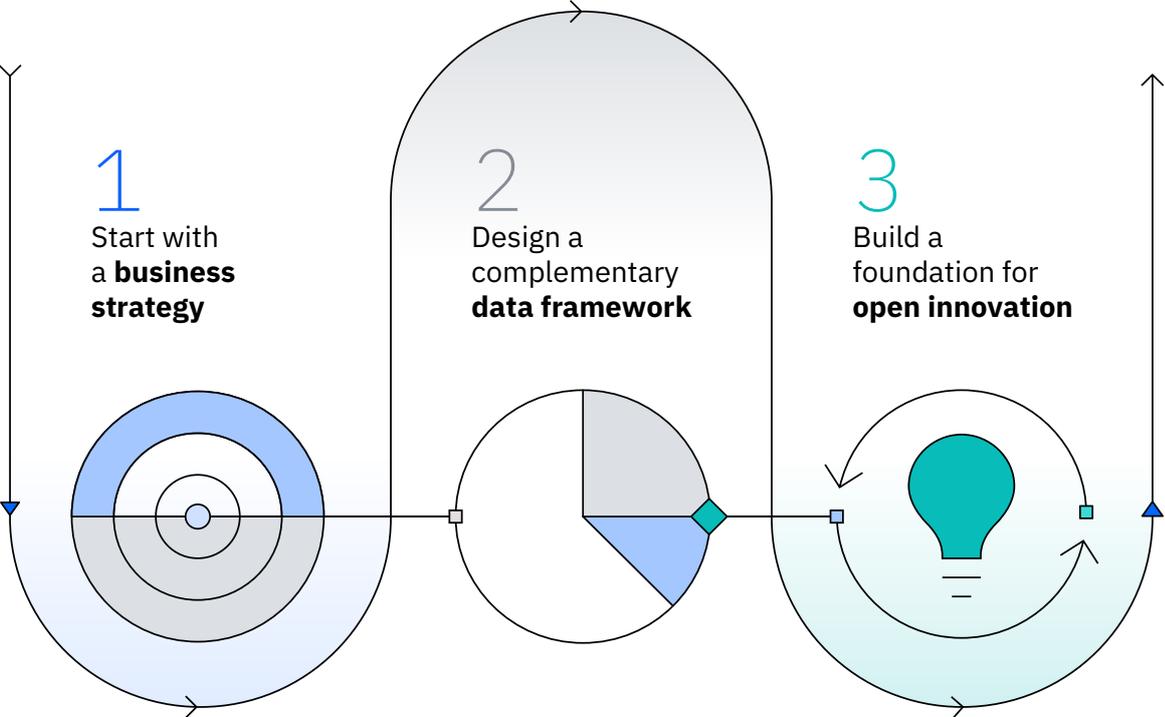


Three steps to successful telecom-banking partnerships

CSPs and banks must align on their approach to solution innovation, which includes three critical steps (see Figure 3). This section discusses insights and best practices for each step.

FIGURE 3

Telecom-banking partnerships require collaboration across three areas.



Step one: Start with a business strategy that drives co-innovation

It's unlikely organizations can build a one-size-fits-all payment solution. Different geographical markets present different opportunities based on cultural preferences, customer expectations, connectivity access, regulations, and even national digitalization strategies.

Successful telecom-banking partnerships must begin with a carefully considered business strategy based on which solution is the most feasible and can have the biggest payoff. The key to success is understanding that markets matter. For example, there can be intense geographical differences: in Japan, only 7% of consumers reported having a primary account with a branchless neobank versus 29% of consumers in Brazil.¹³

IBM IBV analysis has pinpointed other digital payments divides too. In major advanced economies and EU member states (as defined by the International Monetary Fund), consumers said they prefer traditional payments such as plastic cards and direct debits, with digital wallets starting to make inroads. In advanced and emerging economies, mobile wallets were the preferred method for in-person purchases and are in-line with cards and debits for paying bills.¹⁴

Other research indicates that digital payments will grow at the fastest pace in the Asia Pacific region over the next five years. This is being fueled by increasing adoption of smartphones and contactless and real-time payments plus government initiatives to boost development of digitalized payment platforms.¹⁵

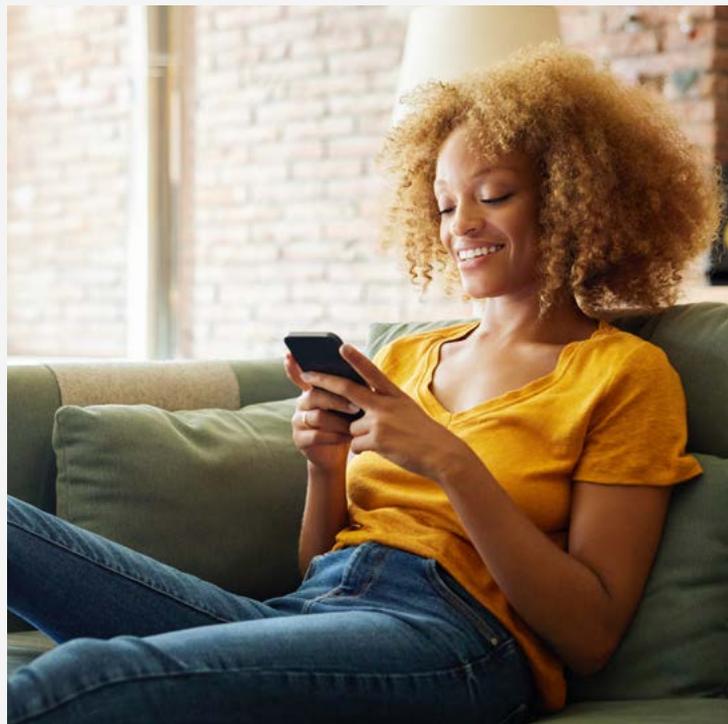
In choosing a strategy, CSPs should keep a steady eye on the long term, since co-creating with other industry players often requires a significant investment of time and resources. At the same time, it can be useful—and valuable—to generate near-term wins too. Embedded payment solutions are often simpler and faster to implement, integrating payments infrastructure to enable commerce now. Another ripe area is social commerce, which targets transactions on social networks and digital media (see Perspective, “The social commerce shopping revolution”). Early gains can reinforce a developing telecom-banking alliance.

Perspective

The social commerce shopping revolution

With more than 60% of the world on social media, the typical person spends about 2.5 hours a day on these platforms.¹⁶ Rather than drive users elsewhere to make a purchase, a well-designed payment experience can turn them into a captive shopping audience. The potential is immense: social commerce sales are projected to grow to \$1.2 trillion by 2025.¹⁷

Forward-thinking CSPs will embed finance and payment links within posts and ads on social media. Digital wallets will allow consumers to store preferred payment information. And businesses can apply analytics on a consumer's purchases across sales channels to curate ads and recommendations on social channels.



Step two: Design a complementary data framework

CSPs and banks have a wealth of consumer data that can be tremendously valuable. Credit ratings, payment histories, and service usage can reveal what's important to consumers and who are strong candidates for different types of financial offers.

Value is amplified when adding the data of other industries that are part of the solution. For example, patterns in retail buying or electric vehicle charging can be combined with mobile phone location information within advanced analytics tools to identify opportunities for captive moments for engagement. Data-driven hyper-contextualized experiences can impact buying behavior.

But obstacles exist—practical, regulatory, and brand-related. CSPs, banks, and any other participating industry must partner to define their priorities and a data framework that addresses processing, analytics, and packaging of the results.¹⁸ They must also consider what data is worth sharing and what can be shared. Data ownership and privacy issues can put hard-earned consumer trust at risk. While embedded financial services offer the advantage of increased security because consumers do not need to store sensitive information themselves, solutions must have robust data security built in.¹⁹

CSPs and banks also need to tackle data governance to help ensure high-quality data feeds their solutions. And finally, they must decide how to share the data—which leads us to step three.

Step three: Build a foundation for open innovation

To build real-time, cross-industry financial services that compel consumers, organizations must embrace open innovation. Recent IBM IBV research has shown that ecosystem-driven innovation practices drive better business outcomes than traditional, internally driven ones.²⁰

Open innovation demands open technology, yet both banks and CSPs have been on a perpetual journey to modernize their infrastructure. In an IBM IBV study, 70% of North American telecom and banking executives said they operate disparate systems on old technologies and tools. And 73% said that many of their applications are slow and inflexible and need to be modernized.²¹

The obvious solution is hybrid cloud, which can provide the foundation for advanced technologies and API development to support collaborative financial services solutions. With the flexibility, agility, and scalability of hybrid cloud in place, telecom-banking partners can implement a data architecture, such as a data mesh or data fabric, to strengthen governance capabilities and enable secure data sharing within and outside the organizations. They can add the advanced technology layers, including blockchain for heightened security and transparency across cross-industry ecosystems, as well as traditional and generative AI for deeper analysis, insights, and automation.

CSPs and banks with hybrid cloud capabilities can take an API-first approach to application development, allowing ecosystem partners to access, consume, and share data and services more easily. But a lack of API standardization—protocols, formats, data dictionaries, security features—blocks progress, particularly in cross-border payment systems.²² An IBM IBV survey on embedded finance found more than half of banking executives cited insufficient API standards and modularity as top challenges.²³

But some banks are breaking down these barriers. For example, J.P. Morgan Payments has started to open their developer portal to those who want to view the API protocols. Access to technical documentation, specifications, and a sandbox environment for trying APIs now extends beyond only bank customers. J.P. Morgan Payments engineers are also contributing open source code through platforms such as GitHub and openly engage with developer communities to create new embedded finance products.²⁴

The need for open collaboration can't be underestimated. In the telecom industry, the GSMA Open Gateway initiative aims to standardize how services are delivered through open APIs.²⁵ In banking, countries and government bodies are engaging in varied ways with the concept of open banking—where third-party developers create applications and services based on banking data using APIs. Some are being more prescriptive with standards, such as the UK and Brazil, while others have been more hands off, such as China and the US.²⁶ As CSPs identify banking partners, they will need to factor in these differences.

A hybrid cloud infrastructure and open APIs help clear the way for banks and CSPs to collaborate.

Action guide

Telecom executives can take the following specific steps to lay the groundwork for game-changing financial services partnerships.

Welcome co-innovation

- Create a culture of entrepreneurship by empowering employees to try a fail-fast approach that also extends to working with external partners.
- Build a checklist with your legal, intellectual property, and security teams to address ethics, privacy, and security requirements of internal teams engaged in open innovation.
- Establish a multidisciplinary team with your banking partner and use the Design Thinking method to generate ideas for new solutions, define success criteria, and build minimum viable products (MVPs) for evaluation. Include representatives from engineering, marketing, sales, legal, finance, customer experience, and data science.

Uncover the opportunities

- Use shared data to identify friction in customer interactions and discern customer needs.
- Convene customer panels and perform surveys to research needs, opportunities, and constraints of different geographic markets.
- Conduct a competitive analysis of existing mobile financial solutions as well as a market gap study to identify new opportunities and requirements.

Modernize infrastructure to align with open innovation

- Institute a Cloud Center of Excellence to orchestrate development of interoperable systems.
- Assess existing cloud and data infrastructure to evaluate your ability to integrate data and solutions with business partners.
- Engage with the GSMA Open Gateway initiative to ensure APIs are standardized for sharing.

About Expert Insights

Expert Insights represent the opinions of thought leaders on newsworthy business and related technology topics. They are based on conversations with leading subject-matter experts from around the globe. For more information, contact the IBM Institute for Business Value at iibv@us.ibm.com.

IBM Institute for Business Value

For two decades, the IBM Institute for Business Value has served as the thought leadership think tank for IBM. What inspires us is producing research-backed, technology-informed strategic insights that help leaders make smarter business decisions.

From our unique position at the intersection of business, technology, and society, we survey, interview, and engage with thousands of executives, consumers, and experts each year, synthesizing their perspectives into credible, inspiring, and actionable insights.

To stay connected and informed, sign up to receive IBM IBV's email newsletter at ibm.com/ibv. You can also find us on LinkedIn at <https://ibm.co/ibv-linkedin>.

The right partner for a changing world

At IBM, we collaborate with our clients, bringing together business insight, advanced research, and technology to give them a distinct advantage in today's rapidly changing environment.

About J.P. Morgan Payments

J.P. Morgan Payments combines our treasury services, trade and working capital, card, and merchant services capabilities to help clients pay customers or employees, in different currencies, around the world. We process nearly \$10 trillion payments daily, operating in over 160 countries and over 120 currencies, and are number one in USD payments volume.

At J.P. Morgan, we think differently about the power of payments. Sign up for *THE MONTH IN* at <https://www.jpmorgan.com/payments/solutions/newsletter> to stay informed on the latest insights on digital payments innovation, industry trends, and more. For more information on J.P. Morgan Payments, visit our website at <https://www.jpmorgan.com/payments> or find us on LinkedIn at <https://www.linkedin.com/company/jpmorgan/about/>.

About GSMA

The GSMA is a global organization unifying the mobile ecosystem to discover, develop, and deliver innovation foundational to positive business environments and societal change. Its vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organizations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Industry Services and Solutions, Connectivity for Good, and Outreach.

Related reports

Telecoms' blind spot

Telecoms' blind spot: Hidden opportunities for driving revenue growth. IBM Institute for Business Value. September 2023.
<https://ibm.co/telecoms-revenue-opportunities>

Connected cars

Connected cars: Getting ahead of the fast and furious flood of data. IBM Institute for Business Value. July 2023.
<https://ibm.co/connected-cars-telecoms>

Telecoms move beyond connectivity

Telecoms move beyond connectivity: Unlocking cross-industry value through IoT payment and data exchange platforms. IBM Institute for Business Value. February 2023.
<https://ibm.co/telecom-iot-payments>

Expert contributors

The authors would like to thank the following contributors: Pablo M. Pinedo and Annie Phoxay, J.P. Morgan Chase; Paolo Sironi and Diane Connelly, IBM Institute for Business Value; and Bridget Devine and Pranav Badhwar, IBM Marketing. And also thanks to the IBM Institute for Business Value editorial and design team: Joanna Wilkins, Neil McLawrence, Kris Biron, Sara Aboulhosn, and Andrew Womack.

Notes and sources

1. "Mobile Payment Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2023-2028." Research and Markets. June 2023. <https://www.researchandmarkets.com/report/mobile-payment>
2. "The 2023 SOTIR Regional Cuts: Charting mobile money in Africa and Asia." GSMA. August 4, 2023. <https://www.gsma.com/mobilefordevelopment/resources/the-2023-sotir-regional-cuts-charting-mobile-money-in-africa-and-asia/>
3. Katigbak, Raquel, David Palmer, Richard Cockle, and Dhana Cruickshank. *Telecoms move beyond connectivity: Unlocking cross-industry value through IoT payment and data exchange platforms.* IBM Institute for Business Value in partnership with GSMA. February 2023. <https://ibm.co/telecom-iot-payments>
4. Rose, Stephen, Rahul Kumar, and Priya Kurien. *Telecoms' blind spot: Hidden opportunities to drive revenue growth.* IBM Institute for Business Value in partnership with GSMA Intelligence. September 2023. <https://ibm.co/telecoms-revenue-opportunities>
5. Thompsett, Louis. "Payments in telecoms: Deepening customer relationships." *FinTech magazine*. October 5, 2023. <https://fintechmagazine.com/articles/payments-in-telecoms-deepening-customer-relationships>
6. Kazmi, Robert. "Embedded Banking: Everything You Need to Know." Koombea. July 25, 2023. <https://www.koombea.com/blog/embedded-banking/>
7. Woock, Kurt. "What is Toast?" NerdWallet. March 21, 2023. <https://www.nerdwallet.com/article/small-business/what-is-toast>
8. Rose, Stephen, Rahul Kumar, and Priya Kurien. *Telecoms' blind spot: Hidden opportunities to drive revenue growth.* IBM Institute for Business Value in partnership with GSMA Intelligence. September 2023. <https://ibm.co/telecoms-revenue-opportunities>
9. Ramamurthy, Shanker, John J. Duigenan, Hans Tesselaar, Héctor Arias, and Paolo Sironi. *Embedded finance: Creating the everywhere, everyday bank.* IBM Institute for Business Value in partnership with BIAN and Red Hat. September 2023. <https://ibm.co/embedded-finance>

10. Rose, Stephen, Rahul Kumar, and Priya Kurien. *Telecoms' blind spot: Hidden opportunities to drive revenue growth*. IBM Institute for Business Value in partnership with GSMA Intelligence. September 2023. <https://ibm.co/telecoms-revenue-opportunities>
11. Ramamurthy, Shanker, John J. Duigenan, Hans Tesselaar, Héctor Arias, and Paolo Sironi. *Embedded finance: Creating the everywhere, everyday bank*. IBM Institute for Business Value in partnership with BIAN and Red Hat. September 2023. <https://ibm.co/embedded-finance>
12. "Adobe and J.P. Morgan Payments: Why Payments in 2023 Is More Like 3D Chess Than Checkers." *PYMNTS*. October 24, 2023. <https://www.pymnts.com/innovation/2023/adobe-and-j-p-morgan-payments-why-payments-in-2023-is-more-like-3d-chess-than-checkers/>
13. Ramamurthy, Shanker, John J. Duigenan, Hans Tesselaar, Héctor Arias, and Paolo Sironi. *Embedded finance: Creating the everywhere, everyday bank*. IBM Institute for Business Value in partnership with BIAN and Red Hat. September 2023. <https://ibm.co/embedded-finance>
14. Ibid.
15. *Digital Payment Market by Offering, Services, Transaction Type, Payment Mode, Vertical, & Region – Global Forecast to 2028*. Markets and Markets. October 2023. <https://www.marketsandmarkets.com/Market-Reports/digital-payment-market-209834053.html>
16. Ali, Marium and AJLabs. "How many years does a typical user spend on social media?" Aljazeera. June 30, 2023. <https://www.aljazeera.com/news/2023/6/30/how-many-years-does-a-typical-user-spend-on-social-media>
17. Danziger, Pamela N. "Social Commerce is a \$1.2 Trillion Opportunity and the Next Global Shopping Revolution." *Forbes*. January 27, 2022. <https://www.forbes.com/sites/pamdanziger/2022/01/27/social-commerce-is-a-12-trillion-opportunity-and-the-next-global-shopping-revolution/>
18. *Technical Considerations: Big Data for Social Good Digital Toolkit*. GSMA. January 2019. https://aiforimpacttoolkit.gsma.com/resources/Big-Data-for-Social-Good_Technical-Considerations-EP3.3.pdf
19. "What is Embedded Finance? [4 Examples of its application]." Brimco. Accessed November 1, 2023. <https://www.brimco.io/finance/what-is-embedded-finance-4-examples-of-its-application/>
20. Palmer, Kirsten, Jacob Dencik, PhD, and Lisa Fisher. *Ecosystems and open innovation: Co-create or stagnate*. IBM Institute for Business Value in partnership with APQC. October 2023. <https://ibm.co/ecosystems-open-innovation>
21. Sharma, Aparna, Arnab Bag, and Smitha Soman. *Modernizing applications on hybrid cloud: Essentials to accelerate digital transformation*. IBM Institute for Business Value. 2022. Unpublished data.
22. "BIS Study Finds Lack of API Standards Is Cross-Border Payments' Biggest Challenge." *PYMNTS*. July 12, 2022. <https://www.pymnts.com/news/cross-border-commerce/cross-border-payments/2022/bis-study-finds-lack-of-api-standards-is-cross-border-payments-biggest-challenge/>
23. Ramamurthy, Shanker, John J. Duigenan, Hans Tesselaar, Héctor Arias, and Paolo Sironi. *Embedded finance: Creating the everywhere, everyday bank*. IBM Institute for Business Value in partnership with BIAN and Red Hat. September 2023. <https://ibm.co/embedded-finance>
24. J.P. Morgan Payments developer portal. Accessed November 20, 2023. <https://developer.payments.jpmorgan.com/>
25. "GSMA Open Gateway." GSMA website. Accessed October 26, 2023. <https://www.gsma.com/futurenetworks/gsma-open-gateway/>
26. Anthony, Art. "7 Global Open Banking Standards." Nordic APIs. November 22, 2022. <https://nordicapis.com/7-global-open-banking-standards/>

© Copyright IBM Corporation 2024

IBM Corporation
New Orchard Road
Armonk, NY 10504

Produced in the United States of America | January 2024

IBM, the IBM logo, and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at: ibm.com/legal/copytrade.shtml.

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED “AS IS” WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided. This report is intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. IBM shall not be responsible for any loss whatsoever sustained by any organization or person who relies on this publication.

The data used in this report may be derived from third-party sources and IBM does not independently verify, validate or audit such data. The results from the use of such data are provided on an “as is” basis and IBM makes no representations or warranties, express or implied.

