



Leading the pack in blockchain banking

Trailblazers set the pace

IBM Institute for Business Value
survey conducted by
The Economist Intelligence Unit

How IBM can help

As one of the world's leading research organizations, and one of the world's top contributors to open source projects, IBM is committed to fostering the collaborative effort required to transform how people, governments and businesses transact and interact.

IBM provides clients the consulting and systems integration capabilities to design and rapidly adopt distributed ledgers, digital identity and blockchain solutions. IBM helps clients leverage the global scale, business domain expertise, and deep cloud integration experience required for the application of these technologies. Learn more at ibm.com/blockchain

The IBM Institute for Business Value with the support of the Economist Intelligence Unit surveyed **200 banks** in **16 countries** on their experience and expectations with blockchains. What differentiates the early adopters and what can we learn from them?

First movers: Trailblazers set a fast pace and new direction

Just a handful of banks are operating on blockchains today. In 2017, 15 percent of the banks in our study expect to have blockchains in commercial production. These Trailblazers are prioritizing blockchain efforts to break through barriers to creating new business models and reaching new markets.

Opportunity seekers: Trailblazers prioritize key business areas for optimal benefits

Time, cost and risk benefits: Trailblazers are prioritizing blockchains in three areas – reference data, retail payments and consumer lending.

New business models: Trailblazers expect blockchains to yield the greatest effect in opening up new business models in three areas – trade finance, corporate lending and reference data.

Shifting profit pools: New vectors for growth and disruption

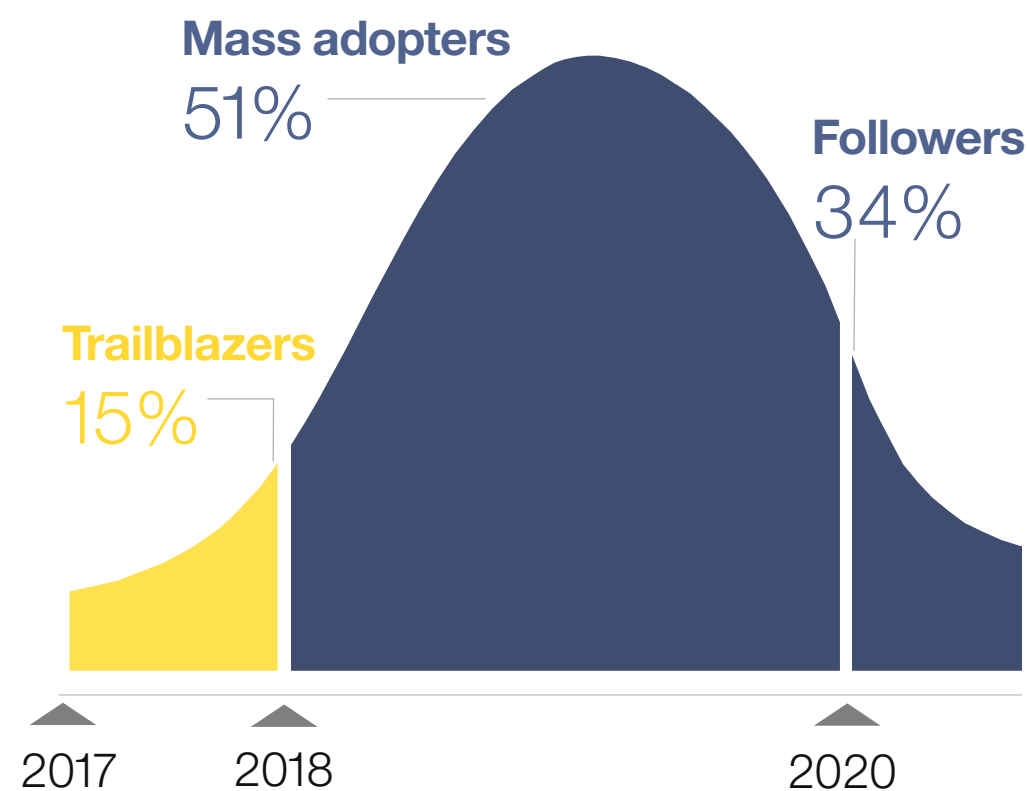
Defending disruption: Trailblazers see a significant wall of disruption heading their way. They expect five out of nine core business areas to experience significant disruption and are investing in each one.

Investing for growth: Across the industry, all banks are investing in international payments, other cash management, corporate lending, consumer lending, mortgages and deposit taking.

First movers

Trailblazers set a fast pace and new direction

Figure 1. *First to finish: Respondents' expectation of when they will have blockchains in commercial production and at scale*



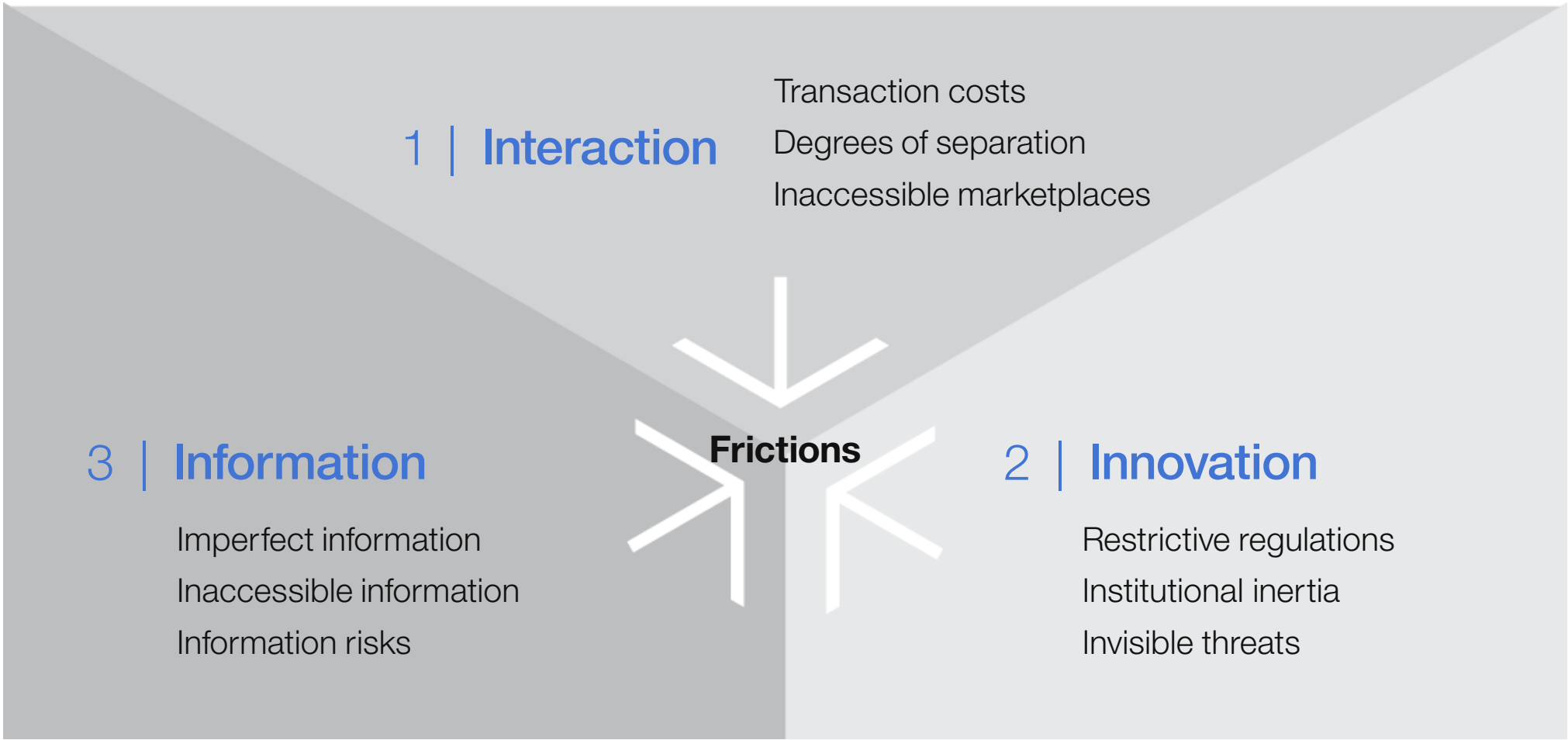
When the first international payments on a blockchain crossed the wires, the transaction was completed in a matter of seconds instead of hours.¹ Speed of execution, of course, is one benefit derived from blockchains, but speed is also proving the operative word when it comes to blockchain commercialization. Our survey of commercial and retail banks reveals that the industry is hurtling toward blockchain adoption far faster than many expected.

Commercial applications in banking are few in number today. In 2017, a full 15 percent of the banks in our study expect to have commercial blockchain solutions at scale (*see Figure 1*). We call this group the Trailblazers. In effect, 2017 looks to be the year banking on blockchains shifts from zero to sixty. First-mover advantages for this group include the ability to influence and set the business standards by which others will operate. Moreover, as start-ups take aim at incumbents and new business models expand beyond industry boundaries, first-mover banks will be well situated to get ahead of the consequent disruption.

These Trailblazers aren't the small start-ups or fintechs many might expect to enter first. Instead, Trailblazers are made up of a disproportionate number of medium sized banks and are more than twice as likely to be large institutions that number more than a hundred thousand employees. Defying expectations, these larger banks are proving they have the agility to move fast in the face of change.

In our first blockchain study, “Fast forward”, ibm.biz/fastforward, we examined the potential for blockchains to eradicate the frictions that hold companies back, limit their growth and constrain innovation. We identified nine frictions that challenge enterprises today (see Figure 2) and analyzed the impact blockchains might have. This study asked for the views of bankers on these same frictions.

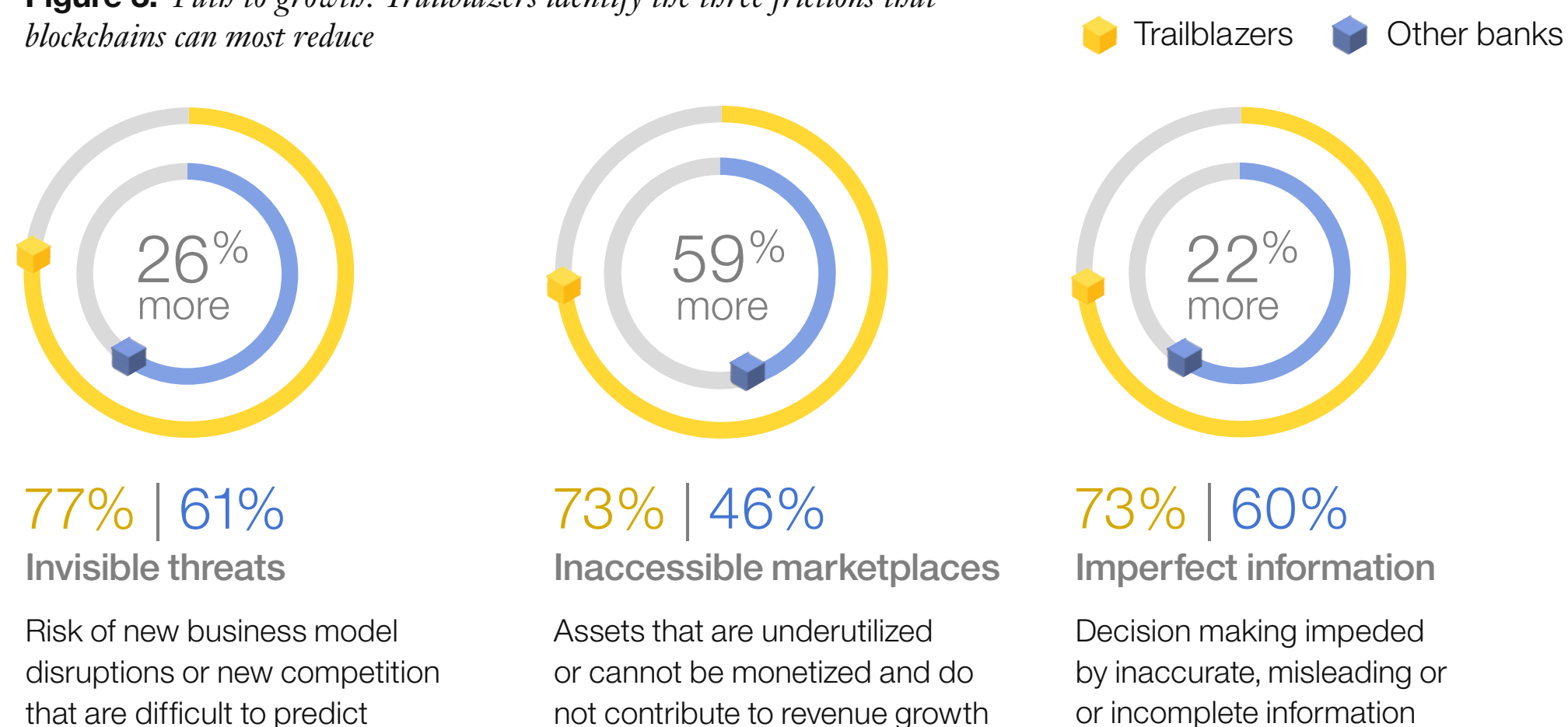
Figure 2. Frictions framework: Information, innovation and interaction frictions can be minimized by blockchains



We found that all banks expect blockchains to eradicate frictions across the board. But Trailblazers stand apart from other banks in one respect. They see the most substantial reductions in those frictions that bring down the barriers to creating new business models and entering new markets. Likewise, these bold banks are singularly focused on using blockchain technology to greatly improve the accuracy of the information they rely on to act on decisions (*see Figure 3*).

How individual banks respond to blockchain opportunities in the next few years will depend on their circumstances, capacity and ambition. How regulators respond – and where – will influence the evolution of blockchains. As with any new technology with the potential to transform, there can be no cookie-cutter approach. However, the plans, priorities and investments of the Trailblazers who are poised to enter the market today do illuminate a direction.

Figure 3. *Path to growth: Trailblazers identify the three frictions that blockchains can most reduce*



Opportunity seekers

Trailblazers prioritize key business areas for optimal benefits

By now, most banks have concluded that blockchains could greatly reduce the time, cost and risk of many transactions. As banks gain experience from pilots, this calculation grows sharper. We asked banks to weigh time, cost and risk benefits in nine core business areas and analyzed their answers to calculate a blended score for each business area. Our analysis reveals near unanimity; blockchain benefits are compelling and can be gained in every aspect of banking. Trailblazers identified three business areas with the highest benefits – *reference data, retail payments and consumer lending* (see *Figure 4*).

Figure 4. *Benefits for all: Blockchains' impact on time, cost and risk*

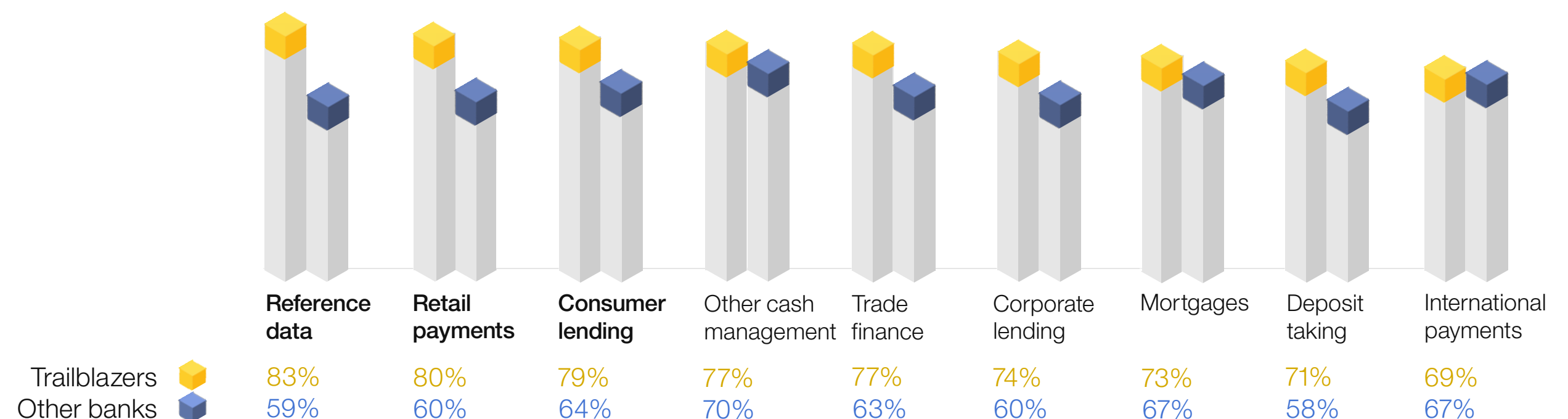
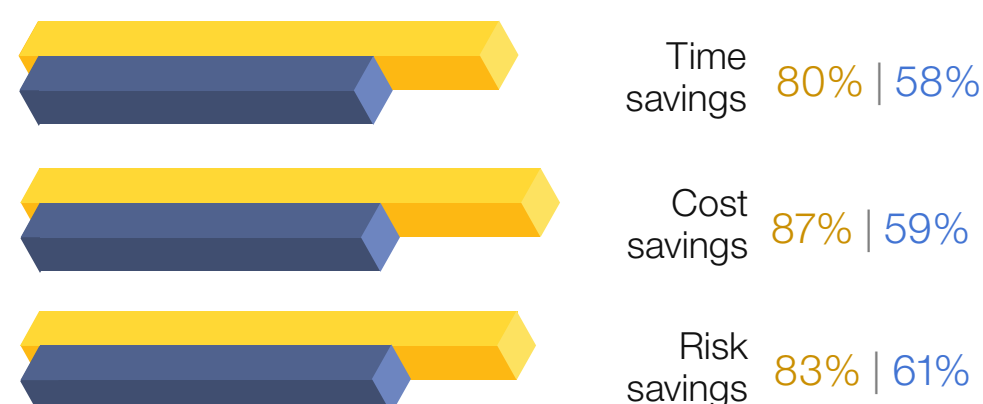


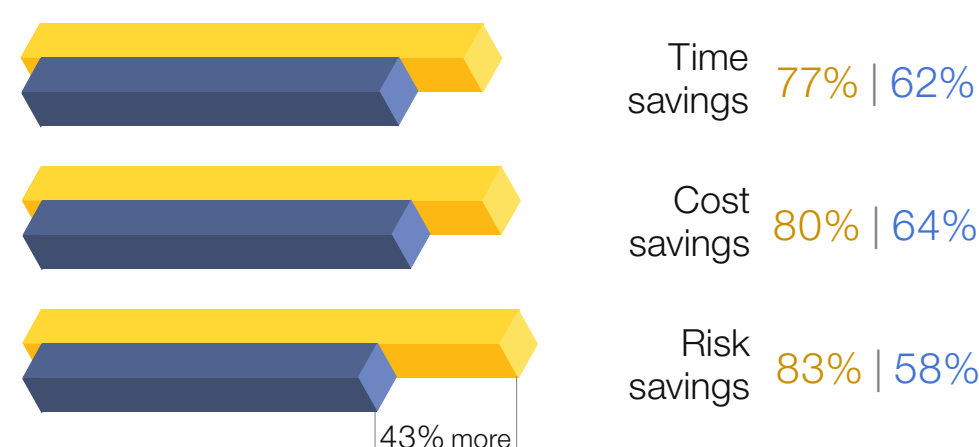
Figure 5. Key Trailblazer reference data benefits



As might be expected, *reference data* claimed the top spot (see *Figure 5*). On blockchains, *reference data* is automatically captured in real time, validated and shared as permitted across business divisions and institutions. It becomes in effect, an always up-to-date self-integrating system of truth.

As data siloes are connected to blockchains, benefits build up: Costly and time-consuming reconciliations are all but eliminated and an instantaneously verifiable audit trail discourages bad actors and potential for fraud. Data integrity is assured and banks gain a superior platform for up-to-the-minute analytics. Because reference data is integral to all of a bank's activities and isn't bound by the complex regulations found in other areas of banking, it's proving a good place to start.

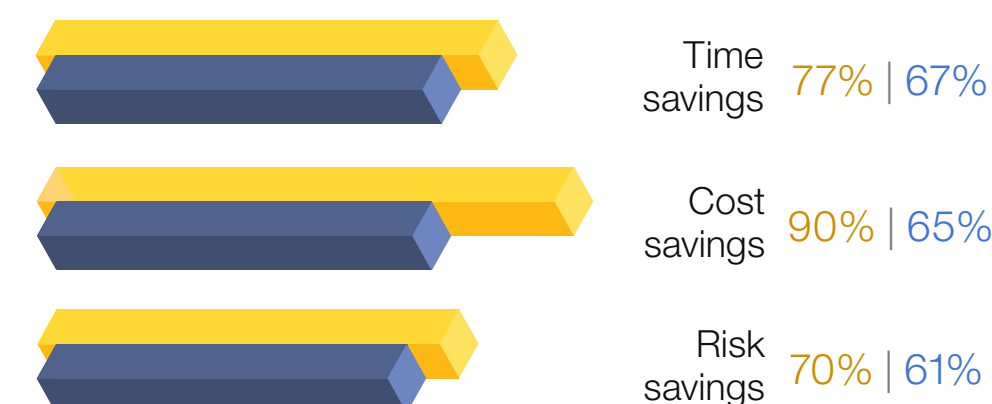
Figure 6. Key Trailblazer retail payments benefits



Payments and lending on blockchains are a target-rich environment for efficiency. Transactions on blockchains not only eliminate the time and labor required for reconciliations, they minimize errors and significantly reduce the time needed for settlement, which in turn lowers risk and capital requirements. Trailblazers are 43% more likely than other banks to expect significantly less risk as *retail payments* move to blockchains (see *Figure 6*).

Cost savings are particularly attractive in *consumer lending*: nine out of ten Trailblazers expect significant results in cost savings alone (see *Figure 7*). For consumer lenders, access to new markets is another attractive proposition. Lack of credit history and identity fraud has made it difficult to grant loans to

Figure 7. Key Trailblazer consumer lending benefits



unbanked customers. On blockchains, as new kinds of verifiable transaction data is captured, enhanced identity and know your customer (KYC) data could open up emerging markets to banks.

When the time, cost and risk benefits from blockchains are considered independently of each other, additional business areas stood out.

Corporate lending ranked 2nd in time savings; international payments took 3rd place in cost savings; and trade finance was the 3rd highest in reducing risk.

Trailblazers | Other banks

A platform for change

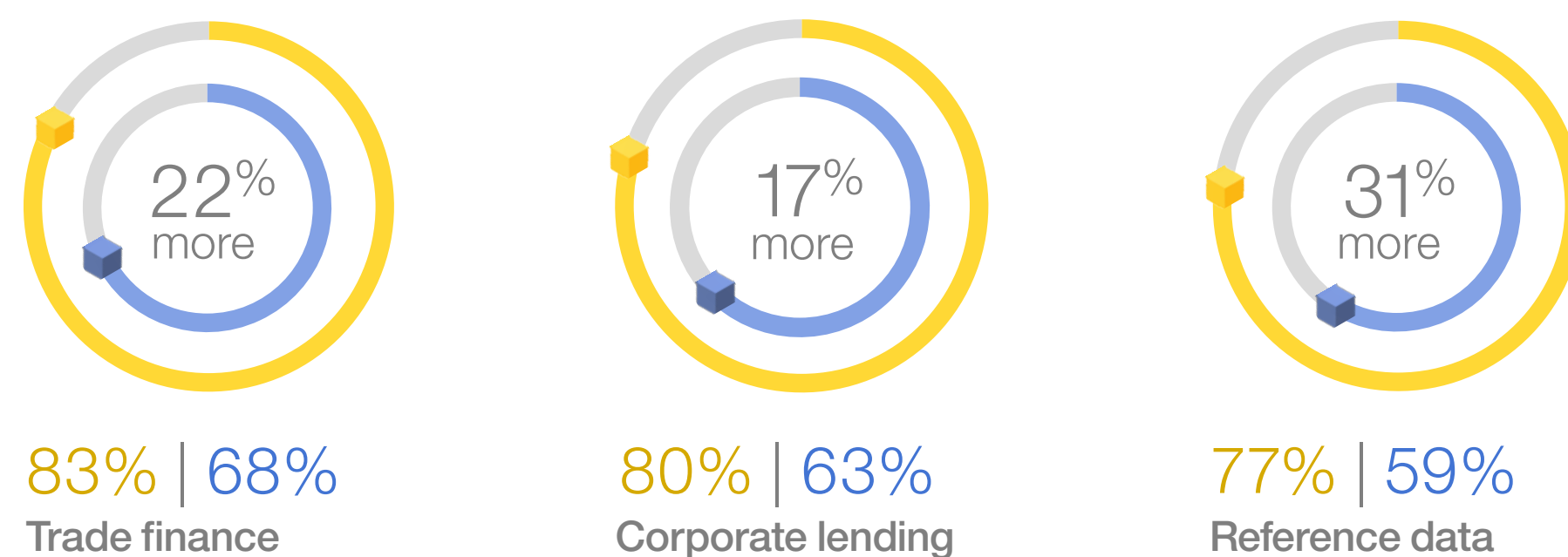
Blockchain enthusiasts, of course, promised something more than an ERP upgrade; they promised a revolution. We asked bankers to share their expectations and experiences on the potential for blockchains as a platform for new business models. Trailblazers identified three areas where blockchain-based business models reach the most impact: *Trade finance*, *corporate lending* and *reference data* (see Figure 8).

Trade finance modernized

Trade finance is one area where both Trailblazers and other banks agree that an entirely new business model should emerge. Mired in complexity due to the number of parties, handoffs, paper documents and manual processes involved in even a single shipment, trade finance appears long due for an overhaul. Blockchains make it possible to reinvigorate this large global market. Bank-intermediated short-term trade finance alone has been estimated to be USD 6-8 trillion worldwide.²

Figure 8. *Trailblazers' top three blockchain-enabled business models*

Trailblazers Other banks



Major institutions like Bank of America Merrill Lynch are innovating to reduce risk, streamline processes and improve financing.³ Established banks as well as fintechs have pilots well underway in areas that include bills of lading and letters of credit, documents that haven't typically been shared or stored in digital form. These modernization efforts are creating immediate efficiencies, but the bigger benefit may be to the heightened visibility that banks will have. With greater access to historical data and real-time trade transactions, banks stand a good chance to greatly improve the profitability of financing as well as the acquisition of new clients.

Banks won't be without new competition: Alibaba, China's largest e-commerce enterprise has set its sights on providing its own financial services including trade finance, and is exploring blockchain-enabled financial services.⁴

50%

of small and medium enterprises
don't have access to the financing
they need – a credit gap estimated at
USD 2 trillion⁶

Corporate lending unbound

Lengthy settlement periods – often 20 days or more – are a drag on corporate lending, tying up capital and exposing banks to new and nimbler competitors. Smart contracts on blockchains promise to dramatically reduce the time to settlement. As blockchains evolve to cross industries and more immediately verifiable data – including real-time access to assets and other forms of collateral – is captured and shared with banks, the pool of borrowers could expand to include the many small and medium sized enterprises that are locked out of credit today.

A more radical model, direct peer-to-peer lending on a blockchain, is already being tested by microenterprises and could prove applicable to larger institutions that want to expand their customer bases. The peer-to-peer model, of course, could also threaten those incumbent banks that move too slowly.⁵

“Blockchain is a transformative agent in our operational application, as proven by this project – the first of its kind in France. This pilot offers a complete view of customers’ documents across our distributed network.”

Frédéric Laurent, COO Innovation & Operations,
Crédit Mutuel Arkéa

Reference data monetized

Real-time data synchronization creates entirely new opportunities to monetize data and create new financial services. Credit Mutuel Arkea has already pulled data from multiple systems to integrate its identity and KYC data on a blockchain. It has identified operational benefits that it believes will boost the bottom line and also heighten customer satisfaction. Credit Mutuel Arkea expects that it will some day provide new proof of identity services to third parties, including utilities, retailers and other regulated service providers.⁷ As blockchains become more common in other industries, the reference data that banks possess could drive the next generation of financial services.

New business models will take many forms and evolve as organizations work with regulators to establish new processes and platforms. One thing is certain: Disruptors have found a new platform; they’re moving faster than most anticipated, and they’re poised to break new ground.

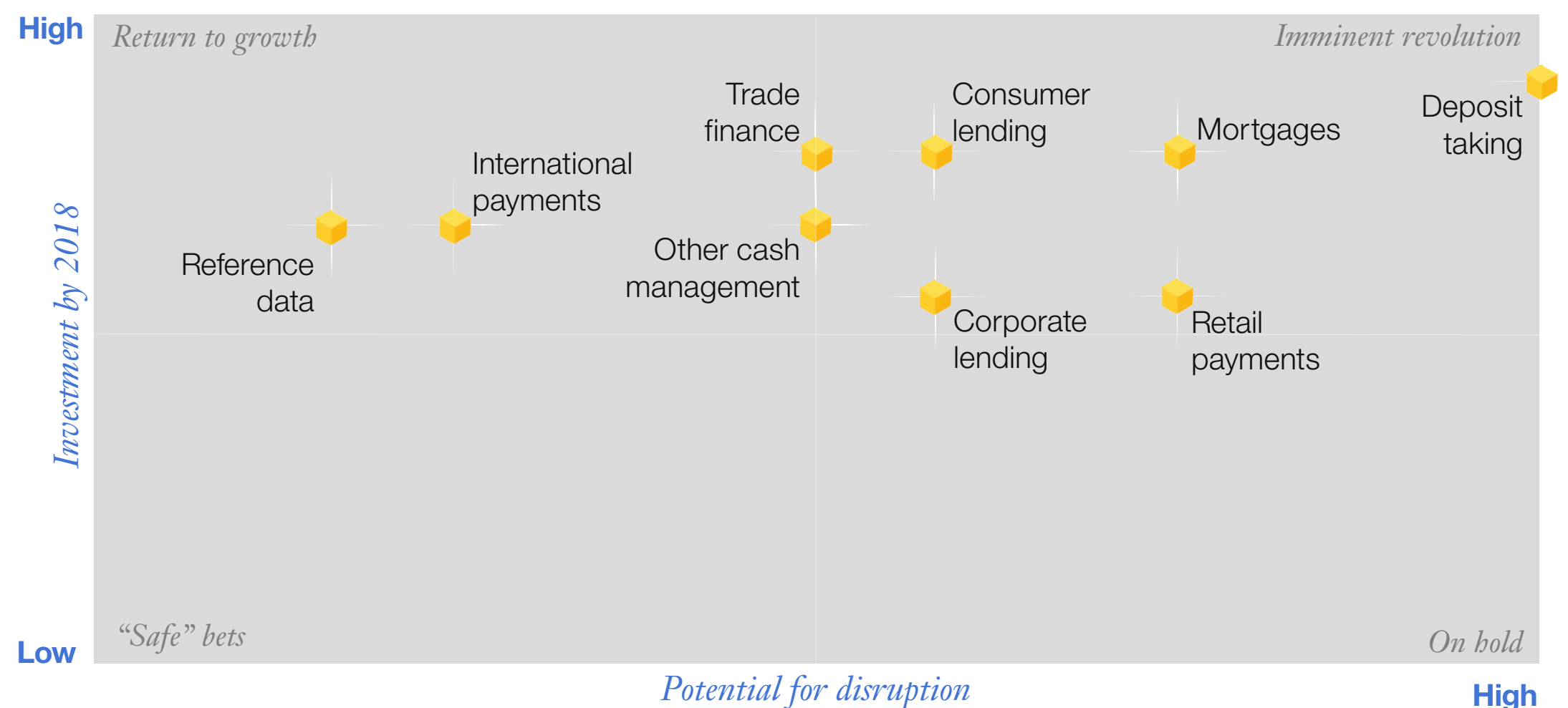
Shifting profit pools

New vectors for growth and disruption

For some time, flat returns on equity have pressured banks to seek new sources of growth. First digital startups, then fintechs and non-financial institutions squeezed into the market, raised the bar on customers' expectations for ease, immediacy and cost – and began eroding share. Now, a leading group of banks, the Trailblazers, have their sights set on regaining ground.

When the Trailblazers, those banks with the most hands-on experience in blockchain technology, scan the horizon, they see something different than other banks – a wall of disruption heading toward them. Trailblazers anticipate substantial disruption in five of the nine areas core to their business, including lending and payments, the bread and butter of traditional banking (*see Figure 9*). By contrast, all other banks we surveyed are counting on disruption in just two areas.

Figure 9. *The great disruption: Areas of investment and disruption identified by Trailblazers*





Defending disruption

Because blockchains encourage trust, organizations can expand the number of enterprises with which they transact. Smaller players and digital start-ups will have access to blockchain infrastructure that can make them more competitive and trustworthy. These new competitors include institutions other than banks and are a possible threat in two of the areas Trailblazers identified as most likely to be disrupted: *deposit taking* and *retail payments*.

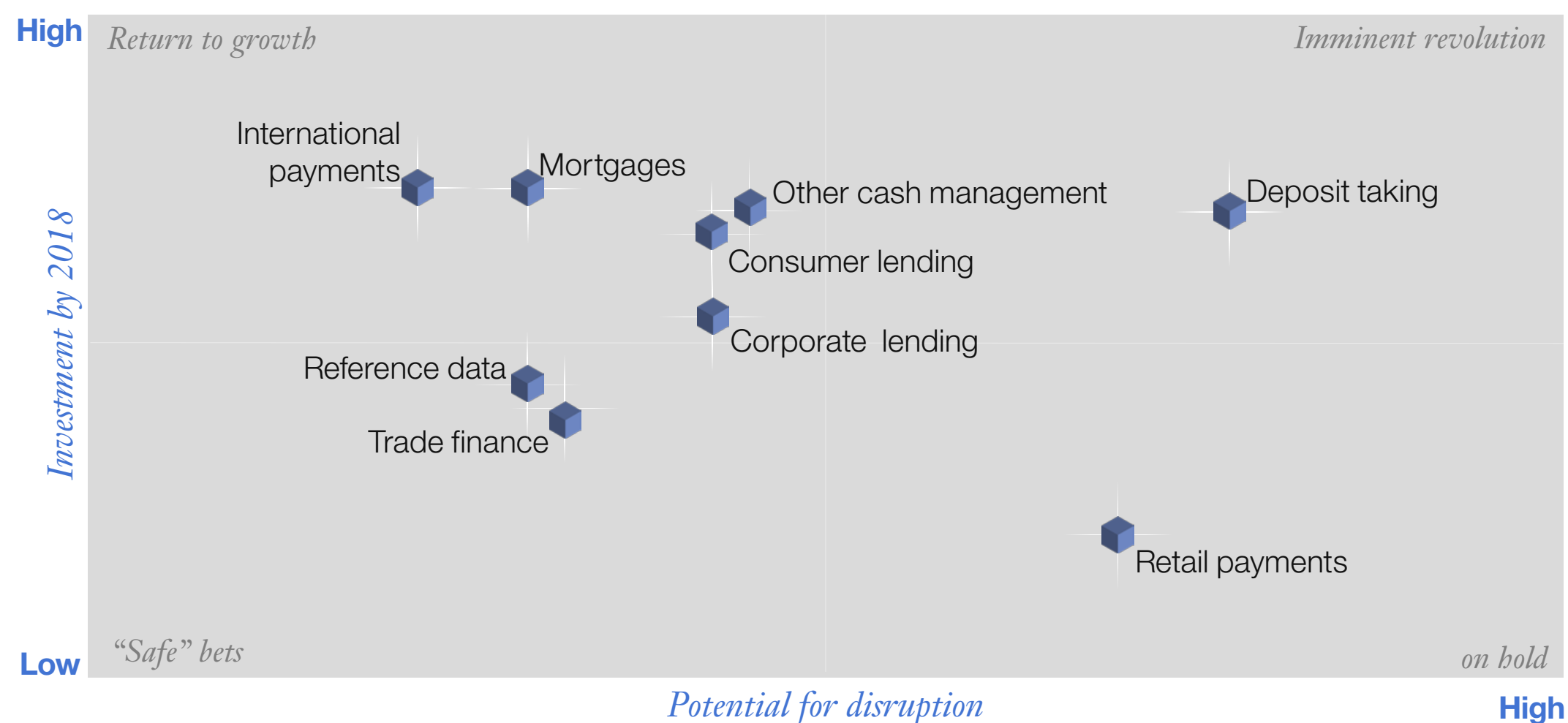
Corporate and consumer lending may be particularly vulnerable to new blockchain models. Because blockchains are decentralized in form and governance they make possible direct transactions between parties, disintermediating some and increasing the viability of peer-to-peer networks.

As blockchains span industries, new cross-industry ecosystems are sure to emerge. Banks will need to determine which networks create the optimal opportunity to thrive – and acquire new customers, as well as new types of data. In China, Xinyuan Real Estate, a real estate developer and property manager, unveiled in July 2016 a new real estate finance blockchain platform that is supported by the Industrial and Commercial Bank of China. The platform will include a network of institutions to, among other things, register, assess and finance property. Developments like these portend a new approach to acquiring customers and financing *mortgages*.⁸

Investing for growth

Even those banks that anticipate little disruption are investing in areas where time and cost efficiencies, as well as reduced risk, could spur growth (see Figure 10).

Figure 10. Set to spend: Areas of investment and disruption identified by all banks



All banks concur that *deposit taking* is primed for disruption. Most don't view the time, cost and risk benefits posed by blockchains to be as high in deposit taking as they might be in other areas, but they agree on the need to play defense and invest. The danger of disintermediation is being driven by fintechs and digital start-ups that can entice customers by delivering a superior digital experience. Blockchain-enabled deposit taking could prove to be pure defense – protecting the customer base – but like many activities in business, once a chain of data and transactions is established on a blockchain and connected to other blockchains, it could yield innovations as yet unimagined.

Recommendations

To best extract value from blockchains, we recommend banks answer three questions:

How fast should we move?

Fifteen percent of those surveyed have already started. These Trailblazers are setting a fast pace and charting a direction for early advantage. Mass adopters can look to Trailblazers for lessons learned but they should be prepared to join them in real-world applications as soon as possible.

For many, regulatory complexity and constraints seem an impenetrable barrier to blockchain adoption (*see Figure 11*). Regulators and legislators the world over are already participating in consortia to determine how regulations might change – and regulators might benefit from blockchains. Leading banking institutions are collaborating with regulators on blockchain projects to earn approval for implementation. Collaborations like these are to be encouraged, and regulators have on the whole been supportive in their responses. Banks have an opportunity to influence both the future regulatory environment and how fast new blockchain initiatives are approved to enter the market.

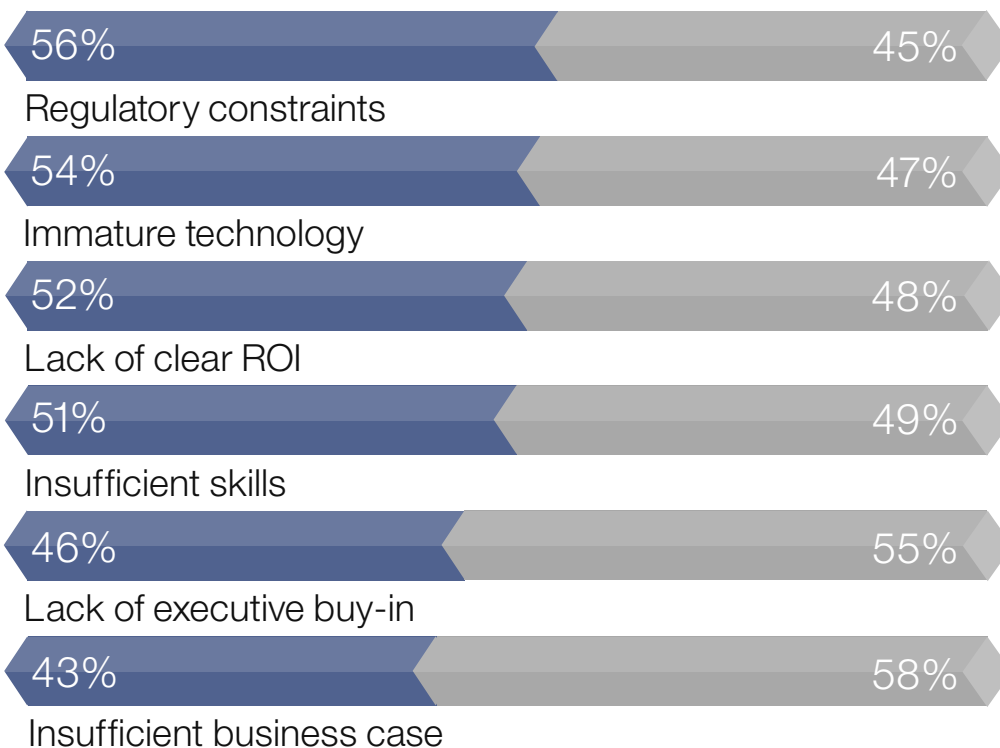
How can we scale across business networks?

Once blockchains have scaled across multiple parties, they can begin to achieve the kind of network effects that drastically reduce frictions that curb growth. Trailblazers are already working on the new business and technology standards that are required to scale. Mass adopters should join them and begin building strong partnerships, including consortia and other groups that have begun establishing business standards.

More than half of organizations still view immature technology as a barrier (*see Figure 11*), and 7 in 10 cite the need for robust mechanisms to establish identity and a high degree of control over access. Security and privacy standards will bring more participants into blockchain networks and drive scale.

Figure 11. *Barriers to implementing blockchains today*

Among top 3 barriers





The Linux Foundation's open-source technology initiative, Hyperledger, has a core focus on identity and permissions. Institutions are working together on Hyperledger to set the technology standards that advance interoperability across blockchains and help ensure that blockchain platforms can evolve as conditions change.

How can we innovate with new revenue models?

As might be expected, our data shows that almost half of banks have already identified areas where a return on investment is probable (*see Figure 11*). Banks that haven't achieved this clarity of outcome should make it a priority.

Consortia lay the groundwork for a better understanding of blockchains' benefits, but many banks already recognize that more focused collaborations with a few key partners is also necessary to innovate business models. New revenue models must anticipate the potential for disruption in areas core to business today and in the future. Whether defending each area or just a few, the surest offense is to focus early and fast on the opportunity to implement new revenue models.

However the market evolves, blockchains will add at least one new revenue stream; the potential to monetize reference data looms large. Banks should factor that into their thinking from the outset.

Notes and sources

1. Sofia. "ATB Financial, SAP and Ripple send the first real-time international blockchain payment from Canada to Germany." Let's Talk Payments. July 22 2016. <https://letstalkpayments.com/the-latest-blockchain-trials-and-projects-the-race-for-adoption-in-on/>
2. World Trade Organization. "Trade Finance and SMEs." 2016. https://www.wto.org/english/res_e/booksp_e/tradefinsme_e.pdf
3. Rizzo, Pete. "Bank of America Latest to Conduct Blockchain Trade Finance Trial." CoinDesk. March 1 2016. <http://www.coindesk.com/bank-of-america-latest-to-develop-blockchain-trade-finance-trial/>
4. Michael, Melodie. "Alibaba partners with e-lenders for trade finance." Global Trade Review. March 13 2015. <http://www.gtreview.com/news/global/alibaba-partners-with-e-lenders-for-uk-trade-finance-service/>
5. Quentson, Andrew. "China's internet giant to roll out blockchain for payments," CoinJournal. July 11 2016. <http://coinjournal.net/ant-financial-blockchain-tech/>
6. Stein, Peer. "5 steps to closing the \$2T credit gap." World Economic Forum. October 26 2015. <https://www.weforum.org/agenda/2015/10/5-steps-to-closing-the-2-trillion-credit-gap/>
7. IBM press release. "IBM and Crédit Mutuel Arkéa Pioneer the Use of Blockchain to Manage Customer Identity and Improve Customer Satisfaction." June 30 2016. <http://www-03.ibm.com/press/us/en/pressrelease/50087.wss>
8. EconoTimes. "Xinyuan's new real estate blockchain platform to launch in August." July 19 2016. <http://www.econotimes.com/Xinyuans-new-real-estate-blockchain-platform-to-launch-in-August-237680>

Related publications

Cuomo, Jerry, Shanker Ramamurthy, James Wallis et al. “Fast forward: Rethinking enterprises, ecosystems and economies with blockchains.” IBM Institute for Business Value. June 2016. ibm.biz/blockchainstudy

Pureswaran, Veena and Dr. Robin Lougee. “The Economy of Things: Extracting new value from the Internet of Things.” IBM Institute for Business Value. June 2015. ibm.biz/economyofthings

Pureswaran, Veena, Sanjay Panikkar and Sumabala Nair. “Empowering the edge: Practical insights on a decentralized Internet of Things.” IBM Institute for Business Value. March 2015. ibm.biz/empoweringedge

Brody, Paul and Veena Pureswaran. “Device democracy: Saving the future of the Internet of Things.” IBM Institute for Business Value. September 2014. ibm.biz/devicedemocracy

Study team

Keith Bear, Vice President, Global Financial Markets

Nick Drury, Global Banking & Financial Markets Leader, IBM Institute for Business Value

Peter Korsten, Vice President, Global Thought Leadership and Eminence, GBS

Veena Pureswaran, Research Leader, Blockchain, IBM Institute for Business Value

Likhith Wagle, Global Industry General Manager Banking & Financial Markets; Industry Academy Member

James Wallis, Vice President, Global Payments Industry and Blockchain

Contributors

The study team would like to thank the following people for their contributions to this executive report: Steve Ballou, Kristin Biron, Jim Brill, Phil Enness, Angela Finley, April Harris, Christine Kinser, Anthony Lipp, Kathleen Martin, Joni McDonald, Smitha Soman, Stephen Ott, Donald Thibeau, Idrissa Thioune and Anne-Marie Weber.

To learn more about this IBM Institute for Business Value study, please contact us at iibv@us.ibm.com. Follow @IBMIBV on Twitter and for a full catalog of our research, visit: ibm.com/iibv

Access IBM Institute for Business Value executive reports on your phone or tablet by downloading the free “IBM IBV” apps for iPad or Android from your app store.



© Copyright IBM Corporation 2016

Route 100
Somers, NY 10589
Produced in the United States of America
September 2016

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 judgement. 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.

GBP03467-USEN-01

IBM Institute for Business Value

The IBM Institute for Business Value, part of IBM Global Business Services, develops fact-based strategic insights for senior business executives on critical public and private sector issues.

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.

