WRAP-UP EDITION

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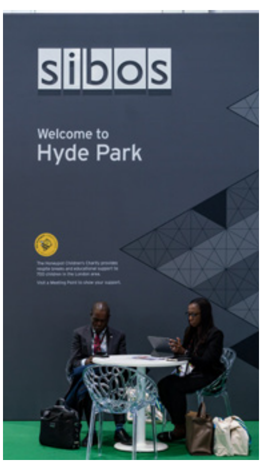
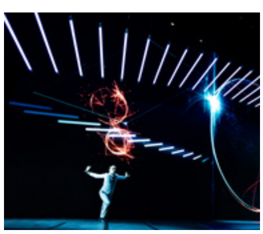
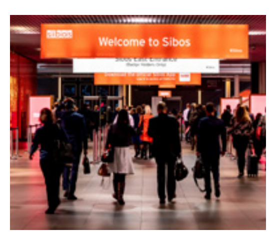
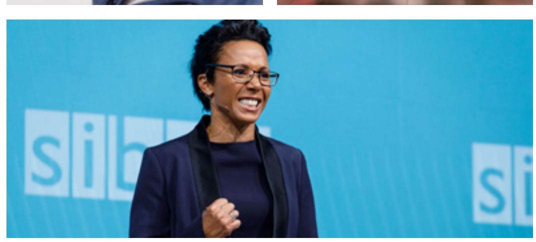




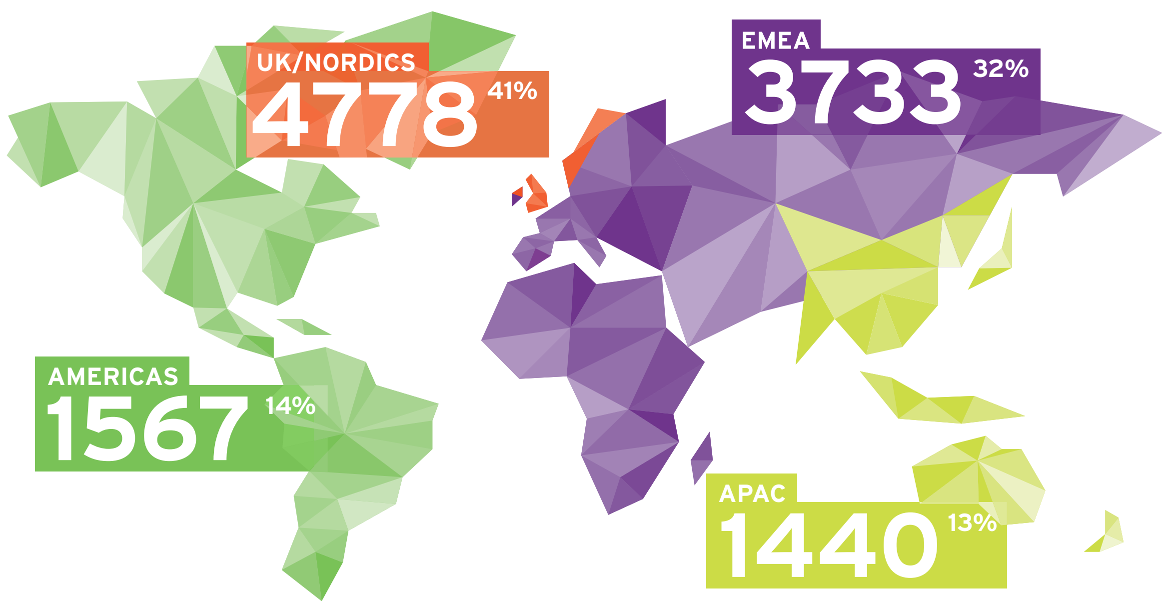




→ Publisher's letter

Sibos 2019 London in numbers

TOTAL PARTICIPANTS	MALE 72%	FEMALE 28%
11518	8293	3225



680 SPEAKERS

375 SESSIONS

332 EXHIBITORS

152 COUNTRIES

170000 Sibos smart badge kiss / bump – digital contact exchanges

51 Sibos TV interviews

150000 Total number of trees planted

8958 Hours of respite funded via the Honeypot Children's Charity

→ Contents page

From London to Boston

Dear Sibos delegates

How do you measure the success of an event like Sibos? At SWIFT, we are delighted that Sibos 2019 in London was the biggest ever, in terms of attendees and exhibitors. Sheer volume is only one indicator, of course, and it cannot be relied on alone to assess quality of experience. As such, we also count the number of delegates attending individual sessions (plus their engagement with and ratings of panels and presenters), as well as the amount of contact details exchanged. As part of our commitment to the environment, we are also putting more effort into calculating (and reducing) the carbon footprint of the conference and exhibition. But you may have different metrics, such as the number of business meetings arranged, or giveaways collected on the last day. Personally, I keep a tally of the times I see old friends meet and embrace, catching up for the first time since their last Sibos.

An important part of the exercise of keeping score is to keep track from year to year. For each new Sibos, we hope to improve the delegate experience in as many ways as possible. In London, for example, we introduced the Spotlight stage, which brought a range of burning issues to the exhibition floor through high-powered keynotes. We'll spend the next few months analysing feedback and planning how to apply lessons learned in London to Boston and other future events.

For all that, each Sibos is unique. Held as late summer was turning decisively to autumn, Sibos in London could not compete with the warm spring sunshine we enjoyed in Sydney. Similarly, Boston may struggle to replicate the buzz of a city more than ten times its size. But, as those of us who attended on one of the three previous occasions that 'Beantown' has hosted Sibos, Boston has a welcoming vibe that keeps us all coming back for more. Not for nothing is one of its most famous exports named after a bar called Cheers!

Best wishes
Chantal Van Es
Head of Sibos

sibos

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sibos

Opportunity in an uncertain world

> **The AI revolution will change jobs that we do not usually think of as being prone to automation.**
>
> **Dame Minouche Shafik,** London School of Economics and Political Science

The finance industry can and must respond to new challenges.

Sibos 2019:
Opening Plenary –
Dame Minouche Shafik

How can financial service providers thrive in a world which is not only hyper-connected, but also increasingly uncertain and unpredictable? To explore the risks, Roula Khalaf, deputy editor of the Financial Times, asked Opening Plenary guest speaker Dame Minouche Shafik, director of the London School of Economics and Political Science, to outline the global context for the economic headwinds faced by the financial industry.

Shafik started by pointing out that the slowdown in global trade that is now acting as a brake on global GDP growth began before US-China tensions erupted into a trade war. But she added that the integration of China into the global economic and financial ecosystem remained one of the most significant issues for governments and businesses, alongside a general rise in protectionism.

To date, she said, China has been "riding two horses", building its own institutions and systems whilst also working with existing international ones. Shafik warned that current tensions could lead to China taking a more isolationist path. "I would like to think cooler heads will prevail," she said.

Policy consequences
Expectations of lower economic growth are having inevitable policy consequences. In September, European Central Bank (ECB) president Mario Draghi reduced the bank's already-negative deposit rate to -0.5%, while also committing to a further programme of quantitative easing from November.

Noting that the action was well within the bank's inflation-targeting mandate, Shafik called for a shift in focus toward fiscal policy. "Monetary policy, as we know, simply creates demand; it does not solve the supply side and the growth side of the economy," Shafik said. "There is really a need for more fiscal activism in Europe but also in other countries."

> There is a need for more fiscal activism in Europe but also in other countries.

Dame Minouche Shafik, London School of Economics and Political Science

The ECB's challenges find an echo not only in the US, where Federal Reserve chair Jerome Powell has faced political pressure to cut rates, but also more broadly. Shafik noted a growing threat to the independence of central banks.

"In markets like Turkey and India, it is essentially a fiscal problem," she said. "Governments want to spend more and they want lower interest rates, and they want central banks to deliver lower interest rates so they can spend more. That is a much more old-fashioned problem, but it is very real at the moment."

Brexit was mentioned, both in terms of its possible economic consequences, but also as one of many examples of the trend towards populism that has been felt in different guises around the world. Discussing the factors that created the conditions for populism to flourish, Shafik said she favoured a 'reset' of capitalism.

"It is welcome that corporations are thinking about wider stakeholders such as employees and the communities they work operate in," she said. "However, voluntary approaches are not enough. It is great that there are enlightened leaders of corporations but, in the end, if you want a consistent approach across an economy, you will need changes in the rules and laws."

Among many areas where governments and companies could work together more closely, Shafik suggested employee retraining, an increasingly urgent issue when AI and automation are predicted to have a widespread impact on jobs.

"We are used to thinking about manufacturing jobs changing, where workers are replaced by machines," Shafik said. "The AI revolution will change jobs that we do not usually think of as being prone to automation, such as accountants, lawyers and doctors. Increasingly, parts of professional jobs will be automated."

Evolving expectations
Against this backdrop, what strategies and capabilities will help banks and other service providers across the finance sector to thrive in the long term? At least part of the answer involves supporting evolving client expectations through an increased focus on resilience, collaboration and innovation.

> Anyone who ignores the fundamentals does so at their peril.

Yawar Shah, SWIFT

SWIFT Chairman Yawar Shah began his address by highlighting the rapid pace of change in the payments sector. Cross-border payments volumes might be showing healthy growth, in terms of flows and revenues, but there is little room for complacency, he suggested, with M&A activity reaching unprecedented levels at the same time that new entrants and new technologies are changing the face of the industry, notably Facebook's Libra "and the emergence of crypto-assets".

"This change should not make us lose sight of the real work needed to safeguard risk and compliance, ensure absolute integrity and resilience and provide efficiencies," Shah cautioned. "With all this excitement, anyone who ignores the fundamentals does so at their peril."

In these unpredictable times, said Shah, SWIFT's role is to stand firmly behind its users, providing stability, security and innovation. "Our number one priority remains supporting the integrity and stability of the global financial system," he said, before outlining the development of SWIFT gpi, the continued rollout and adoption of the Customer Security Programme, and developments in SWIFT's financial compliance offering.

"You are very well aware of Customer Security Programme. It is a framework to protect, detect and recover," said Shah. "SWIFT also continues to make significant investments on your behalf in financial crime compliance. We continue to accelerate and innovate, with The KYC Registry, the Sanctions Screening service and Compliance Analytics tools."

Shah then handed over to SWIFT CEO Javier Perez-Tasso to explain the cooperative's vision and priorities in supporting innovation by members. "We have an extremely resilient core and huge opportunities to innovate to allow you, ultimately, to grow market share," he noted.

It is our job to offer the industry a best-in-class platform.

Javier Perez-Tasso, SWIFT

Collaborate and compete
Remarking on rapid growth and change in both the payments and securities markets, Perez-Tasso explained the implications of the many new ways to provide banking services being explored by bigtechs, fintechs and incumbent financial service providers. In this new and evolving environment, financial institutions must collaborate and compete to offer the most compelling customer channels, the best client experience and to execute faster than ever before. These front-end dynamics require the market's underlying infrastructures to be more agile and connected, but no less secure and reliable.

"When I think about SWIFT in this context, it is our job to offer the industry a best-in-class platform," Perez-Tasso said. "You can rely on us and focus on the front end, on acquiring new customers and growing market share through new services." Having operated as a two-sided platform for the financial industry long before anyone was talking about platform economics, Google or Amazon, "Our model of connecting providers and users at scale is fairly similar," he observed.

To highlight the cooperative's commitment to innovation, Perez-Tasso cited the ongoing adoption and evolution of SWIFT gpi, focusing in particular on recently-unveiled gpi instant, which connects the gpi infrastructure and its users to domestic real-time payment systems. With trials already having proved gpi instant's ability to facilitate account-to-account transfers, Perez-Tasso was able to confidently declare: "There will be international payments in seconds."

This is not the limit of SWIFT's ambitions, however. "Our vision is to become an instant global network for cross-border transactions," Perez-Tasso said. "This means creating an even more efficient and interconnected payment system that enables our users to transact from account to account anywhere in the world in an instant across all the world's currencies, with full transparency on fees and FX rates. Instant, frictionless and as seamless as domestic payments: that is what we are working towards."

Banking for a better world

Not only does financial exclusion exacerbate social exclusion, poverty and inequality; it is also bad business. In her Spotlight presentation, 'Why financial inclusion matters for your business', Inez Murray, CEO at Financial Alliance for Women, made the point that the financial sector is leaving money on the table by not servicing women. Just providing unbanked women with access to a bank account could generate US$24 billon for the global economy, she said.

To serve women better, Murray said that banks need to facilitate their access to finance, information, networks and recognition: "Create something of meaningful value for women, please don't just paint things pink."

Improving rates of financial inclusion also means understanding and including all demographics in the world of finance. Futurist Chloe Combi addressed the challenges that face Generation Z – 12 to 23 year olds – noting that this cohort grew up in the shadow of the global financial crisis. "The industry can offer much better online services to provide financial information," Combi advised. "Platforms represent engagement with this generation; YouTube is huge. There's a gap for an expert to fill here."

Enabling financial inclusion is one of today's critical challenges, according to Conan French, senior advisor for digital finance at the Institute of International Finance. "The excluded need products and services that meet their needs, where they are geographically, with interfaces designed for them," he said.

Which technologies offer the greatest help in the development of services to increase

inclusion? Tania Ziegler, head of global benchmarking for the Cambridge Centre for Alternative Finance at Judge Business School, sees a role for all the technological advances currently revolutionising the financial sector: mobile/internet; cloud computing; AI/machine learning/big data analytics; and blockchain. "These four groups of technologies are underpinning the new financial world," she commented. "They overlap and create a new ecosystem."

For French, digital identity solutions offer the best opportunity for financial services to address the unbanked, citing India's developments in this regard. "This is a place where governments, the financial sector and the digital economy can work on new models and ecosystems," he said. "This can be portable and relevant across industries, enabling simple customer onboarding and yet preventing financial crime."

New technologies are underpinning the new financial world. They overlap and create a new ecosystem.

Tania Ziegler, Judge Business School

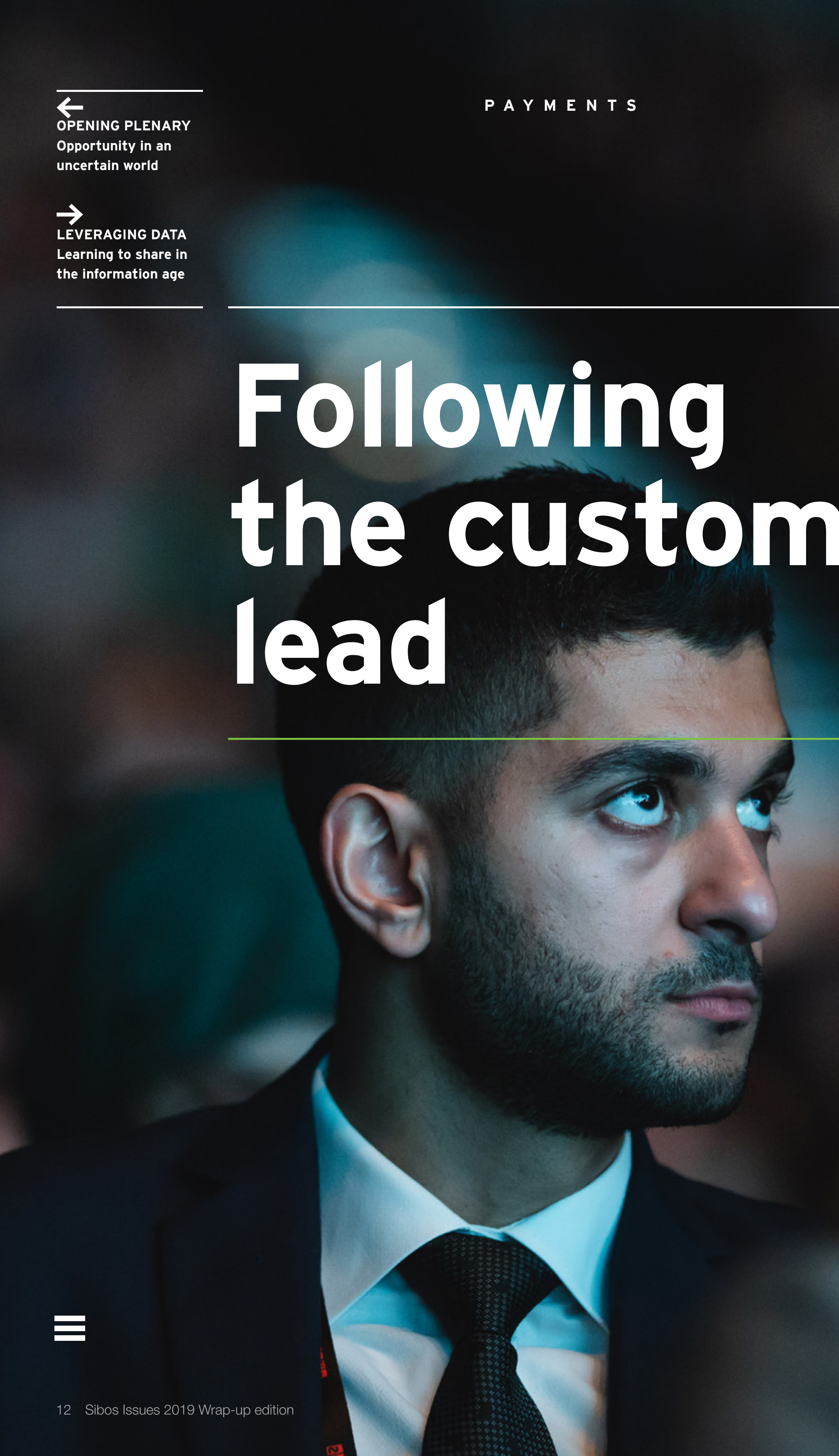
Responsible innovation
Underlining Shah's earlier point, Perez-Tasso said the pursuit of faster and more efficient processes still had to be tempered by appropriate risk management policies and procedures. "It's basically about responsible innovation. Our platform is reinforced with a major focus on cyber controls, on fraud prevention and detection capabilities, on compliance tools and data analytics. We are focused on maintaining the highest levels of resilience, security and compliance, backed up by very strong oversight," he said.

Innovation must not only be responsible, but customer-centric. When we roll out something new, we check that it brings customer value, that you trust the technology that lies behind it, that we support it well and that it can scale. That is what being a grownup fintech is all about," Perez-Tasso added.

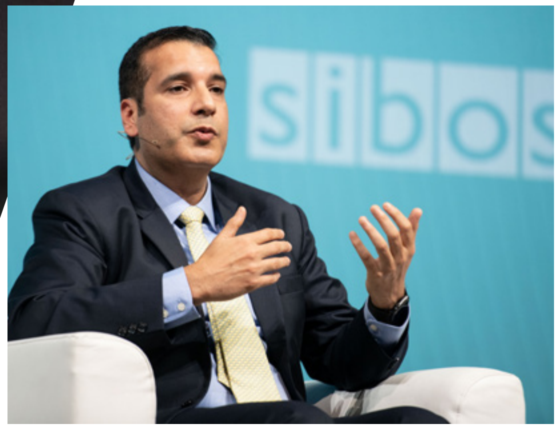
The levels of uncertainty and unpredictability highlighted at Sibos 2019 by Shafik and others mean that no organisation can take anything for granted. No, not even SWIFT. As Perez-Tasso noted, alternatives are available to banks and fintechs. How we respond, will determine our future. Or, as SWIFT's CEO concluded, "There is clearly a deep transformation underway in our industry, which is an opportunity for us all."

OPENING PLENARY
Opportunity in an uncertain world

LEVERAGING DATA
Learning to share in the information age



Following the customer's lead



We want to build a world where anyone can pay anyone.

Manish Kohli, Citi

With payments franchises under threat, business models must evolve in the open banking era.

Sibos 2019:
Big Issue Debate -
The future of banking

With open banking encouraging a swathe of new entrants to the payments market, what steps can banks take to avoid atomisation, or worse irrelevance, at the hands of fintech and bigtech rivals? Sibos 2019's payments-focused sessions presented plenty of opportunity for soul searching, but also optimism.

The topic of customer-centricity was discussed throughout the week, but nowhere more so than in Tuesday's Big Issue Debate, 'The future of banking'. For Benoît Legrand, chief innovation officer at ING, the future of banking and payments requires the customer to be placed at the centre of innovation. "Customers lead by their choices," he said, suggesting banks' business models need to consider more fully the customer value of their product offerings. "By being an integrated, interconnected platform we can enable our customers."

Bigtech threat

Today's banking customers are also customers of the bigtech companies that dominate the consumer space. Kristo Käärmann, co-founder and CEO of TransferWise, noted the challenge to banks presented by the bigtechs' extensive reach, as did Deutsche Bank CEO Christian Sewing in his 'Views from the top' address.

"Names like Google, Amazon, Facebook and Alipay, with their vast potential client bases, market capitalisations and data analytics capabilities, are already taking market share from banks, not only in the retail area." With the commercialisation of customer data fundamental to the success of platform models, Sewing said the banking industry "needs to catch up in terms utilising our vast stores of client data – this is a priority for us at Deutsche Bank as it certainly is for many of our peers."

Standard Chartered CEO Bill Winters took a similar stance. "The key for banks is to understand the banking needs of our customers and create our own compelling ecosystems," said Winters in his 'Views from the top' address. "The banking industry has gone to great lengths to rebuild some of the trust that had been previously damaged, and it is still a large competitive advantage of ours. We must ensure that this translates in to data."

Banks need to catch up in terms utilising our vast stores of client data.

Christian Sewing, Deutsche Bank

Victoria Cleland, executive director of banking, payments, and innovation at the Bank of England, said new market entrants, such as TransferWise, should be allowed to join existing payments systems, thus supporting consumer choice. But she cautioned that this should not come at the expense of robust and well-regulated market infrastructures.

"We need to think of unintended consequences," she explained.

For Citi's global head of payments and receivables, Manish Kohli, the disruption caused by new players and new technologies is already having a beneficial impact on incumbents and their customers. But he also raised the question

The key for banks is to understand the banking needs of our customers and create compelling ecosystems.

Bill Winters, Standard Chartered

Customers lead by their choices.

Benoît Legrand, ING

of whether disruption would destroy, replace or encourage upgrades to existing infrastructures. "We want to build a world where anyone can pay anyone as if there is no country or currency [difference], seamlessly," Kohli said.

On the subject of infrastructure, Kohli pointed to the huge progress being made on domestic instant payment schemes around the world: "This is a sustainable path that the regulators like that we can all go down together," he said, admitting that the pace of adoption is currently inconsistent, with many countries still lacking real-time infrastructure. If batch payments meet real-time payments, the customer still has a batch experience, he noted.

Customer empowerment

The current flow of new services, technologies and competitors into payments is being facilitated in many markets by open banking initiatives. Speaking at a dedicated Spotlight stream, Gavin Littlejohn, chairman of the Financial Data and Technology Association, described open banking as the empowerment of the customer to make use of their financial data to better meet their needs, typically requiring banks to allow API-based access to their systems by third-party providers of new data-led services.

Like instant payments, open banking is happening at different speeds around the world. Littlejohn contrasted Europe, where open banking is driven largely by the second Payment Services Directive, with the US, where initiatives are more industry-led. "There is a spaghetti of contracts between big fintechs and banks" in the US, noted Littlejohn, adding that India is top ranked globally for the design of its open banking ecosystem.

Delegates were also offered an in-depth view of the UK's open banking efforts from Imran Gulamhuseinwala, trustee of the UK's Open Banking Implementation Entity. Launched in 2008, the final 10% of the UK's open banking implementation remains crucial, said Gulamhuseinwala. "The biggest action list to complete is not just around technology development but also user experience," he commented. "The nine largest banks in the UK must have app-to-app functionality."

Around 300 non-bank service providers, not all fintechs, have applied to join the UK's open banking ecosystem, according to Gulamhuseinwala, with some already live. And whilst only the UK's top nine banks are mandated to participate, 80 others have volunteered, giving the initiative 99% customer reach.

Momentum is strong, but new horizons beckon. Gulamhuseinwala cited a 2019 report[1] which makes clear open banking for current accounts is not enough. Expanding the concept to other financial products, including mortgages, pensions and insurance, will drive more competition and better consumer outcomes. Gulamhuseinwala confirmed the UK's intention to expand open banking to open finance and beyond to utilities.

Connected banking

With banks opening up their systems and infrastructures, fintechs have already developed a variety of new offerings. In his Spotlight session, Andrew McFarlane, managing director, financial services at Accenture, identified 40 fintechs active across banking, payments, lending,

1 https://www.openbanking.org.uk/wp-content/uploads/open-banking-report-150719.pdf

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We can get a much better understanding of our clients through data.

Marie-Laure Gastellu, Société Générale

mortgages, savings, wealth, insurance, and personal finance management.

“Banks have customer trust, but are more exposed than ever to losing customers,” McFarlane said. “25% of customers are pioneers and will switch banks and 35% say they trust non-FIs, according to Accenture data.” Overall, McFarlane suggested banks that don’t engage in the ecosystem will lose 29% of their customers.

With the ‘atomisation’ of traditional banking well under way, banks need to embrace connected banking. To do that successfully, MacFarlane said, they must prioritise openness, engage with ecosystems, deliver relevant customer insights and look for partnerships that support the creation of an ecosystem that serves client needs. “The real change of culture will come from partnerships – it’s the Lego approach of building together,” commented Kim Fournais, CEO and founder of Saxo Bank, in his Spotlight session.

McFarlane added that digital identity is the glue that holds all of these concepts together: “Then you can layer in consent management.”

Responsible for emerging payments and business development at Citi’s Treasury and Trade Solutions business, Tony McLaughlin provided a global bank’s perspective on the service developments being enabled by technology innovation and greater collaboration. “Publishing APIs is the 21st century equivalent of building a branch on a high street,” he noted, in a session highlighting the role of API standards, two of which have been published to date.

The first, explained McLaughlin, is the SWIFT Pay Later API standard, which allows any bank to offer instalment lending at point of sale. “We must defend lending, it is the heart of banking. The point where the consumer is looking to access credit has moved to platforms. Can you lend there?” he asked fellow bankers.

A SWIFT Pre-Authorisation API standard has also been created, which allows a payer’s bank to earmark funds for a purchase in advance, guaranteeing that the future payment will be honoured. “The banking community has to come together at SWIFT to develop API standards,” McLaughlin noted. “Open banking on its own is not enough.”

Seamless ecosystems

Trade services for corporates face similar challenges and opportunities to the current account world: optimising data flows to deliver client value. “We are working with some of the largest ecosystems globally,” said Philip Fellowes, head of global liquidity and cash management in Europe at HSBC. “Tough clients want a slick user experience.”

When providing trade services, banks are a trusted third party, with privileged access to client data. “We can get a much better understanding of our clients through this data, and can then bring specific solutions,” commented Marie-Laure Gastellu, deputy head of trade services at Société Générale. The barrier to generating data-driven insights in the world of trade is the sheer volume of paper generated by every trade transaction. Therefore, back-office streamlining and investment in tools such as artificial intelligence (AI) is critical.

“Confluence of new technology will empower trade ecosystems,” noted David Rutter, CEO of R3. “However, the siloed approach of banks to issues such as AML is holding the industry back. AI in isolation is of limited use.”

Digital technologies such as AI, cloud and APIs are revolutionising not just banking, but every aspect of our commercial and personal lives. In facing up to the multiple challenges and opportunities of delivering innovative financial services in this new era, banks have in their favour both the trust placed in them by customers and their experience of working as a community. The message that came through loud and clear throughout Sibos 2019 was that collaboration and partnerships – with other banks, third-party providers, and even end-users – are essential to playing a role in the ecosystem of the future.

No need for science fiction as Team Asimov wins 2019 Student Challenge

Samuel Wincott (centre), aka Team Asimov, flanked by SWIFT’s Nancy Murphy and Peter Ware

Samuel Wincott, aka Team Asimov, won the 2019 SWIFT Institute Student Challenge, which asked competitors to devise artificial intelligence-based solutions to improve fraud detection and prevention in instant payments. This was the fourth year that SWIFT has run the challenge, and Wincott, a computer science student from Cardiff University, beat a field of five to claim the £20,000 prize.

The starting point for Asimov was recognition that, as 99.987% of electronic payments are non-fraudulent, the current store of data for use in the detection of fraud by AI systems is inadequate. “You can’t learn about fraud from non-fraudulent data,” noted Wincott in his 10-minute presentation. This means well-established classification procedures, whereby transactions are pooled into either fraudulent or non-fraudulent buckets, are critically flawed.

Wincott hit on the solution of looking at synthetic but statistically realistic data drawn from existing pools of information. He identified at least 30 different models, but ultimately turned to generative adversarial networks (GANs), machine learning systems that have been used, for example, to generate highly lifelike but artificial human likenesses from real faces.

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“Good data is the foundation of artificial intelligence.”

Samuel Wincott

The use of GANs by payment providers could greatly augment the quality of data which AI systems use to determine potentially fraudulent transactions. As Wincott observed, “Good data is the foundation of artificial intelligence.”

Crucially, this approach does not breach privacy rules as underlying transaction data stays locked inside the vaults of each payment provider. Thus, any provider can trade, or share, its stock of GAN-generated synthetic data with any other, each advancing its stock of information while proprietary data remains untouched.

PAYMENTS
Following the customer's lead

GEOPOLITICS & REGULATION
Is uncertainty the new normal?

Learning to share in the information age

Building a standardised, flexible data architecture will transform the capacity of banks to serve customers.

At Sibos 2019, the banking industry faced tough questions around its role as a custodian of data. For customers, trusting that data can be managed securely by banks is now as important as the institutions' ability to manage money securely. More than ever, no bank is an island. Data exchange is fundamental to new service offerings.

"Why don't I bring my data to the bank, and trust that they will know what to do with it?" asked Andreas Weigend, former chief scientist at Amazon and author of 'Data for the People', speaking at Tuesday's Big Issue Debate, 'Cloud, AI and privacy'. "Like I bring my money to the bank, and hope that I get it when I need it, should we trust the banks or the tech companies with our data?"

Big Issue Debate – Cloud, AI & privacy: Building blocks of a universal collaborative platform?

Banks' ability to handle customer data with care is just one side of the coin. Banks must trust other firms, particularly third-party cloud providers, if they want to tap into the near limitless capacity to leverage and optimise data. They must create pathways to derive value from data, using APIs to support its transfer between systems, and industry-wide programmes to facilitate seamless communication, such as adoption of the ISO 20022 (See outbox) standards framework for interbank messaging.

In this effort, security and quality are partners. Automated systems, including machine learning and artificial intelligence algorithms, offer great opportunity for added value, but errors in data result in errors in decision-making.

Speaking in the 'Views from the top' series, Lance Uggla, CEO of IHS Markit, noted that the range of information in scope to be machine readable has changed dramatically. "Firstly, the quantity of information has increased, secondly the quality has increased and finally the types of data [have grown]," he said. "We have so many unstructured forms of data."

Banks need to handle the dynamics of scale, quality and range flagged by Uggla, but these are limited by cost, analytics and

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Should we trust the banks or the tech companies with our data?

Andreas Weigend

interoperability. Technology is overcoming these hurdles, but compromises must still be made, forcing banks to negotiate these tensions in order to thrive in the information age.

“While we think about the challenge of privacy and AI let’s also look at the ethics of data,” said Samik Chandarana, head of data and analytics, applied AI and ML at JP Morgan’s corporate and investment bank, during the Big Issue Debate. “Are we allowed to use the data that we have, for some of the purposes that we want?”

Comfortable in the cloud

Much progress has been made in a short time. Previously, the cost of managing data within on-premise servers in proprietary data centres generated considerable capital expenditure, before banks began adopting cloud-based models to access capacity on demand.

“If someone were to lay down a business case ten years ago with an opportunity for US$100 million, they would block US$50 million just for hardware purchase,” said Hari Moorthy, global head of transaction banking at Goldman Sachs, speaking at the ‘Cloud debate’ panel. “The capital expense for fixed and illiquid assets was the biggest drawback. The economics of starting a business have fundamentally altered as a result of the cloud.”

Cybersecurity concerns have abated, but financial institutions are still finding their comfort level with governance in cloud services. “What we measure from a risk perspective is, who is accountable to investors?” said Paolo Pelizzoli, chief operating officer for International New Payment Platforms at Mastercard Operations and Technology. “Is it partially the cloud provider? Is it partially the software vendor? Is it partially the operations folks?”

There are also clear tensions between the commercial models of cloud providers and the service demands of users. Portability between cloud providers was also queried by panellists, with Pelizzoli observing, “As we move, we have to have the ability to move back from the cloud, in a situation where regulation forces us. Can we pull it back in?”

Moorthy made the case for a standard set of tools that can work across cloud providers, to support portability and ease integration. “That will make our lives much easier,” he said, predicting the commoditisation of cloud provision.

Open vs closed

Banks are also sharing data with other institutions, fintechs and service suppliers, as their value propositions are increasingly built on collaboration and aggregation.

Access to data is in part being driven by regulatory factors, such as open banking initiatives. These require banks to offer access to account and transaction data through standardised APIs, to facilitate competition.

Andrea Melville, head of commercialisation and propositions for Global Transaction Banking, Lloyds Banking Group, said that Amazon-like service level expectations make APIs vital to meeting emerging demand.

“With APIs, you can go inside an existing process and create something that has an ultimate client benefit by being faster and simpler,” she said, speaking on the panel, ‘APIs: The connective tissue enabling platforms and creating thriving ecosystems.’ “That’s how we are going to be competing going forward.”

Even where no regulatory mandate exists, open banking is increasingly understood and accepted by banks as boosting competition and choice. “I don’t think it needs to be regulated on the consumer or the commercial side; you can see the market coming to embrace it and to drive out inefficiency,” said Tom Durkin, global head of digital channels, Global Transaction Services at Bank of America Merrill Lynch.

Nevertheless, there is potential for resistance, for example due to security

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Let’s also look at the ethics of data.

Samik Chandarana, JP Morgan

fears. Andrew Smith, head of technology at ClearBank, noted that multiple APIs communicating within and across organisations are a potential risk.

"Each one of those [connections] is an attack point for a cyber-criminal," he said. "You have to be really conscious about how you are securing that [chain of connectivity] via end-to-end encryption."

Smith also reported that many institutions are expressing an interest in using less security to reduce friction. "My engineer could hook up and start making a payment within minutes; that's great – or that's what [some businesses] think," he said. "But your pain point is going to be securing the input. Security has to be the number one fundamental."

Built in trust
To establish the levels of trust needed to leverage data, banks must be effective in their selection and management of people, processes and technology, Sibos delegates were told.

Speaking on the 'Data science and the future of banking' panel, Nuno Sebastiao, co-founder and CEO of data science anti-fraud fintech Feedzai, said: "There are only 10,000 data scientists in the world that can actually call themselves data scientists; on LinkedIn you will find 100,000 claiming

The economics of starting a business have fundamentally altered as a result of the cloud.

Hari Moorthy, Goldman Sachs

Even the most advanced organisations don't have access to the talent they need.

Nuno Sebastiao, Feedzai

I can envision having my own data vault, that I can open up to the world if I want to.

Lance Uggla, IHS Markit

they are data scientists. Even the most advanced organisations don't have access to the talent they need."

As well as recruiting talent, banks must assess how to build robust data science into its processes, supported by APIs, cloud and related technologies. Michael Curry, vice president of regtech at IBM, said, "There is no artificial intelligence (AI) without information architecture (IA). You need to have a repeatable pipeline of how you move data from the source systems in a reliable and scalable way."

Selecting the right architecture is in itself crucial for supporting trusted management of data. By automating decision-making, it is possible to use smart technology that never actually 'reads' the data it processes, which offers protection from exposure to third parties.

Flexible standards key to value-added services

As its reach expands further across the payments landscape, the ISO 20022 message framework is being expanded and adapted to help banks transmit more sophisticated instructions between counterparties, customers and market infrastructures, to better support provision of value-added services through greater interoperability.

"One thing all standards need to be is flexible. Without flexibility, we can't move with the times. When additional data elements are needed or created, such as legal entity identifiers, we're stuffing them into some narrow generic file," warned Lisa Iagatta, director of account management for investment services at Fiserv and chair of standards body ISITC, speaking on the Standards Forum panel 'How ISITC standards help create a thriving, hyper-connected world'.

ISO 20022, the financial messaging standards framework, is creating this facility. Having been adopted in a growing number of payment market infrastructure renewal projects in recent years, it is being rolled out from November 2021 to replace SWIFT's existing MT messages, to become more widely used in payments between correspondents. In addition, a key element in supporting its increased use has been the evolution of ISO 20022 to expand to cover securities activity, from pre- to post-trade activities such as reconciliation.

Integrating business-level semantics for the FIX protocol across the ISO 20022 messaging model is currently underway, which will facilitate mapping between the FIX messages used in securities trading and the ISO standard.

Jim Northey, chair of ISO Technical Committee for Global Financial Services Standards (ISO TC68), said at the ISTIC panel, "I took the [standards group] to create a semantic representation because we felt that was going to drive us to a point at which we could pull this together."

> **Without flexibility, we can't move with the times.**
>
> **Lisa Iagatta,** ISITC

"There has been a breakthrough in making more efficient versions of these technologies," said Qiang Yang, chief AI officer at WeBank, during the Big Issue Debate. "Homomorphic encryption, for example, allows computation to be done in such a way that computational engine may not have to know what is being computed."

Despite the many challenges, it is clear that the tools and skills are available to enable banks to become the safe place for data – for itself and its customers – as Weigend proposed.

As befits a data visionary, Uggla outlined the concept that awaits: "In the future I can envision having my own data vault, that I can open up to the world if I want to, or I can expunge it from the world if I want to, and I can participate in data exchange that may add value to something I am engaged with."

How data can drive banks to deliver a better client experience

Ileana Sodani, head of international sales – EMEA & APAC, and Dee Sommerville, global head of client service and experience, Asset Servicing, BNY Mellon, explore opportunities for differentiation.

Ileana Sodani, BNY Mellon

Dee Sommerville, BNY Mellon

At Sibos 2019, both fintechs and the large 'BigTech' firms were more prominent than ever. These firms have built their franchises on using data intelligently to enhance the client experience, and financial services providers can draw on their example to create an ecosystem available at one touch – fast, transparent and seamless. At a time of intense pressure to drive down fees and costs, client experience must be the key driver for a firm's strategy and investments. Only the fittest – and most innovative – will survive.

People, process and technology
How do we define client experience? Is it the 'googlification' or 'amazonation' of your business? A click-and-go experience with all information at your fingertips? For a bank to provide its own brand of data-driven client experience, there must be unity of purpose across operating infrastructure, business model and internal culture.

For starters, financial service providers must be able to adapt nimbly to a fast-changing technology landscape, positioning themselves to optimise innovation both internally and through fintech partners. But at the same time, they must recognise the impact of new technology on client preferences within different segments. An open platform architecture should be embraced to provide the most optimal client experience in a fast-changing technological life cycle. Firms must also possess the data governance, infrastructure and tools to collect, analyse and enrich data generated (and demanded) by clients, to better understand and anticipate needs.

Making the right technology investments and developing an effective transformation strategy relies on the vision, culture and leadership displayed by senior executives and infused at every level of the organisational structure. This means having a clear sense of direction, in terms of the experience provided over the lifetime of the client relationship. But it also entails a flexible attitude to means and mechanisms, for example using agile development processes to accelerate or change direction.

Supporting client choice
What does this look like in practice? Across wholesale and retail payments franchises, banks are using digital assistants to automate responses to routine queries, using AI-driven tools to enhance quality of service from support desks. Borrowing from the experience of consumers, corporate treasurers are tracking transactions via mobile apps, even to authorise large payment flows.

Self-service is taking root. Treasurers want raw data feeds sent to bespoke liquidity management portals to support real-time visibility of cash positions globally on a bank-neutral basis. Banks with asset management arms want to incorporate NAV and other inputs using APIs that interrogate systems at prescribed intervals. This allows clients to integrate data from custodians with other sources and run it through third-party analytics in pursuit of alpha.

To continually enhance the client experience, financial service providers must complete the feedback loop by providing clients with the ability to enrich their data. As investors show deeper interest in sustainable investment choices, for example, wealth and asset managers are using data to meet emerging demand. At the individual level, this can mean using apps to understand the evolving priorities of millennial investors, for example. For institutional clients, the ability to screen out certain investments or quantify the non-financial impacts of others is dependent on regular and granular data exchange.

Opportunity and risk
The pace of technological innovation is only one of several factors driving unprecedented levels of change across the sector. As such, survival depends on building differentiated client experiences to deepen relationships and penetrate new markets, expanding strategies and operating models to combat fee and cost pressures.

BigTechs have undoubtedly played their hand effectively, but there is no inherent reason why financial service providers cannot deliver superior client experiences as well. There is a great opportunity, but also a risk for those who lag. Banks must place client experience not just at the centre of their data strategy, but also at the very heart of their culture and organisation.

For more insights on navigating the digital future visit bnymellon.com/sibos

BNY MELLON

LEVERAGING DATA
Learning to share in the information age

CYBERSECURITY
Mobilise the power of the network

Is uncertainty the new normal?

Firms must adapt to a fractured but fluid future.

A brief survey of today's geopolitical landscape would lead many to conclude that banks and their customers face considerable risks in the near-to-medium term. But opportunities also came to light in Wednesday afternoon's Big Issue Debate, 'Navigating an era of renewed great power competition – New challenges for countries, markets and investors'.

Even so, panellists concurred with moderator Dean Garfield, vice president for public policy at Netflix, that we are entering largely uncharted waters.

Reshaping the terrain
According to Elizabeth Rosenberg, senior fellow at the Center for a New American Security, the unique characteristics of this "new era of economic competition" stem partly from the willingness of the US to reach for "coercive tools", such as sanctions and tariffs, often against other large economies. But the particular qualities of the US's chief rival are also reshaping the terrain. "China is the biggest economy the US has faced in competition since it became the world's biggest economy," she said. "China has different values and economic and political systems, and that is seen by many in the US as a threat."

Big Issue Debate –
Navigating an era of renewed great power competition

> **There are solid and enduring arguments for maintaining global flows.**
>
> **Elizabeth Rosenberg,**
> Center for a New American Security

“

It's difficult to see how you can stop the digital revolution.

Gerard Lyons, Netwealth Investments

“

We need to find a way to connect the Chinese and international markets.

Charles Li, Hong Kong Exchanges and Clearing

Ming-chin Monique Chu, lecturer in Chinese politics at Southampton University, agreed that US-Chinese "antagonism" is one of the defining factors of our time, noting the current US administration's perception of China as a threat both to US interests and the western liberal world order. As well as its rapid economic growth, China also represents a challenge due to its authoritarianism, its state-centric development model and its Sino-centric world view. "China's accession to the World Trade Organisation was predicated on the expectation that it would eventually give up its interventionist approach, but the opposite has turned out to be true," she observed.

US-Chinese relations were placed into the context of other global developments by Gerard Lyons, chief economic strategist for Netwealth Investments. The two interlocking themes of the west-to-east shift of investment and the political and economic aftershocks of the global financial crisis should be viewed, said Lyons, alongside challenges to the post-WWII institutional framework. "There has been much talk about the need for the International Monetary Fund and the World Bank to change – and indeed they have – but with the rise of China we're now starting to see more institutional relationships emerge," he said.

Heightened volatility
China's rapid growth has clearly reshaped geopolitical dynamics. But its future path is far from certain, nor is it the only force reshaping the established order. As such, we're unlikely to witness the passing of a baton from one superpower to another, panellists agreed, orderly or otherwise.

Rosenberg suggested that heightened geopolitical volatility would prevent the re-emergence of rigid power blocs, arguing that fluid "coalitions of the cautious" would coalesce among countries with specific, time-limited objectives. As further evidence of complexity, Lyons flagged interdependencies between China's fast-growing private sector and international investment institutions, also pointing to the forces unleashed by the fourth industrial revolution and demographic change in sub-Saharan Africa and the Indian subcontinent.

Many geopolitical factors are influencing business planning, but keeping out of the crossfire of trade tensions is perhaps the most urgent. Greater agility will be required to reappraise and redirect investments, facilities and supply chains at short notice, whilst innovating faster to meet new needs.

"Some companies have become savvier in dealing with US commerce and banking laws," said Rosenberg, noting the growing ability of commercial actors to limit the impact of government-imposed restrictions. But geopolitical tensions will outlast the current US administration, with politicians too becoming more "creative" in their use of sanctions and other tools. "We're probably at the beginning of the curve," Rosenberg added.

Despite recognising ongoing challenges, Lyons focused on upside potential. "Trade wars are undesirable, but it's difficult to see how you can stop the digital revolution," he said, emphasising the scope for innovation to energise low-growth economies with ageing populations. "Low productivity has been the challenge in the west."

Lyons called on banks to fund growth whilst maintaining vigilance against concentrations of risk, stating that growth and exports would thrive through continued sharing of innovation and protection of intellectual property rights. "But if geopolitics erects barriers to the flow of information and intelligence sharing, that would be a cause for concern."

Chu said there is potential for China's evolving cybersecurity protection rules to hike costs for foreign firms. Already, differing regulatory approaches to data privacy and digitised commerce have given rise to concerns over the possible development of parallel, siloed infrastructures, replacing global networks. Rosenberg acknowledged the risks posed by tougher cross-border barriers.

"There are solid and enduring arguments for maintaining global flows" in sectors with substitutability and flexibility, she said, whilst political tensions might lead to fragmentation, for example in the high-tech sector. "Certain sectors will see more disaggregation, but wholesale de-coupling that forces the rest of the world to choose is not realistic."

Disruptive impact
Speaking earlier, Hong Kong Exchanges and Clearing (HKEx) CEO Charles Li offered a case study on the disruptive impact of political uncertainty, during his 'Views from the top' session.

In mid-September, HKEx launched a (subsequently abandoned) takeover bid for the London Stock Exchange Group, despite the latter's management being focused on buying market-data provider Refinitiv. Li acknowledged the timing was not ideal, revealing that HKEx had intended to unveil its offer soon after March 31, 2019, the scheduled date of the UK's departure from the European Union. "We had wanted to do this for quite a while. But we thought Brexit would create uncertainties we could do without," said Li, admitting that the ongoing lack of clarity on Brexit subsequently forced HKEx to take a "now or never" approach.

Although its bid timing has been hampered by political realities, HKEx's underlying strategic reasoning was also driven by them. With many firms considering retrenchment behind domestic borders, and polarisation growing between east and west, Li made the case for global market infrastructures to underpin these two "centres of gravity". "Our idea for the transaction is a simple vision, but a big dream," he said.

Despite geopolitical tensions – and the fate of individual M&A initiatives – there remains an opportunity to channel US$27 trillion of Chinese assets into the international finance markets. The task is complicated not only by capital controls, but also transparency reforms which, explained Li, have left no meaningful institutional intermediation with retail investors in China's capital markets. "The Chinese market is like a round pipe; and our [international] market is like a square pipe: it doesn't fit. We need to find a way to connect them," he said.

Paradigm shift?
Long-running issues such as Brexit might make us feel we are living in a period of greater political uncertainty, but is this minor turbulence or a more significant paradigm shift? Dr Angela Gallo, lecturer in finance at Cass Business School, pointed to some tangible measures in her SWIFT Institute presentation, 'Living in an era of political uncertainty'.

In particular, Gallo looked at risk insurance data, noting that Germany and Spain had both been included in broker BPL Global's top ten countries for credit and political risk insurance claims by value over 2016-18, taking positions normally reserved for emerging markets countries.

The fact that large, traditionally stable countries are showing signs of turmoil, turning away from multilateralism and toward state-centred reforms and economic nationalism, suggests the emergence of a new reality, said Gallo. Further, developments such as Brexit frustrate efforts to anticipate resolution,

> **There is no expiry date for this uncertainty.**
>
> **Dr Angela Gallo,** Cass Business School

meaning institutions and investors cannot simply sit tight. "There is no expiry date for this uncertainty," she said.

Equally, banks should consider the risks of retrenchment very carefully, counselled Gallo, noting that such a policy by facilitators of globalisation could become self-fulfilling. Instead, banks will need to improve their resilience to shocks and their ability to innovate, she said, whilst playing close attention to regulatory developments, national and global.

Gallo acknowledged that her conclusions were somewhat downbeat, but offered one reason for optimism. Asked how long the swing from globalism to nationalism might last, she said typical historical cycles of 30-50 years could well be shortened through today's rapid news cycles and social media. "We've never had such velocity," she said.

Technology central to corporate response

How to offset the rising cost of trade in an increasingly uncertain geopolitical environment, where sanctions and tariffs are imposed with greater regularity? Importers and exporters are paying for protection via credit insurance and letters of credit, but trade finance experts are exploring new cost-efficiencies too.

According to Vinay Mendonca, global product head, propositions and structuring, trade and receivables finance, HSBC, firms inevitably face higher trade costs as they seek new markets to avoid tariffs. "In this environment, digitisation of trade becomes critical," he told Sibos delegates.

James Binns, global head of trade and working capital at Barclays, said the sophistication of 3D printing is increasing the viability of more localised supply chains. Cross-border trade will become more focused on intellectual property and licencing revenues, he argued, requiring banks to develop new tools.

Banks are already combining with peers, platforms and fintechs to tackle the inefficiencies stemming from trade's traditional paper trail. Historically, the breadth and diversity of supporting players has thwarted fuller automation, but technologies including AI, robotics, optical character recognition and blockchain are offering new hope.

While Mendoca called for minimum standards to support automated screening and KYC processes, Binns suggested the emergence of non-bank trade platforms could remove barriers to supply chain finance. "I want our bank to connect to all these platforms so that we can finance clients' supply chains. Banks need to be more open and to work with platforms," he said.

In a separate session, panellists flagged a number of shortcomings in existing trade-related platforms, including limited interoperability, reliance on stale information, and lack of reach to smaller banks and corporates, as well as other parties involved in the trade process. Anne-Cecile Delas, global head of trade and treasury solutions at Natixis, echoed calls for common rules and standards. "Each platform has value individually, but they will all be more powerful if they interact," she said.

Flexibility and resilience

The interplay between geopolitical risks and technology-driven efficiencies was also explored in 'Slowbalisation and its impact on global corporates'. Against a backdrop of slowing trade growth and increased friction in the international trading system, Amazon Core AI chief economist Pat Bajari claimed machine learning and other digital technologies could drive a new wave of productivity gains. Although he identified significant scope for new efficiencies in many industrial sectors – including finance – he admitted implementing the changes needed to deliver more accurate, data-driven decisions was no easy matter.

"You need collaboration between people with a number of different skills, including those trained in the use of data. You also need strong leadership because the process can be frustrating. But there are too many inefficiencies that need addressing for these efforts to fail," said Bajari.

Banks and their corporate clients are already adjusting, co-panellists insisted. Matthew Davies, head of transaction services for EMEA at Bank of America Merrill Lynch, said clients with complex cross-border supply chains are rationalising. "Firms are looking at how best to set themselves up for the new environment, including regional models and local supply chains," he remarked.

Steffen Diel, head of global treasury at SAP, said that large corporates needed to ensure they had sufficient flexibility and resilience to withstand headwinds. "I need a real-time view on liquidity, across country and instrument exposures. Technology should be able to provide this, by calculating scenarios quickly and on the fly."

> **In this environment, digitisation of trade becomes critical.**
>
> **Vinay Mendonca,** HSBC

> **There are too many inefficiencies that need addressing for these efforts to fail.**
>
> **Pat Bajari,** Amazon Core AI

GEOPOLITICS & REGULATION
Is uncertainty the new normal?

HUMAN ELEMENT
Keep it simple, stupid

Mobilise the power of the network

A hyper-connected world does not have to be a dangerous one.

"Cybercrime is becoming much more mainstream," Siân John, EMEA and APAC director, cybersecurity strategy, Microsoft, told a packed plenary room at Sibos 2019's Big Issue Debate on cybersecurity.

'Have new business models created a perfect cybersecurity storm?' was the central question. And along with the answer (spoiler alert: yes, the advent of real-time services and open banking make it harder to protect assets against cyberattacks), the panel gave us an in-depth analysis of the threat, a closely argued array of defensive strategies and even a measure of reassurance. The sentiment was common across this year's cybersecurity sessions: as the lights came up, we felt that we knew what to do. Perhaps the week's take-away was as simple as: we have the tools and the defensive measures; with the right attitudes, the right thinking and the right connections we can handle this.

First, the Big Issue Debate, and the threat itself. "We are operating in an ever more digitally connected ecosystem, where we are exposing ourselves to greater points of vulnerability simply because we are doing more business on a global level through complex supply chains," said Sir Rob Wainwright, senior cyber partner, Deloitte. Sophisticated cybercriminals work alongside, and sometimes in partnership with, malicious state actors – and both are equally keen to target banks.

"Traditionally, their attack vector has been narrow, aimed at governments and military installations, but in the last three or four years, malicious state actors have expanded their activities. They now also steal money and commercial secrets," said Wainwright, citing recent examples where the estimated pre-detection 'take' from cybercriminal activities ran into billions.

But we shouldn't focus all our attention on – to use Wainwright's phrase – the top end

Sibos 2019: Cybersecurity highlights

> **How do we deal with sophisticated cybercrime and the general noise as well, while enabling digital transformation?**
>
> **Siân John,** Microsoft

Our focus is on understanding the adversary.

JF Legault, JP Morgan

of the cybercriminal economy. "From our customers' point of view, the question is: how do we deal with sophisticated cybercrime and the general noise as well, while enabling digital transformation?" said Microsoft's John. Cybercriminals' motivations and techniques evolve, often rapidly, but banks have to deal with some unchanging realities. As John observed, every organisation, however secure, will contain at least one employee capable of clicking on even the most obviously suspect link. "There'll always be a 'Dave'," John warned.

Likelihood, intent, capability

In a Wednesday morning Spotlight session, 'Why is cyber risk the most critical risk that FMIs are managing today?', Dave was joined by a more sinister partner in cybercrime. Moderator Oisin Lunny, adjunct professor, UX-driven business at Barcelona Technology School, cited a member of the intelligence community's definition of a cybercriminal. "People think of cybersecurity as analogous to securing your car. These days, it's as if you have a serial killer in the boot of your car. He's crazy, and he's trying to get at you, all the time. It's relentless," said Lunny.

Cybercriminals don't take time off. And some are already inside your organisation. "We invest in insider risk management. Some 60% of attacks are a result of insider activity," said Andrew Gray, group chief risk officer, DTCC, the US post-trade services utility. "Everyone is a risk manager," Gray added, going on to discuss the potential vulnerabilities represented by critical third and fourth parties.

States do it; sophisticated criminal networks do it; mainstream criminals and malicious insiders do it. And naïve employees like Dave sometimes inadvertently facilitate it. How do we defend ourselves? "Our focus is on understanding the adversary," said JF Legault, global head of cybersecurity operations at JP Morgan. "We look at likelihood, intent, and capability of the different adversaries to see how they could target financial institutions – ourselves, others, utilities, partners. We then monitor for that activity," Step one: know what's out there. Through detecting and monitoring criminal activity, banks can develop content to detect and respond to threats, said Legault, later explaining how detailed

modelling of threats enabled defensive measures to be precisely targeted.

But a successful know-your-criminal strategy isn't enough on its own. Legault continued: "It's important to investigate even blocked activity. Sophisticated actors won't reveal their most sophisticated tools early on. They'll escalate as needed." A clumsy attack, easily blocked, may be just the beginning – although not every criminal has the capability to escalate. One encouraging point, made by several speakers, is that most of what we're facing hasn't evolved significantly. Echoing John's point about "mainstream noise", Wainwright said, "Cybercriminals are still using traditional malware, re-utilising those tools to steal as much personal data, including banking credentials, as possible, dump it onto the dark marketplace for onward sale into fraud. The illegal acquisition and exploitation of personal data is still what's driving the bulk of cybercrime."

Complex supply chains

By the end of the week, we had all been reminded, multiple times, not to use our birthdays, cats' names, favourite actors, et cetera, as our passwords. Not even Dave would do that, of course, but password security remains a point of vulnerability judged worthy of mention. But not all 'traditional' cybercriminals are as unsophisticated as they might seem – an apparently full-blown attack might be an initial probe. A further dimension to this is that cybercriminals don't need to attack us directly, to attack us. Cheri McGuire, chief information security officer (CISO), Standard Chartered, said, "It's even more critical that we make sure that we have proper configurations and that our APIs are as rock solid as we can make them. The opportunity is to make sure we have the right protocols and standards in place, and that we're adopting those – to build security and privacy in – as we're adopting the APIs."

Our partners, customers and suppliers – indeed every party in our extended network – are vulnerable, and it's in the hyper-connected nature of banking that we are actively engaged in broadening our range of interactions. As Wainwright suggested, our supply chains are complex, and getting

We're all looking at how we evolve our approaches to third-party risk.

Cheri McGuire, Standard Chartered

> **Linear thinking is no longer enough.**
>
> **Daniela Peterhoff,** Oliver Wyman

more so. No wonder McGuire suggested that we need to focus not only on what we're doing, but on how we're doing it. Gray made a similar point, telling the Spotlight audience, "We can do everything possible to protect ourselves and recover, but we're part of a system, so we need to think of the whole system. What are our customers doing, what are our service providers doing? What would happen if management was distracted across multiple incidents?"

In the same session, Dr Daniela Peterhoff, co-head of EMEA corporate and institutional banking and global head of market infrastructure, Oliver Wyman, presented some sobering statistics. "We have seen a 15% increase in cyber-attacks – and CISO budgets – over the past three to five years. We see one in three organisations being affected by insider attacks and two out of three organisations being affected by cyber-attacks overall. We estimate there were approximately 5.09 billion breaches in 2018," she said.

Peterhoff also described her experience of participating in end-to-end simulations across market infrastructures. It is important to ensure every participant in a simulation – and by implication, a live incident – is fully briefed on the situation and their potential role in it. When designing simulations, Peterhoff said her firm often introduces unexpected elements – a key person is absent, for example, or a board member is on a plane. To anticipate and manage cyberattacks effectively, attitudes need to change, Peterhoff insisted. "Linear thinking is no longer enough. There's always something more you can do," she said, advocating a multi-faceted approach capable of seeing potential vulnerabilities across an entire infrastructure. "We believe you need systemic thinking for cybersecurity."

Strengthen and freshen

Being part of a network can be a source of vulnerability, but internal connections and external partnerships along the digital supply chain can also be used to strengthen and freshen cyber-defences. Citing an uptick in wholesale-payment attacks in 2016, Legault said, "One of our first steps was to go to our internal business partners and ask if they had anybody looking for a new job. We wanted to bring them into our cyber-intelligence team, to have their knowledge of the payments business." On the one hand, it's important to hire the talent required for the job, but on the other, this shows the importance of flexibility, doing what's necessary to counter threats as they arise.

Banks are typically mature businesses with established – indeed, tried and tested – procedures for maintaining security. In the context of cybersecurity, this means, first, they can be predictable, and second, they can be resistant to change.

"We quite often see people trying to use the controls they've had in place for fifteen, twenty years. They take new ways of working and try to route them through their existing control frameworks. As people adopt open banking, cloud and mobile workforce, they still ask, how do I fit this into my existing on-premise perimeter environment?" said John. And the answer is, of course, that they can't. "One of the biggest conversations we have is, do you actually need to look for a new control for a new way of working? How do you do that in the new world?" John continued.

Shared oversight

The old perimeter fences have been breached; for sound business reasons, every bank's gates are open. As McGuire said, "We're all looking at how we evolve our approaches to third-party risk, because it's now fourth-party and fifth-party risk as well."

Effective cybersecurity requires effective oversight of the whole ecosystem – suppliers, customers, suppliers' suppliers, customers' customers, all parties. A further point: effective oversight is shared oversight. Wainwright said, "The sharing of threat intelligence in a systematic way will be an important part of the future." Later on Wednesday, Steve Silberstein, CEO, FS-ISAC, made a similar point in his Spotlight session, 'Cybersecurity intelligence sharing: How do we overcome the legal barriers?' "An army of one will not win the cyber-war. The challenges are great, and we can't do it alone. Now is the opportunity to start designing security for the digital channels of the future."

"The same, but very different"

> **The means of communication are increasing exponentially.**
>
> **Dame Stella Rimington**

Not strictly billed as a cybersecurity session, Dame Stella Rimington's 'Views from the top' presentation gave us an insight into the way state actors have always used information – stealing it, trading it, copying it – to gain strategic advantage. The former head of MI5, Britain's domestic intelligence service, reflected on how technology innovation had changed the tools and techniques of her craft of information gathering and analysis. "They're the same, but very different," she said.

Focusing on three core tasks – interception, surveillance and eavesdropping – Rimington pointed out the expansion in potential of communication channels that needed to be understood and utilised, compared to the 1970s, when she joined the service. Back then, interception meant steaming open letters with a kettle and a knitting needle or listening in on landlines. "The means of communication are increasing exponentially. The job now is to keep pace to make sure they are capable of intercepting all these platforms," she said, noting also the enabling role of legislators. In place of following suspects on foot or by car, surveillance has gone digital too, while eavesdropping no longer involves drilling holes in walls to insert hidden microphones. "The world I grew up in seems a long time ago. But it isn't really, it just shows the speed with which technology has advanced," said Rimington.

←
CYBERSECURITY
Mobilise the power of the network

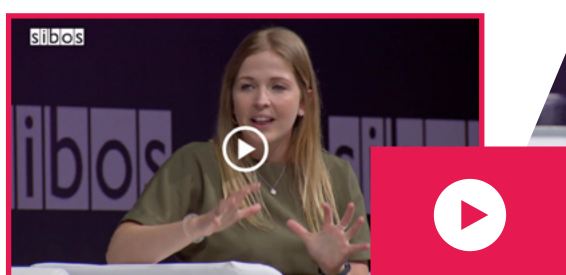
→
SECURITIES
Tech-led revolution

Keep it simple, stupid

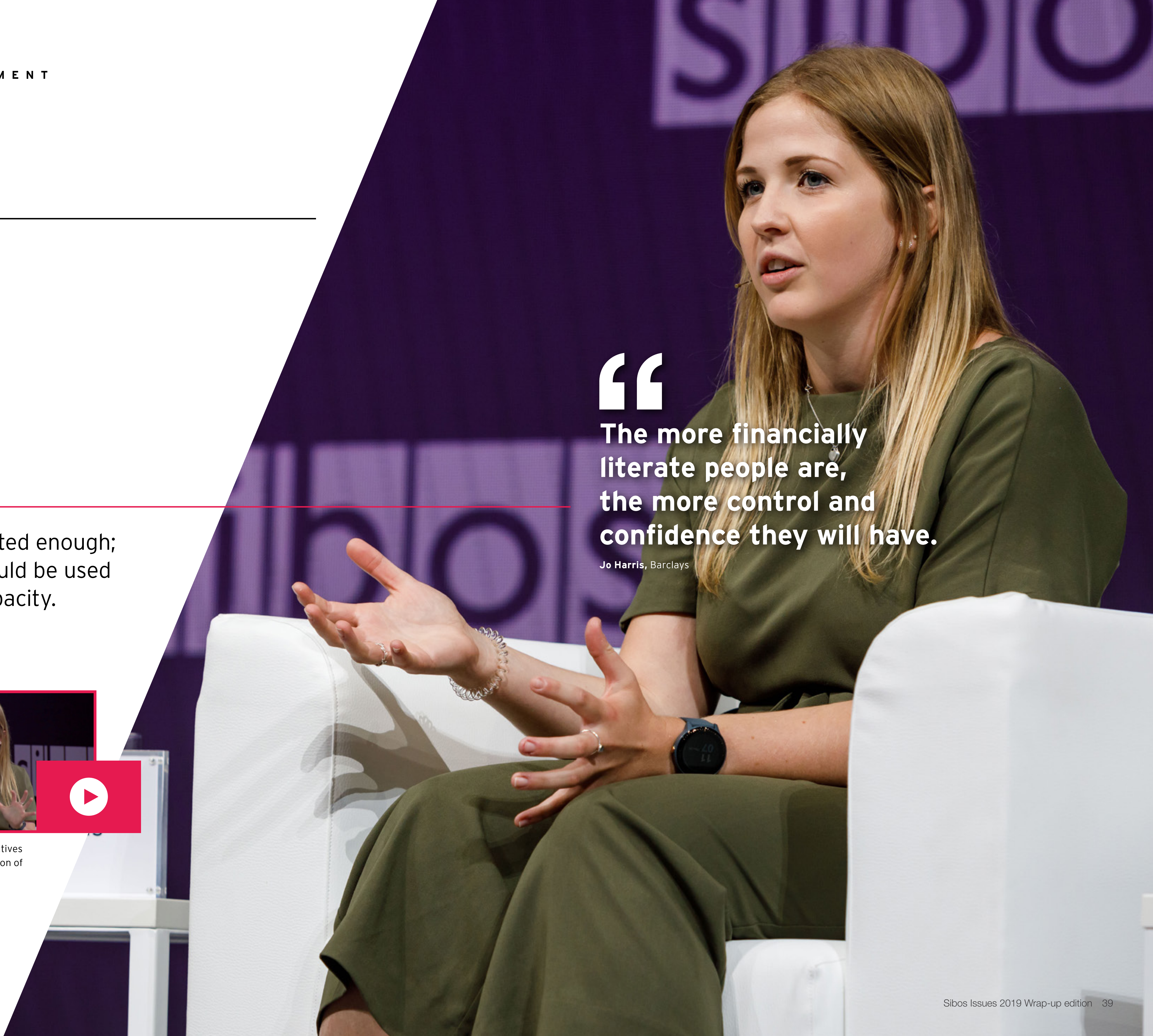
Life is complicated enough; technology should be used to strip away opacity.

In a world where technology is moving at a rapid pace, the human element cannot be underestimated. Shifting behavioural and economic patterns are not novel, but the generations now coming of age do stand apart. These young people are not only the most tech savvy ever; they also grew up in the shadow of the global financial crisis. The challenge for financial service providers is to capture their interest with products tailored to their digital nature, but they must also gain their trust.

These themes were explored in Thursday's Big Issue Debate – 'Banking Perspectives: Understanding the Next Generation of Customers' – as well as several Spotlight sessions throughout Sibos week. The key message is that technology is only part of the solution. Mobile apps are important, but the industry must also play an educational role. Competition is tough, with the challenger and neo banks snapping at the heels of their mainstream counterparts. Nevertheless, there is time for banks to secure their future by offering better targeted products, more digital-friendly channels, value-added services and convincing evidence of



Big Issue Debate: Banking perspectives – Understanding the next generation of customers



> "The more financially literate people are, the more control and confidence they will have.
>
> **Jo Harris,** Barclays

Don't allow technology to become a complicating factor.

Julia Hobsbawm, author and broadcaster

empathy and connection to this fast-maturing and demanding cohort.

In some ways, Gen Z, born since the mid-1990s, are not so different. They want good health, security, money, and a place to live, according to Chloe Combi, consultant and futurist, who gave a Spotlight talk and participated in the Big Issue Debate. But many are still scarred by the financial crisis, with negative impacts on their faith in traditional banks. "Some children canvassed at the time of the crash stated that their lives had been ruined by it," she said.

Further, the traditional coming-of-age journey – leaving home, getting married, having children, buying a flat or house – "has been turned on its head", Combi said. "The statistics indicate that, in 2020, the average age of moving out of the parental home will be 28 for women and 31 for men. It's almost impossible for adults in their twenties who still live with their parents to think about settling down and having children of their own."

Up for the fight

Use of social media was also highlighted by Combi as having a significant effect on consumer habits. Gen Z are curators of their own media – creating content themselves, downloading information, e.g. photos and videos – as well as consumers. They are also more socially isolated, able to interact with friends online, order food from Deliveroo and watch streaming services such as Netflix, without leaving the house.

Given this backdrop, it is no surprise that upstart providers are stealing a march on established players. Unencumbered by legacy systems or cultures, new entrants have quickly developed products – mobile apps, social media-friendly user interfaces and personal finance capabilities – that cater for the younger generation's specific requirements. As Charlotte Crosswell, CEO, Innovate Finance, explained, "Banks are doing a lot of work around trying to understand consumers' needs, but are finding it hard to make predictions about the future. New entrants had an advantage in that they could almost start afresh and

Gen Z do not appear to be educating themselves about finance.

Charlotte Crosswell, Innovate Finance

make a concerted effort to find out what the young generation wanted."

Traditional banks may still be on a learning curve but they are fighting back. Jo Harris, head of Millennial Finance at Barclays, who described herself as being on the Millennial/Generation Z cusp, said "new entrants would help to keep the banks honest". Envisaging a future full of new providers, products and services, Harris said incumbents were getting up to speed and warned "against writing them off."

Major banks that already offer a full suite of products may hold an advantage over newer competitors, said Harris, adding that Barclays has developed services to help younger people access their offerings and to understand how to manage their money. "Our view is that the more financially literate people are, the more control and confidence they will have," she said, pointing to the bank's Money Mentors programme, which offers informal one-on-one sessions with specially-trained staff via video calls.

Education, education, education

Panellists advocated wider educational programmes for students at schools and universities in order, as Combi noted, to better prepare them for the "realities of life outside of the classroom". Croswell, agreed, adding, "Gen Z do not appear to be educating themselves about finance and the best way of managing their money." She suggested devising programmes whereby financial institutions go into schools to provide guidance directly. "Some fintechs have started to do some work aimed at educating people on how to avoid payday loans," said Crosswell, but she acknowledged the difficulties of enacting curriculum changes.

Financial education can also be passed down the generations, said Combi, advocating "more collaboration between populations that are 'great with tech' and those that are 'good at saving'. "It's common for the media to pit generations against each other, judging baby-boomers against snowflakes, but this is not very helpful," she said. Cross-generational

Kindness is an essential commodity in an effective corporation.

António Horta-Osório, Lloyds Banking Group

interaction can work both ways, panellists suggested, noting that the younger generation is not the only one interested in cutting-edge tools and better customer service.

Author and broadcaster Julia Hobsbawm, moderator of the Big Issue Debate and Spotlight speaker, emphasised the nature of human interaction, regardless of industry and generation. If relationships with colleagues, family members and friends are conducted mainly via messaging apps, text, social media or email: think again. "Being a pro-social human is about being in the physical, not virtual world," she said.

From a business perspective, companies can better target customers, increase profitability and have a more productive and innovative workforce if the human element is more appreciated. In other words, artificial intelligence, robotics and machine learning are important, but "don't allow technology to become a complicating factor," Hobsbawm said.

Firms should implement the old 1950s military design principle KISS, also known as Keep It Simple, Stupid, said Hobsbawm. Networking and sharing ideas in person should not be underestimated. Managers should not rely solely on email or online connections, but use quality face-to-face or voice-to-voice time to discuss projects, new ideas or solve problems. "The most important person in the room is not the machine, but you," she added.

Sharpening the skillset

To that end, last year the UK's Lloyds Banking Group embarked on a four-pronged strategy designed to put the individual at the centre. Although it includes digitising the group, maximising existing capabilities and providing a leading customer experience, the fourth leg – transforming ways of working – is underpinned by the bank's largest-ever investment in its staff, according to group chief executive António Horta-Osório, speaking in his 'Views from the top' session. The programme, which aims to equip staff with skills for the future, has increased average training hours per head by 50%, with a target of delivering 4.4 million hours by the end of 2020. Over 2.1 million hours have been delivered to date.

Sharpening the skillset is only part of the programme. Horta-Osório said the bank also embedded support for mental health, tripled paid paternity and doubled maternity leave. "Kindness is an essential commodity in an effective corporation, so providing employees with the support they need is the correct course of action," he added.

Today's pioneers, tomorrow's leaders

Inspirational women are never hard to find. They appear in all walks of life, although many have faced steep challenges in reaching their goals. Despite their differences, career choices and personal circumstances, they all share resolve and purpose. Dame Kelly Holmes, a double Olympic champion, personified this drive when she told the audience her own story in Thursday's 'Views from the top' session. She explained that she was a strong, resilient woman for whom nothing would stand in the way of her goal of becoming an Olympic champion.

Too many people forget to "pat themselves on the back", said Holmes, remembering, especially in times of difficulty and self-doubt, the progress they have made so far. As an individual athlete, Holmes succeeded on her own, in many respects, overcoming adversity and injury to achieve her goals through sheer determination. To her, reaching peak performance was about ticking off boxes and having a clear sense of purpose. To succeed, Holmes said it was necessary to set the bar high, have an "I'm the best" mindset, and exhibit passion and "fire in the belly".

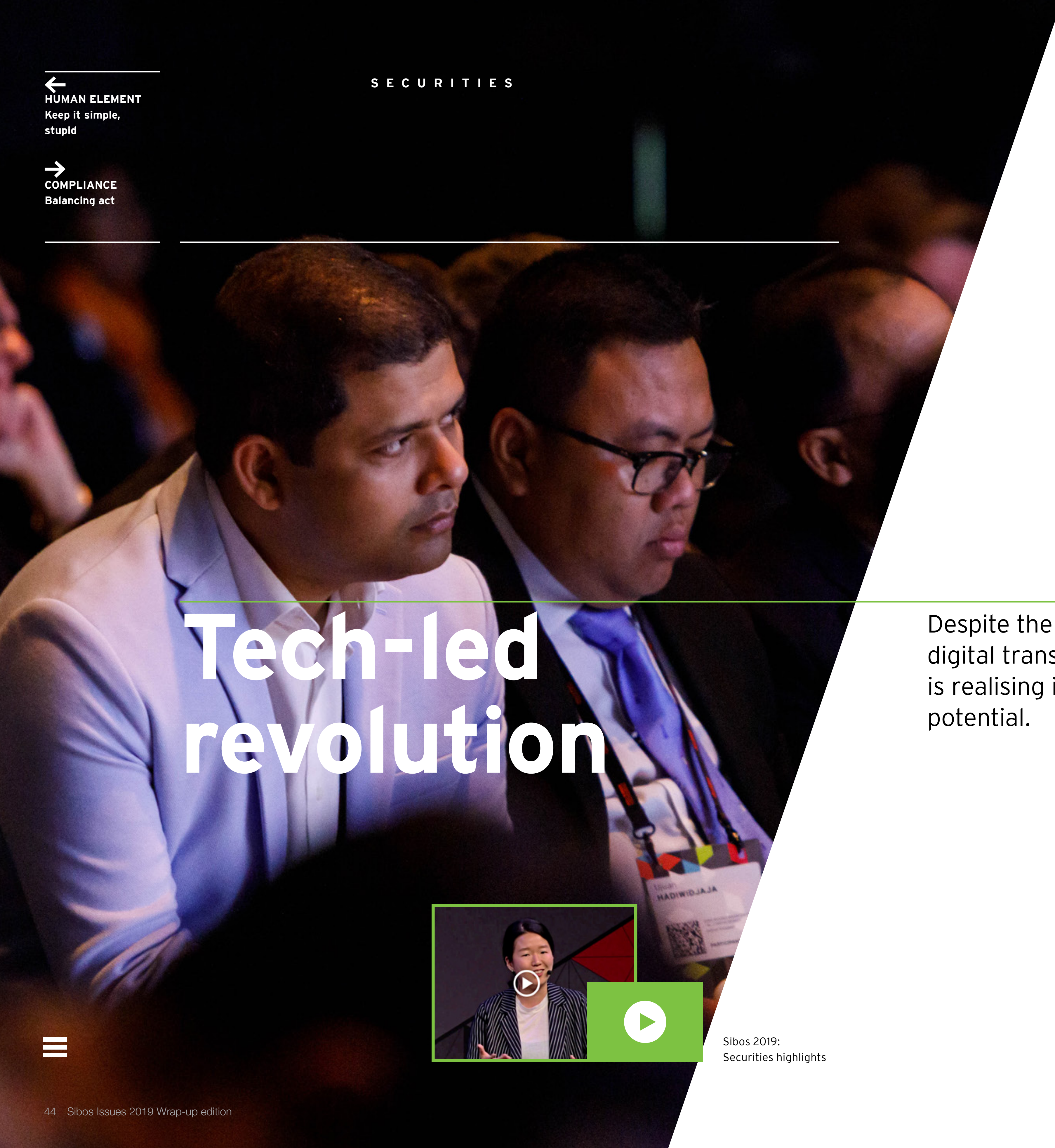
However, while personal ambition is key, networks, mentors and role models can also significantly help move the dial forward. These themes were highlighted by both Sandy Toksvig, the British-Danish writer, broadcaster, actor, comedian and presenter, speaking at Wednesday's women's networking event, and throughout Thursday's lunchtime Chat & Connect session, which focused on the STAR (Sibos Talent Accelerator Route) scholarship programme, moderated by Julia Streets. The programme, launched this year, is designed to support diversity by encouraging the next generation of female leaders. It comprises 30 women from 17 countries, including the UK, Sweden, South Africa, China and Australia, aiming to benefit from the learning and networking opportunities at Sibos.

"Even though progress is being made and there are a lot more women working than in the past, there is still a lot to do," said Mary Duncombe, a STAR Scholar from Bank of America Merrill Lynch. "A report from the IMF (International Monetary Fund) last year found that women accounted for less than 2% of financial institutions' chief executive officers and less than 20% of board members. It is well known that we make better decisions when there is diversity."

While each STAR scholar shared their individual experiences, they collectively believed banks need to create a more flexible environment for all genders to promote opportunities, purpose, continual development and respect. For women in particular, the concept of sponsorship resonated widely. Louise Wong, vice president, global clearing and FX product sales specialist at JP Morgan, spoke for many: "We need the senior managers who have gone before us to support and sponsor us. We appreciate the STAR programme because it has allowed people at our level to come to Sibos for the first time, network and meet clients."

HUMAN ELEMENT
Keep it simple, stupid

COMPLIANCE
Balancing act



Tech-led revolution

Sibos 2019: Securities highlights

> The role for a regulated governor becomes even more important in a decentralised network.
>
> **Jo Van de Velde**, Euroclear

Despite the barriers, digital transformation is realising its potential.

The possibilities and limitations of technology innovation dominated securities-focused sessions at this year's Sibos, with service providers looking to generate new efficiencies and insights in support of evolving buy-side priorities. With business models across the sector being reshaped by margin pressures, regulatory developments and the need to deliver a differentiated client experience, technology is a critical part of any conversation about the future of post-trade securities services.

While many experts believe that distributed ledger technology (DLT) can make a significant contribution to the efficiency of post-trade securities processes, it is often perceived as a solution in search of a problem. Several speakers noted a distinct cooling in enthusiasm toward DLT-based solutions compared with Sibos panel sessions four or five years ago.

"There is still the potential to transform but not to disrupt, as we thought about five years ago. The scale required to change the whole industry is just too large and there is no business case for it," said Phil Brown, CEO of Clearstream Holding, speaking in the CEO panel session, 'Getting ready for the new world'.

Transparent and instant
Nevertheless, advocates point not only to DLT's potential to eliminate post-trade matching and confirmation processes between securities market participants, but also its role in facilitating the tokenization of assets.

Vic Arulchandran, chief operations officer of Nivaura, a London-based start-up that utilises DLT alongside other digital technologies, described how his firm has assisted in the issuance of a fully tokenized and compliant private placement in the UK. "We believe that there is a lot of opportunity for investment banks to clear and settle on some sort of distributed ledger technology," he said during 'DLT – Taking a bite out of the securities industry?', held in conjunction with the International Securities Services Association.

Growing interest in this area is reflected in the fact that the association is releasing a paper in November, titled 'Crypto Assets

– Moving from theory to practice', which will include recommendations relating to the issuance, settlement, safekeeping, asset servicing and will address legal and regulatory implications, as well as issues of interoperability and standards for market participants.

DLT is also transparent and instant, noted Jo Van de Velde, head of the product, strategy and innovation unit at Euroclear, allowing participants to "share and access one golden source of truth to achieve simultaneous consensus across a data store that is distributed to multiple participants, reducing the risk of information distortion".

Wholesale migration?
Panellists willingly accepted the theory, but pointed to the caveats faced by DLT adoption in practice. Firstly, if the securities infrastructure were to be re-engineered around DLT, it would entail enormous expenditure across the sector in the hope of bearing fruit in, say, 10 years' time. In today's uncertain business climate, justifying such spending would be exceedingly difficult.

"If I were to go to [JP Morgan CEO] Jamie Dimon and say, 'We're going to replace our existing platform with a new platform, you're going to have to rebuild your platform, so you'll probably have US$300-

Clients are not ready to invest on a 10-year horizon.

Thomas Zeeb, SIX Group

The last mile of manual processing is still unaddressed.

Michael McGovern, Brown Brothers Harriman

Imagine a Wall Street treasurer trying to fund 130 million trades a day. You'd tie up massive amounts of capital.

Michael Bodson, DTCC

400 million of write-offs, and then you're going to have to spend another US$300 million to re-connect to me,' it would be a very short conversation," said Michael Bodson, CEO of the Depository Trust and Clearing Corporation (DTCC).

Cost and complexity clearly makes wholesale migration of the securities market infrastructure to DLT unrealistic. But market participants are willing to back new technology-led initiatives with more precisely defined objectives and timelines.

Swiss market infrastructure operator SIX Group, for example, has developed its exchange for digital assets, SDX, in parallel to but separate from existing facilities, according to Thomas Zeeb, SIX's head of securities and exchanges. "Clients are not ready to invest on a 10-year horizon. They are driven by the business case and short-term returns," he observed. Due to be rolled out across 2020, SIX intends SDX to be an end-to-end platform for trading, settlement and asset servicing of digital assets, including a DLT-based, distributed central securities depository (CSD).

Liquidity risks
Further arguments advanced against DLT include both the levels of process efficiency and reliability achieved by ongoing investment in the existing securities market infrastructure, and the potentially negative impact on market liquidity of a move to T+0 settlement. It is standard market practice for market-makers to take unfunded positions and use the T+2 settlement window to hedge the order, but this much-needed flexibility would be curtailed by immediate settlement, as might netting opportunities, thus adding cost to liquidity provision.

"We do about 130 million trades a day and we net these down to about three million and settle in two days. It's a very efficient process. Imagine a Wall Street treasurer trying to fund 130 million trades a day. You'd tie up massive amounts of capital," warned DTCC's Bodson.

Speakers also flagged a number of regulatory barriers to DLT's wider adoption, including the absence of consistent legal treatment for digital assets, and the evolving and fragmented nature of regulation around data protection, cyber security and privacy across jurisdictions. Indeed, could a DLT-based market infrastructure lead in time to a new model for market oversight?

"Similar to the role played by exchanges, clearing houses and CSDs in today's capital markets, the role for a regulated governor of the network becomes even more important in a decentralised network to ensure legal accountability and adherence to participation rules and compliance," pointed out Euroclear's Van de Velde.

Acute pressures
Despite the lack of consensus and range of challenges faced by infrastructure renewal, speakers were under no illusions about the acute pressure to reduce costs. "The industry has been struggling since the regulatory changes of 2008, so I feel there is more momentum for the industrialisation of some of these problems," said Clearstream's Brown.

These cost pressures are also driving investment in artificial intelligence (AI), machine learning (ML) and natural language processing (NLP). Increasing back office use of these methodologies is taking off, particularly in reconciliation, according to speakers in the session, 'Technology implications in post-trade: Where AI meets back-office operations'.

"We see ML, which incorporates elements of NLP, as the 'killer app' for the back office. For the most part, we have mature automation around assets, asset servicing and settlement cycles, but inevitably there is a last mile of manual processing that is still unaddressed," said Michael McGovern, head of investor services, fintech, at Brown Brothers Harriman (BBH).

Investing in information

There is overall growth in demand for data.

David Schwimmer, London Stock Exchange Group

The evolving role of data in the securities markets was underlined by David Schwimmer, CEO of the London Stock Exchange Group (LSEG), during his ‘Views from the top’ conversation with ex-Financial Times reporter Jeremy Grant. The group is in the process of finalising the acquisition of market data provider Refinitiv. Schwimmer placed the acquisition in the context of the globalisation of financial market structure and the need to augment the LSEG’s traditional strengths in equities with a greater presence in FX and fixed income, but also flagged the changing nature of data consumption.

“The desktop is now one of five distribution channels for data,” explained Schwimmer, also citing electronic feeds, cloud, third-party and on-premise channels. “There is a structural decline in the number of individuals who need access to a desktop, but at the same time there is overall growth in demand for data,” he added, noting the increasing demand for data to support sustainable investment strategies.

Do such major strategic acquisitions suggest a different role for exchanges in future? Not necessarily. Schwimmer said: “We support global financial stability and sustainable economic growth. We work with companies, asset managers, governments and individuals to allocate capital, fund innovation, manage risk and create jobs. We’re an engine room of the capital markets and, therefore, of the economy and we take our responsibilities very seriously.”

ML has already had a “profound impact” on reconciliation, McGovern asserted. For example, BBH’s legacy rules-based systems could detect unmatched breaks in trades with an 82% accuracy rate, but running new ML-based systems bumped detection rates up to 95-96% immediately.

BBH has also used NLP-based clustering techniques to identify anomalies in pricing sources when calculating NAVs for clients and has reduced false positives to less than 1%. The ability of automated routines to efficiently identify both pricing anomalies and their underlying causes offers scope for significant cost savings over existing manual workflows, panellists suggested.

“Our industry suffers with a massive number of people that still do reconciliation,” agreed Tom Castelyn, global head of custody at BNY Mellon. “Once you start using some of the more intelligent reconciliation tools you find patterns and breaks that give you better resolutions, but they also give you better analytics that show you how these breaks can be avoided in the future.”

New use cases

Panellists also commented on the increasingly widespread use of ML and AI tools in the securities markets for compliance purposes, including fraud detection. John Kain, head of worldwide business and market development, capital markets at Amazon Web Services, cited the development of ML-based surveillance capabilities by the Financial Industry Regulatory Authority, the self-regulatory organisation for the US securities market, to support transaction surveillance.

“Smart rules generate too many false positives to be efficient. ML can be used to better tune smart rules and, more importantly, to find new patterns,” he explained, going on to suggest that use cases would continue to emerge across the industry. “The technology is real and the price points continue to come down.”

Machine learning can be used to better tune smart rules and find new patterns.

John Kain, Amazon Web Services

As experts observed throughout Sibos week, effective deployment of new technology-enabled initiatives not only requires investment in new platforms and tools, but also in recruitment, training, policies and processes. New sorts of people will have to be employed and new forms of governance erected to properly manage and optimise the new service offerings. As soon as one question is answered, several more are posed.

Will the dollar still deliver in the new world order?

Reports of the demise of the primacy of the US dollar are greatly exaggerated, according to David Bloom, head of FX strategy at HSBC. Presenting his thoughts on ‘FX and the new world order’, one of several highlights during the first ever ‘FX Day’ at Sibos, Bloom suggested that the appeal of the dollar, which may be diminishing for some, needs to be set in context of the alternatives. “The dollar is the king, but it’s London that wears the crown,” he said, referring to the UK capital’s dominance as a dollar trading centre.

The euro, for example, offers exposure to an economic region “mired in recession and massive political infighting” and a maximum return of minus 0.5%. For all its structural faults, the US dollar, in contrast, has been offering 1.7% for 12-month money.

The dollar may still be king, but some time-honoured principles of FX markets are very much challenged by the emerging new world order, Bloom admitted. In particular, the threat of tariffs is changing the fundamental influences upon currency values.

Bloom reminded his audience that the current US trade deficit with China is not dissimilar to the trade deficit it had with Japan in the 1980s. Back then, rather than implementing tariffs, the US chose to depreciate the dollar in conjunction with the UK, West Germany, Japan and France through the so-called Plaza Accord. The major difference between these two eras, said Bloom, is that now the US is obliged to operate unilaterally, rather than multilaterally, and has opted to impose tariffs.

The increased politicisation of world economies, alongside quantitative easing, negative interest rates, bilateralism and nationalism has turned the world upside down. Investors can no longer afford to look simply at growth differentials and hope to understand currency values, he stressed.

The dollar is the king, but it’s London that wears the crown.

David Bloom, HSBC

← SECURITIES
Tech-led revolution

→ INNOTRIBE
The future is ours to decide

Balancing act

In an increasingly real-time world, technology is helping to keep customers safe and satisfied.

Sibos 2019: Compliance highlights

Speed is of the essence, when it comes to meeting today's client expectations, but financial service providers do not want to put their collective foot on the accelerator if it means sacrificing security or increasing exposure to criminals. The challenge for banks and market infrastructure operators is to find the right balance between enhancing the customer experience, protecting their systems and assets from criminal intent, and complying with regulatory requirements aimed at preventing financial crime. The task of achieving this balance – against a backdrop of technology innovation, but also spiralling compliance costs and mounting pressure from regulators – provided the common thread throughout Sibos 2019's compliance sessions.

Firms are developing their own models and capabilities, but also forging partnerships with industry groups and technology providers to find the most efficient and effective solutions across their anti-money laundering (AML), know your customer (KYC), sanctions and fraud detection obligations.

All areas of the industry are looking to improve their financial crime compliance processes, but the drive toward real time and open banking is putting particular pressure on payments providers.

"At the macro level, there is a government imperative that wants payments to move faster and enable corporates to have better access to money. We are also in the world of the internet where everyone expects things instantaneously and the same is true of the flow of money," said Nilixa Devlukia, head of regulatory at the UK Open Banking Implementation Entity, during the panel session, 'Opposing forces: How banks are aligning compliance needs with real-time payments'.

These trends are not new in the UK, said Devlukia, but we are now seeing a marked evolution of the services that sit above the payment rails. "This is part and parcel of open banking and the agenda of innovation and competition, not just in the UK but also from regulators around the world," she said.

As well as instant and interoperable payments services, banks are expected to provide a seamless, secure and smooth onboarding experience, whilst implementing thorough KYC checks. According to Mike Winn, head of business services, global banking and markets

We're seeing growing use of robotics for data aggregation.

Lee Hale, Deutsche Bank

Siloed data is a fundamental nut to crack.

Katie Jackson, Deloitte

Banks are looking at how to balance their risk management agenda with their client experience agenda.

Mike Winn, HSBC

at HSBC, banks are increasingly alert to the difficulties imposed on clients by the changes to banks' customer-facing processes demanded by evolving compliance requirements. "Banks are now looking at how they can balance their risk management agenda with their client experience agenda. This issue is coming to the fore, especially in the corporate sector," said Winn, during Wednesday's session, 'KYC utilities: What does success look like?'.

Lessons learnt

Although progress has been made in recent years, panellists stressed the increasing pressure to improve performance. In several areas of compliance, notably sanctions, major banks have invested heavily, often building sizeable, complicated infrastructures and labour-intensive processes in an effort to deliver on regulatory requirements. Lee Hale, global head of anti-money laundering and sanctions at Deutsche Bank and panellist on the 'Looking ahead – Designing compliance for the future' session, acknowledged that "huge amounts" had been spent in the past, but indicated that smarter use of technology would improve efficiency and effectiveness.

"We're seeing growing use of robotics for data aggregation, providing analysts with a holistic view of transactions whereas historically they had had to consult multiple systems," he said. "We all know transaction monitoring is a highly inefficient process. But now the move is toward more analytics-based platforms," Hale added, explaining how Deutsche and other major UK-regulated banks are sharing analytics and data via Joint Money Laundering Intelligence Taskforce, the UK's public-private information-sharing initiative.

Heidi Toribo, global head of banks and broker-dealers at Standard Chartered, suggested that the improved deployment of technology was being accompanied by a maturing approach by compliance teams. "Five or six years ago, we were all trying to figure out how to interpret regulation and understand what does good CDD (customer due diligence) look like. We have collectively come together to create a risk-based approach which we can align towards. And we have moved from the view of 'whose fault is it' to 'how can we get better' and that's an important mindset to achieve," she commented.

Despite this progress, Toribo, along with other participants, acknowledged the need for further effort, especially around data management. "We still have not solved the de-risking problem and it is something we should continue to discuss," she said. "Collaboration has been good, but we still do not optimise the way we connect to reduce financial crime. There are still US$1.5 trillion of illicit funds going through financial institutions. We are probably not giving ourselves a fantastic report card, but it is not due to lack of effort. We need to find a better way to connect and one of the challenges is being more effective in sharing information."

One of the biggest and ongoing obstacles is siloed data. A lack of global connectivity across internal systems could lead to a

In many jurisdictions we do not 'look through' our customers' accounts to those of end-investors, yet we are exposed.

Mark Gem, Clearstream

bank not realising that a single customer is operating multiple accounts in different geographies, according to Katie Jackson, partner at Deloitte. "Criminals do not hit the national borders and stop," she added. "Siloed data is a fundamental nut to crack if we want to stop these criminals."

Close collaboration

Although firms are at different stages of development, most are leaning toward a greater use of artificial intelligence (AI), machine learning and robotics to streamline, standardise, automate and enhance processes within the compliance function. Panellists said changes are needed from an operational perspective in how compliance staff cooperate with teams from other divisions to prevent financial crime.

At Standard Chartered, the compliance team already works closely with its cash and trade counterparts to understand the risks and opportunities of faster payments, according to Patricia Sullivan, global co-head of financial crime compliance. Informed by this collaborative approach, the bank is utilising technologies such as AI for name screening and other screening processes to manage sanctions compliance more efficiently. This is helping Standard Chartered to meet its regulatory requirements faster, identify false positives more quickly and reduce the number and frequency of stopped payments, said Sullivan. "With faster payments, you are under pressure to prevent financial loss in real time," she said.

At an industry level, panellists also all pointed to the advantages of utilities such as SWIFT's KYC Registry, which has over 5,500 financial institutions in 220 countries and is now opening the door to corporates. Speaking on the KYC utilities panel, Jeff Gontero, executive director of global financial crimes compliance at JP Morgan, insisted that more work is required on standardisation. Although he supports industry utilities and initiatives such as the Wolfsberg Correspondent Banking Due Diligence Questionnaire, Gontero argued that the onboarding and renewing of clients is unnecessarily encumbered by differences in local and regional regulations.

Industry-level collaboration is also supporting the financial crime compliance efforts of securities market infrastructure operators and securities services providers. The International Securities Services Association (ISSA) recently published updated compliance principles for securities custody and settlement, intended to help firms to manage the financial crime risks that can arise between securities issuers and ultimate beneficial owners.

Mark Gem, chairman of the risk committee at Clearstream and leader of the ISSA working group on financial crime compliance, emphasised the need for service providers to tune their KYC due diligence programmes to take account of the hyper-connected nature of securities market intermediation. "We need to recognise the fact that in many jurisdictions we do not 'look through' our customers' accounts to those of end-investors, yet we are exposed – as a matter of AML legislation and sanctions controls – to the actions of our customers' end-investors," he observed.

Whilst all the compliance panels at Sibos 2019 highlighted the potential efficiency and effectiveness benefits of digital technology, questions of culture and collaboration were frequently raised. Forging stronger links with industry bodies and joining utilities are increasingly seen as key elements of a robust compliance infrastructure, as well as strong ties within firms' own four walls.

Clive Gordon, head of the financial crime specialist supervision unit at the UK's Financial Conduct Authority, told the 'Designing compliance for the future' panel that the most effective firms from a compliance perspective are not necessarily the best resourced, but rather those in which the business owns the risk. "They do not see it as simply a compliance issue that goes down to the second or third line," he added.

A strong compliance culture, Gordon said, is best achieved by inviting a wide range of parties to sit at the compliance table. "They not only have to be able to talk to each other, but also understand each other's differences and have an end-to-end view of the systems," he added. "This way, if one part of the business makes a change, they will not come unstuck."

Pooling expertise to leverage AI

Rather than modelling outliers, we should be modelling behaviour.

Salla Franzen, SEB

Despite the hype about AI, participants on the panel 'Embracing artificial intelligence – How is AI augmenting compliance practices?' willingly concurred that its potential to strengthen controls across the financial crime compliance spectrum is enormous. Specifically, AI offers the ability to rapidly and reliably scan vast quantities of data, identify patterns and behavioural anomalies, detect changes in motivation and provide clues about fraudulent activities. It can also analyse the connections between individuals and organisations to identify suspicious activity.

According to Patrick Craig, financial crime technology lead at EY, some firms are only just testing the water, in terms of applying AI to compliance, while others are already incorporating robotics, machine learning and natural language processing. "They are using the techniques in control processes to take costs out and are already achieving 20-30% savings," he said. "However, it is the third group of financial institutions that are the disrupters and are looking at the technology differently in terms of how they can improve their overall compliance regime."

To get the most out of AI in compliance, said panellists, managing data is critical, but not sufficient. "To unlock the technology, you need high quality data," said Salla Franzen, group chief data scientist at SEB. According to Franzen, the bank initially made slow progress because multiple teams were separately asking similar questions of the same data set, based on slightly different areas of expertise, such as fraud, market surveillance or rogue trading. When they pooled their expertise, they were quickly able to develop more effective programmes for compliance monitoring.

"We discovered that, rather than modelling outliers, we should be modelling behaviour, because if you can understand typical behaviour from many perspectives, that knowledge will help you detect the outliers," she explained.

COMPLIANCE
Balancing act

CLOSING PLENARY
Building for the long term

The future is ours to decide

Building the next generation of financial services will challenge our understanding of humanity and technology.

Sibos 2019: The future of money

"How far do we want to go with this?" asked Gerd Leonhard, CEO, The Futures Agency, first speaker in Tuesday morning's session, 'Humanist vs Technologist', which addressed the "avalanche" of technological change heading towards us. "Technology is changing us," Leonhard continued. "If you can be superhuman, would you not want to be superhuman? Who decides what is the right thing to do?"

The answer to that question was almost simple. We do. We decide how we want the future to be. But we must be careful not to cede control of our own future to our own technology. Innotribe's theme for 2019 was the evolution of trust in a digital future. How do we trust each other, and – by Tuesday – how do we also trust the machines around us? By the Innotribe Closing session on Thursday afternoon, we were ranging through possible futures foreseen by sci-fi authors and film-makers, from Robert Heinlein's 'Stranger in a Strange Land' to James Cameron's 'The Terminator'. Anything's possible (except, perhaps, terminators and intergalactic trading empires) if we let it happen.

Securing identity
But there was a lot of ground to be covered before we got as far as those imagined outcomes. On Monday, we discussed identity. "Trust and identity are wicked problems," said Don Thibeau, executive director at The Open ID Foundation, in the session, 'The future of identity'. "The problem with identity and access-management solutions is that once they're solved, they become more brittle over time. That's certainly the case with knowledge-based authentication," Thibeau continued. Passwords are not the answer – "Passwords are the cockroaches of identity," said Thibeau – and knowledge isn't a reliable test – you're not the only one who could know (or find out) your date of birth or other personal data.

But there's an opportunity here, as well as a challenge. Thibeau – followed by a series of speakers on the Discover Stage,

Identity and access-management solutions become more brittle over time.

Don Thibeau, The Open ID Foundation

situated across the Discover Zone from the main Innotribe Stage – spoke of standards and structures for securing identity in future. In her 'The true meaning of identity' session, Kaliya Young, Identity Woman, gave us a clear description of how a secure identity structure could work. "You are in the business of helping people manage their money. You could, in future, through new technologies and open standards, get into the business of helping people manage their data," said Young, having already noted that past – actually, still current – authentication methods are not only unreliable, but also very expensive.

Banks could, in a new sense of the term, become 'databanks'; the individual (or other entity) holds her own identity data (in a bank), which in future can be authenticated (by the bank) without disclosure. This is the concept of self-sovereign identity, which returns control of private data to its owner, thereby addressing a range of present-day issues. Young moved on from her account of that (blockchain-based) technology to announce that the future is already here. She cited a number of examples – including the Alberta Credentials Ecosystem and CULedger – where self-sovereign identity systems have already gone into production. "Let's stop using the word trust," Young said. "Let's talk about accountability and trust frameworks." In the future, she suggested, banks will build out their own trust frameworks – and by now, we weren't surprised that her example was a project already begun: the Pan-Canadian Trust Framework.

Enter the machines

Discussions of identity continued on the Discover Stage and in Innotribe's end-of-day 'Curated Networking' session. Then, on Tuesday morning – enter the machines. And the humans. The focus for the day, said day anchor Jennifer Schenker, founder and editor-in-chief of The Innovator, would be the "blurring lines" between man and machine. "Will machines augment us, or replace us; will machines know us better than we do ourselves; how should we handle the ethical issues that the implementation of AI presents?" she asked. First up, Gerd Leonhard debated with Brad Templeton, chairman emeritus, The Electronic Frontier Foundation. One played the 'humanist', the optimist; the other played the 'technologist', but in the course of a fascinating hour, it wasn't always clear which was which. "The future depends on whether we use technology to dehumanise, or to rehumanise," said Leonard.

Evidence for the latter course was provided on the Discover Stage, in sessions including 'Payments – the human face of technology' and 'Solving the problem of financial exclusion in Southeast Asia'. Back on the Innotribe Stage, Templeton responded to Leonhard: "This debate goes back to the very earliest days. Stonehenge gave us a calendar; I'm sure people were debating back then whether that would change what it meant to be human." We're in no more danger from our technology now, Templeton suggested, than at any point earlier in history. "Our first debate was whether to come down from the trees. Would we lose our monkey-ness? We ended up liking the result in the long run," he said. Part of the genius of Innotribe is this ability to address serious subjects with humour. "The one thing that perhaps we could all agree on," said Schenker, closing a lively, entertaining, and substantive discussion in which little was agreed, "is this. The future doesn't have to be dystopian. It's up to us."

Technology may be bringing us the future, but it's also bringing a range of ethical issues, moral questions, challenges to our humanity. Nowhere is this more evident than in the field of artificial intelligence (AI), as reflected in Tuesday morning's Discover Stage

The future doesn't have to be dystopian.

Jennifer Schenker, The Innovator

The future depends on whether we use technology to dehumanise, or to rehumanise.

Gerd Leonhard, The Futures Agency

session 'Responsible and explainable AI in financial services', and the Innotribe Stage's lunchtime Sensemaker session, 'AI for social good'. In his presentation, 'Artificial and natural intelligence – are two heads better than one?', Eng Lim Goh, CTO for high performance computing & AI at Hewlett Packard Enterprise, argued for a partnership between humans (better at emotional intelligence) and artificial intelligences (they can handle the number-crunching). "Humans need to be there," said Dr Goh. Then Pascal Coppens, innovator, nexxworks, challenged us. Outlining 'China's new normal', Coppens said, "If we want to learn from the innovators of tomorrow, but we don't trust China, how are we going to learn from companies such as Tencent and Alibaba? That is the paradox."

Who's driving?

Wednesday began with 'The future of money'. Discussing the process of innovation, Tony Fish, Founder, AMF Ventures, contrasted the "approval" environment in which banks operate, with the "forgiveness" environment inhabited by non-bank innovators. "We have to seek approval, so we lag behind; others can power ahead," said Fish. This was not unequivocally accepted by other panel members, who also noted

> **It's better to be proactive than to play the ostrich.**
>
> **Jean-Pierre Mustier,** UniCredit

the power of inertia. "In the US, cash still has a huge impact," said Scarlett Sieber, chief strategy and innovation officer, CCG Catalyst, citing a recent Federal Reserve Bank of San Francisco survey: 34% of transactions by under-25s in the US are still cash-based. "I don't see cash going away any time soon," said Sieber.

Perhaps the medium – the cash, the crypto-currency, even the state-issued digital coin – isn't the message after all. Leda Glyptis, CEO at 11FS Foundry, said, "What used to be the regulatory layer – we're told, and then we do, what is permitted – has now become an intensely moral layer, about access, permission, fungibility. We're not sure anyone is driving that conversation. Change is coming from a million directions." Banks should at least recognise the need for moral leadership in the context of tech-driven change. "We should get faster, the regulators and legislators should get faster, because we don't want what is the most fundamental component of our social infrastructure to be determined by accident, which is largely what is happening now," Glyptis continued. Back on Monday, Thibeau had forecast the appointment of the first chief identity officer; perhaps the chief moral officer isn't far behind.

Innotribe was not the only platform for discussion of the challenges of innovation for banks, non-banks and regulators on Wednesday. On the plenary stage, UniCredit CEO Jean-Pierre Mustier acknowledged that customers are benefitting from the new ideas being brought to the banking sector by fintechs, and called on banks to capitalise through strategic partnerships with innovators. "It's a positive ecosystem," he said. "It's better to be proactive than to play the ostrich." Mustier agreed with the Future of Money panellists that the pace of change also posed significant challenges for regulators, noting the need for consensus of the ethical use of data and a post-PSD2 levelling of the playing field between banks and non-banks in sharing data.

Over to you

Through Innotribe's Wednesday agenda, presenters and delegates spoke about tokenisation, cryptocurrencies, AI and trust. 'Contrarian arguments: payments is just a killer app for identity' gave us Innotribe's first formally scheduled argument – and yes, it delivered a full, frank and fascinating exchange of views. On Thursday, in 'Privacy – fintech vs consumer login', Eric Sachs, partner director of PM for Identity, Microsoft, discussed the awkward truth that the simple act of logging in hasn't kept pace with fintech innovation – we're back to talking about identity management here. And in 'Data for the people and people for the data', Andreas Weigend, author and ex-Amazon chief scientist, posed a question that unambiguously took us back to Monday: can I bring my data as well as my money to the bank? Opportunity, anybody? It may be worth making a note of the term 'identity custodian'.

Finally, where else at Sibos than at the Innotribe Close, could you find Captain Kirk, Obi-Wan Kenobi, 'Provoke' author David Birch, Breaking Banks founder Brett King, Sarah Connor and the Cyberdyne Systems Model 101 Terminator? It was, in short, a spectacular run-through of all the possible futures that the human imagination, via sci-fi, has offered to us. "It's up to you what future we get," said King, closing with what had in fact been the theme of the week. "It's all up to you."

Payments innovation at the Hackathon

This year's Innotribe achieved a distributed architecture all of its own. There was the Innotribe stage that took attendees on a deep journey to the future of finance and technology, situated at the heart of a two-level Discover Zone packed with stands for fintechs, banks' innovation labs and other innovators. There was the Discover Stage that bridged that future to the present by showcasing innovation that's happening today, with its own programme of speakers and panels, and there, just beyond, was the Sibos Developer Park, which hosted the teams competing in the 2019 Sibos Hackathon.

Five teams of developers, drawn from companies across the world, representing a broad cross-section of the financial services sector from old to new, big to small, competing "to craft API mashup solutions to future industry challenges relating to security, identity and payments".

Competing, in fact, to have an idea, to refine it, and to bring it to a point at which it could be presented on the Innotribe Stage on Thursday. All from a Monday morning start. Five teams, five ideas, one winner: Optipay, a cross-border payments currency-optimisation mechanism. Optipay's Josephine Windsor-Lewis, Form 3, said afterwards, "The Hackathon was an amazing experience. It was so much fun collaborating with so many different developers from different companies. Bringing together all our different ideas made for great innovation."

INNOTRIBE
The future is ours to decide

Sibos 2020
Boston 5-8 Oct 2020

Building for the long term

Strong customer relationships will rely on innovation, trust and sustainability.

Wrapping up Sibos 2019, the Closing Plenary session took in the key themes of the week by bringing together the application of innovative technology and the nurturing of trust-based relationships. Guest speakers encouraged delegates to think about how service providers across the finance sector can better serve their users, thereby earning the opportunity to grow their business over the longer term.

First, Cate Kemp, SWIFT's head of UK, Ireland and Nordics, kicked off proceedings with a video review of the week's highlights, observing, "It was never more true that the future is incredibly uncertain. But what we have learned together this week is that it is going to be truly exciting, with innovation at the heart of it."

Co-host John Ellington, SWIFT's deputy chair, underlined the importance of new tools and capabilities, but reminded us about the ends as well as the means. "It is not just about technology; it is very much about people too," he said.

Thomas Kurian, CEO of Google Cloud, then offered his insights into

Sibos 2019: Closing Plenary – Google Cloud CEO Thomas Kurian

“Every time you make something more convenient, you make it more useful.

Thomas Kurian, Google Cloud

the development of cloud services, emphasising their role in empowering users of financial services. With the digitisation of financial products, he suggested, the evolution of technology has never been more integral to the value that banks and financial institutions provide to customers.

"It really changes the way that financial institutions can think about creating products, pricing them, managing risk associated with them, distributing them and reaching customers to deliver experience in a fundamentally new way," he said.

Enhanced experiences
As firms engage with digital tools to enhance the experiences they deliver, new risks are emerging, Kurian noted, such as cybercrime, which require further technological solutions to be developed.

"There has been anxiety about data security, locality of data, regulatory risk, etc, but as cloud companies have invested in data centres and software capabilities to protect data, and to build very advanced cybersecurity capabilities, financial institutions increasingly look at cloud as a new platform to deliver products in new ways," he said.

Cloud platforms offer financial institutions the capacity to manage tasks that require considerable data processing power, such as regulatory reporting, risk management and accounting. Interaction between cloud providers, peers and counterparties is facilitated by APIs, which provide the connecting layer of a new collaboration-centric ecosystem.

Open banking environments, in which competition is driven by API-based integration between established banks and new start-ups, have been driven in some markets by regulation. But they are increasingly seen as fuelling innovation and differentiation among market participants themselves.

"We see this ecosystem as empowering the consumer," said Kurian. "It allows consumers to access their financial information from their devices, whether from one or different financial institutions. Every time you make something more convenient, you make it more useful for them. Similarly, we see many financial institutions now taking their core systems and exposing things not just to consumers, but also from one financial institution to another."

Greater convenience and access must, Kurian argued, be accompanied by more sophisticated tools to protect against fraud and other malicious behaviour. There are also concerns from customers that over-reliance on suppliers within an ecosystem, including cloud providers, could result in 'locked-in' relationships.

Kurian acknowledged that regulators also worry about concentration risk, as cloud becomes the primary model for technology use among financial institutions. "The more open cloud can be, the easier the adoption, because people have low risk using cloud-provided technology," he said. "We have invented something that we have brought to market that lets a customer build a workload once, they can run it without change in their data centre, they can move it to Google or any other cloud provider, and they can manage it in a consistent way."

Opening up in this way further broadens the appeal of cloud for financial service providers, as they can train staff on one technology rather than different technologies from each provider.

"It gives them choice and most importantly lowers risk because you manage all these environments in a single, consistent way," Kurian added. "For us as a technology participant it's important that we listen to customers and regulators and evolve the technology to solve problems like this."

“Trust is what enables us to take the risks that fuel innovation.

Rachel Botsman,
Saïd Business School

Contextualising trust
Fellow guest speaker Rachel Botsman, author of 'Who Can You Trust?' and trust fellow at Oxford University's Saïd Business School, built upon Kurian's comments around communication between banks and customers by focusing on the concept of trust.

"We often talk about trust in generalised ways, i.e. 'I don't trust this person, I don't trust this company', but it's not a helpful way to talk or think about trust," she observed. "If I said, 'Do you trust that Uber will get you from A to B?', many of you would have clapped. If I said, 'Do you trust that Uber treats its drivers fairly?', you may have given me a different answer."

Botsman's point, that trust is highly subjective and contextual, led on to the question of how to build more trust, or more accurately, how to be given more trust.

"When we ask someone to take a risk, to try something new or to do something differently, this is a 'trust leap'," she said. "Whenever you ask someone to try a new product, service, or system you are asking them to take a trust leap."

Cate Kemp, SWIFT

Yawar Shah, SWIFT

Javier Pérez-Tasso, SWIFT

John Ellington, SWIFT

While some trust leaps can seem quite small, such as asking customers to switch from paper to digital banking, Botsman noted that others can be intimidating, with firms often underestimating the leap they are asking the customer to take. While the combination of finance and technology has been demanding leaps for some time, such as when people first used an ATM machine or credit card, "People are being asked to leap faster and higher than ever before, and many products and services fail because people are not ready to take the trust leap."

Whenever a business asks for a customer's trust, Botsman asserted, it is essentially dealing with two steps; the known, and the unknown. "The space between these two things is what we call risk. [It] is made up of the likelihood of something happening and the severity of that thing happening," she said. "In any situation where we have a choice, we can either reduce the risk of the situation, or we can try to increase someone's trust."

Trust is what enables someone to move from the known to the unknown, Botsman argued, acting as the social glue between the two points. If there is very little risk, or if the outcome is known, then very little trust is required, but trust enables people to place faith in systems despite not fully understanding them. "Trust is what enables us to take the risks that fuel innovation, which enable society to move forward," she said.

Botsman then deconstructed a commonly repeated statement in finance and regulatory circles – "We will build more trust by becoming more transparent" – by explaining that transparency removes the need for trust. As such, secrecy is not the enemy of trust, deception is. "However, transparency does very little to treat the root cause of deception," she added.

Instead, Botsman proposed that trustworthiness can be assessed via a two-part formula, made up of capability traits, which relate to *how* a person does things, and character traits, which explain why a person does things. "The most important trait, particularly in the context of financial services, where we have seen trust break down, is the trait of integrity," she said.

Increasing integrity

Defining integrity as being honest about the alignment of intentions and motives with another person, Botsman said that increasing integrity, not transparency, will ultimately increase trust in finance. Leaders in the industry must therefore assess carefully who they are giving their trust to, and also ask if they are behaving in a way that is really trustworthy.

"Every time we go through that process, every time you ask those two questions, we are in our own small way taking care of society's most precious yet fragile asset: trust," she said.

With the roles of trust and innovation explored so thoroughly, all that remained was for SWIFT chairman Yawar Shah to warmly thank the closing speakers and for SWIFT CEO Javier Pérez-Tasso to confirm London's status – with 11,572 participants – as the biggest Sibos ever, before asking the London Contemporary Voices choir to simultaneously raise the roof and lower the curtain.

A burning question

Tailoring finance to suit customers is not only about the delivery of products, but also the products themselves. The green bond industry, for example, has grown exponentially over the last two years. Last year, US$182 billion of green bonds were issued, according to Nigel Beck, group head of environmental and social risk and finance at Standard Bank, during his Spotlight presentation, 'What does the burning Amazon have to do with sustainable trade finance?'

"That's 77% more than two years prior," he said, drawing further optimism from the fact that US$120 billion of green bonds had already been issued in the first half of 2019, on grounds that activity is typically stronger in the second half.

This appetite, he argued, is indicative of a wider trend for social bonds, sustainable derivatives, and sustainable trade finance, in which incentives are offered along the supply chain for meeting sustainability targets. The significance of this is reflected in the extensive burning of the Amazon rainforest by farmers preparing land for commodities from beef to soya, at a rate of 80% higher than the same period last year.

"This has been picked up by consumers," he said. "Consumers want to make sure the products that they use are ethical and sustainable. They want to make sure the steak they eat didn't result in the de-forestation in the Amazon. This brings into sharp focus the sustainable trade finance."

Multinational companies are having to respond to consumers, from transparency in their supply chains to using drone technology to assess any adverse impact on biodiversity, but they will need the support and expertise of their financial partners. "Financial institutions are in the position to provide sustainable trade finance and sustainable supply chain finance," Beck confirmed.

Consumers want to make sure the steak they eat didn't result in de-forestation.

Nigel Beck, Standard Bank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