The Future of Retail Banking and the Case for Digital Transformation
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Executive Summary

The widespread uptake of disruptive new technologies is exacerbating the pressures facing retail banking today, thereby driving a fundamental change in the structure of the industry: the digital-driven disintermediation of the banking value chain. The COVID-19 pandemic has rapidly changed consumer mindsets and circumstances driving banks to both accelerate and scale digital transformation and customer experience across complex product and customer journeys. Many incumbent banks are not equipped for this change because of the limitations of their complex legacy-based IT systems. Although banks have been investing heavily in digital and cloud technologies in recent years, they have been reluctant to embark on core system modernization. At Temenos, we believe that true digital transformation requires banks to replace their core processing systems progressively with a cloud-native intelligent banking platform designed for seamless scale and digital agility fostering continuous innovation and a cost 10X lower than today. Without such a modern platform, it will no longer be possible to compete effectively in the industry. The good news is that such transformations can now be executed easily and with acceptable levels of risk, because of the Cloud and SaaS intelligent banking platforms coming into the market, built on API-first, microservices and DevOps principles offering automated migration and deployment.
Disruptive Technologies in Retail Banking

Today, a nexus of disruptive technologies is becoming omnipresent in banking as they lead to increased agility, elasticity and connectedness. Next generation core banking platforms built on these technologies can deliver complex functionality 20X faster\(^1\) and are 10X cheaper to run\(^2\). In a survey\(^3\) we commissioned this year with the Economist Intelligence Unit (EIU) with 305 global banking executives relating to the digitization of banking, 66% said that new technologies will continue to drive global banking in the next five years, over regulation and changing customer behavior.

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1. McKinsey: Next generation technology transformation in financial services April 2020
2. Expert Interviews; Temenos analysis
3. EIU Report 2020: “Forging new frontiers: advanced technologies will revolutionize banking”
Cloud/SaaS: Cloud infrastructure offers broad network access, resource pooling, rapid elasticity, high resilience and on-demand self-service for provisioning. By 2023, Cloud spend is projected to represent 45% of the total enterprise spend of banks⁴. Moreover, COVID-19 will accelerate this trend; 55% of CIOs indicate that they will increase Cloud adoption more than planned since COVID-19⁵. Beyond Cloud, consuming banking software-as-a-service (SaaS) is expected to grow at 10X the non-SaaS market for core banking⁶.

Microservices/ APIs: An architectural and organizational approach to software development, microservices are independently deployable and updatable units of software that communicate over well-defined APIs and are owned by self-contained teams. APIs are a proven technology that integrate different IT systems and provide access to open data and secure access to private data and to enable 3rd party developers to build applications around the bank. Together microservices and APIs have multiple purposes – internally to streamline and accelerate software development and simplify legacy IT systems and externally to enable compliance with open banking regulation and allow banks to connect with ecosystems of related businesses, offering a significant opportunity to innovate and develop new products and services quickly. McKinsey estimates that the value at stake across global banking is significant — approximately 50% of revenues or 65% of profits (the money banks make from distribution rather than manufacturing) over the coming decades.⁷

DevOps is the combination of agile cultural philosophies, practices, and tools that increases an organization’s ability to deliver applications and services at high velocity. DevOps enables the introduction of new software faster and more predictably using continuous testing, integration and deployment techniques rather than traditional waterfall approaches. Benefits according to McKinsey include a 25-30% increase in capacity creation, a 50-75% reduction in time to market, and a greater than 50% reduction in failure rates⁸.

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⁵. Flexera 2020 State of the Cloud report
⁶. McKinsey Analysis on core banking market, Temenos financials, IDC, IBS
⁷. McKinsey Insights: Cutting through the noise: How banks can unlock the potential of APIs
⁸. McKinsey Insights: DevOps: The key to IT infrastructure agility

“Temenos was the only provider that was able to deliver on all three of our key requirements: cloud, interoperability and open APIs, with its world-class core banking system that will scale with us as we grow.”

– Minerva Tantoco, Co-Founder and CTO, Grasshopper Bank
**Big Data:** A bank's ability to curate, manage and leverage big data, namely the vast stores of structured and unstructured information from within the bank as well as from exogenous sources like social media sites, partners, suppliers and customers, is a key differentiator. McKinsey estimates that building on their long history of leveraging data and sharpening analytics efforts could lead to an increase in earnings of as much as $1 trillion annually for the global banking industry. The benefits would be widespread, but about a third of the gains would come from reduced fraud losses and about 20% from better informed pricing and promotion.

**Artificial Intelligence (AI):** This is predicted to be a game changer for banking in the future. 77% of our EIU survey respondents think unlocking value from AI will be the differentiator between winning and losing banks. AI is predicated on automation and digitalization which result in the accumulation of more and more data about customers and products combined with the easy availability of analytic tools enabling banks to draw commercially useful conclusions very quickly. AI’s efficacy depends on the depth of data (better accuracy) and breadth of data (more complex use cases). For global banking, AI could potentially deliver up to $1 trillion of additional value each year, boosting revenues through increased personalization of services, lowering costs through efficiencies, and uncovering new and previously unrealized opportunities through the use of data, say McKinsey10.

**Blockchain:** The distributed transaction validation model behind digital currencies, blockchain has not been widely adopted in retail banking in contrast to capital markets and wholesale banking. Nevertheless, there are applications in cross-border remittances, KYC/ID fraud prevention, and risk scoring. McKinsey estimates that blockchains applied to cross-border payments could save about $4 billion a year and blockchain solutions in customer onboarding could create up to $1 billion of savings in operating costs for retail banks globally and reduce regulatory fines by $2 to $3 billion11.

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9. McKinsey Insights: Smarter Analytics for Banks
10. McKinsey Insights: The Executives AI Playbook
11. McKinsey Insights: Blockchain and retail banking: Making the connection
Increasing pressures on the Retail Banking Industry

The widespread uptake of the disruptive technologies, taken together, is exacerbating the pressures facing the retail banking industry – demanding customers, rise of new competitors and increasing levels of regulation. This is happening while the industry faces unprecedentedly tough market conditions significantly worsened by the COVID-19 crisis that are not likely to ease in the foreseeable future.
**Demanding Customers:** Digital technologies facilitate repeated and increasing customer interactions at multiple touchpoints both inside and outside the bank (bank-owned channels as well as external portals), and customers want to seamlessly go back and forth across these in no particular sequence. It is no surprise then that customers journeys today are non-linear, complex, individual, spontaneous and unpredictable, instead of the traditional static sequence of awareness, interest, decision and action that banks hard-wired into their processes, IT systems and organization structures, often in product silos. Thus, banks must provide their customers as broad a choice as feasible on what channel to engage on at every part of the journey.

Retail customers demand more convenience, greater relevance and higher responsiveness from their banks. They are less loyal and happy to shop around for alternative providers of banking products and services for a better quality of user experience and better value for money. 57% of consumers in the UK said in 2018 that they would go to multiple providers for their financial needs based on the best proposition. Customers are creating their own curated banking universe i.e. a virtual everyday bank which is a portfolio of cherry-picked offerings from multiple providers. As this happens and proprietary relationships and proprietary information become relegated to the past, those banks that proactively position themselves at the centre of this universe rather than those that find themselves at the periphery will be winners.

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**Rise of New Competitors:** All the new entrants that are or have been entering banking in the past few years share certain characteristics – they are all consumer-oriented, technology-driven companies that are leveraging the disruptive technologies to develop compelling propositions for their customers. 50% of our EIU survey respondents saw payment providers (Paypal, Alipay, Apple Pay) and technology and e-commerce disruptors (Amazon, Google, Facebook, Alibaba) as the biggest competition for the next 5 years. The latter bring massive distribution platforms and high-quality data to the table. BBVA’s CEO was prescient when he said almost 8 years ago, “If banks are not prepared for new competitors like Google, Facebook and Amazon, they face certain death.” According to McKinsey, 45% of the banking revenue pool is at risk to these new entrants who are cherry-picking the most profitable segments of the banking value chain. For instance, up to 50% of payment and investment and 35% of consumer and SME lending business volumes could be disintermediated by 2025.

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12. PwC 2018 survey
Regulation and Market Practice: Ever since the credit crisis, banks are under ever-increasing scrutiny from local and global regulators, governments and credit agencies, with more rigorous financial reporting and risk management practices such as Basel III, MiFiD and Dodd-Frank. But today, regulation is no longer just about reporting and compliance. It is causing banking operating models to fundamentally change. Regulators all over the world are driving innovation and competition through new standards in open banking, issuance of new banking licences to non-traditional entrants, and creation of technology sandboxes for banks to collaborate with new players on innovative propositions. Regulators are also forcing banks to focus on cybersecurity – PSD2’s 2-factor authentication and GDPR’s digital IDS requirements to manage consent and authorization are examples. Throughout 2019, ECB Banking Supervision has continued to treat IT and cyber risks as a supervisory priority citing dependencies on end-of-life systems as a major cause for concern. Banks recognize this – cybersecurity was cited as the biggest challenge posed by digital and open banking today and their top investment priority according to this year’s EIU survey.

Market Conditions: Post-2008, the industry has struggled with historically low interest rates and margins caused by prolonged recessionary conditions, the debt crisis and increased geo-political volatility. This is reflected in the drastic drop in average returns on equity since 2008, from above 20% to below 10% for the industry. We have found that in 2019, ~70% of banks globally earned a return on equity below their cost of equity and were valued below their book value.

The situation is not helped by the shift towards capital market financing driven by regulators wanting banks to deleverage, driving up the cost of funds and by price pressures exerted by the new entrants. In Europe, traditional banks have average cost-income ratios of 50-60%, whereas the new digital-only banks are aiming for 30%.

15. Calculated based on global average weighted by sector (Retail and Corporate / Mass Affluent / Wealth) in the Temenos Value Benchmark 2018 – Sources: McKinsey Global Banking Insights (02/18), Oliver Wyman Global Wealth Managers (02/18)
Accelerated digital transformation since COVID-19: COVID-19 led to immediate changes in consumer behaviour such as increased reliance on digital engagement for obvious reasons like inability to visit branches in lockdown conditions and the bulk of shopping moving online. COVID-19 has also created serious financial distress and anxiety for society so calls to banks have skyrocketed. This has led to customer traffic spilling over from branches to call centres and from assisted to digital channels. Therefore, banks have been compelled to beef up their digital capabilities to handle many more interactions and transactions in terms of scalability, extend omni-channel capability to enable relationship managers and call centres to seamlessly engage, and ensure even complex customer journeys can be handled completely digitally for all product lines and services, including those that may have been offered only in branches before the pandemic. So even one step in a customer journey or even one product that is not digital has become a matter of survival in the COVID era.

Behavioural scientists who have analysed previous crises caution that many of these mindsets and behaviours will outlast the COVID-19 crisis. We can thus assume that the increased acceleration digital banking and engagement is likely to continue well beyond COVID-19.

“Temenos will provide a completely remote installation in light of the Coronavirus pandemic, enabling us to realize our business goals and support SMEs with vital financing in a matter of days.”

– Mr. Mohammed R, Chairman, Al Ain Finance (UAE)

“Our top priority in these unprecedented times is supporting our small business and commercial clients. With Temenos digital omnichannel capability, we were able to build a brand new digital loan portal specifically for the U.S. Paycheck Protection Program (PPP) in less than a week.”

– Kelly Dakin, Chief Digital and Customer Experience Officer, Atlantic Union Bank (USA)

Structural Change –
Disintermediation of the Retail Banking Chain

The chipping away of the banking value chain by non-traditional players plus the widespread consumption of digital banking services by technologically savvy, less loyal customers, combined with the high costs of operation of incumbent banks mean that the end-to-end manufacturing and distribution of banking services entirely within a bank will continue to decrease and that manufacturing and distribution will continue to diverge making it necessary for banks to co-exist with and collaborate with other players of the eco-system, be they fintechs, telcos, retailers, technology giants or other banks. This unbundling of the banking value chain will only gather pace, as the disruptive technologies mature in financial services.
Banks will need to assess which elements of their value chain truly add value to the end customer and which do not, how much value is created, what are the associated risks and costs and what are the opportunity costs of divestment. Accordingly, banks may decide to focus on certain processes themselves, may consider outsourcing and other innovative partnership models for sections of their value chain or may in-source certain business from other banks, leveraging economies of scale and leading to the rise of new utility models in the industry.

Open banking will drive all banks towards focusing on what is really core to them i.e. which business segments and geographies they want to operate in. Focus areas in the future will be extending private banking to the mass affluent and ultimately mass retail segments and extending corporate banking to the underserved SME segment. Banks may choose to provide a full front-to-back-service in selected business lines or offer their own products to third-party distributors or sell third-party products to their own customers. Thus, banks will co-exist with and co-evolve with multiple players in the banking eco-system, pursuing a combination of open banking business models.
Incumbent banks still possess an enormous competitive advantage over non-traditional entrants. Their scale, connectivity, assets and special role as custodians of consumers’ financial information put retail banks in a prime position to capture the market of the future. Being regulated means implicit state support in the shape of insured deposits and access to central bank funding, resulting in lower costs of liquidity and raised barriers to entry. Historically, this has led to increased trust between the bank and the customer, but the trust advantage is fast narrowing. Customer attitudes towards banking with technology companies have become more favourable in recent years.

Banks are running out of time to seize the opportunity presented by the twin trends of digital and open banking which will entail fundamentally restructuring their business model, acquiring new competencies as well as improving their ability to execute.

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18. McKinsey Future of Banking Consumer Survey July 2019
**Key banking capabilities in the digital and open banking age:** The banking capability model today needs to balance between customer-driven differentiation in distribution and efficiency-driven standardisation in manufacturing, both of which are underpinned by front-to-back digitization and analytics. The insights held by banks are their core asset in today’s world and these are increasingly driven by AI which is infused into every aspect of the banking business model, whether to launch hyper-targeted marketing campaigns and personalize products and experiences or to optimize processing and reduce operational costs and risks.

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**Digitally augmented customer experience**

- Omni-channel Harmonized, seamless, proactive, intimate 87%
- Contextual user-experience Analytics-driven, omniscient, proactive 94%
- Mass personalization Tailored products and services 88%
- Open banking Collaboration with ecosystem partners via APIs 74%

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**Analytics**

- Flexible, modular product engines 87%
- Straight-through, real-time processing 90%
- Scalable, secure infrastructure (Cloud) 95%
- Adaptive and resilient operating model 88%

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**Efficient and effective operations**

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* Proportion of Temenos Value Benchmark* retail participants that rated the capability as top priority (4 or 5 out of 5 on importance)

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* Temenos Value Benchmark (TVB) is Temenos’ proprietary survey-based strategic programme to discuss business performance and value creation by a bank’s investment in IT, structured around business and IT metrics and qualitative best practices.
Temenos Value Benchmark (TVB) participants confirm that digitizing the bank from the front through to the back and the bank-wide use of analytics are key capabilities required to compete in the industry today.

**Front-to-back digitization**

This includes seamless on-boarding and origination, automated processing of transactions, payments and settlements from the front to the back as well as automatic accounts reconciliation and billing processes. 89% of participants have given this an importance rating of 4 or higher on a scale of 1-5. The TVB has also revealed that the best performing banks in terms of cost-income ratio have the highest levels of front-to-back digitization i.e. top performing banks are 26% more digital\(^9\) than the average performers, indicating that digitization maturity is a driver of financial performance.

**Analytics**

Analytics is about the fact that decision-making across the bank is supported by user-friendly facts and data using descriptive/diagnostic as well as predictive/prescriptive analytics embedded into banking processes. 91% of TVB participants have rated analytics as the highest priority. The TVB has also revealed that the best performing banks in terms of cost income ratio have the highest levels of analytics usage i.e. top performing banks use analytics 23% more widely\(^{20}\) than the average performers, indicating that analytics maturity is a clear driver of financial performance.

“Take the experience that we currently deliver to our bankers in face-to-face channels and provide that same quality of experience through a digital channel. The big challenge often comes down to how do you personalize it and make that experience different for every client and recognizing what makes it unique. And a big part of that comes down to data and AI.”

- Jeff Wright,
  SVP Client solutions, Canadian Western Bank (Canada)

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\(^9\) Temenos Digital Index = 0.25 x Digitally active customers (%) + 0.25 x Front Office STP rate (%) + 0.25 x Operations STP rate (%) + 0.25 x Payments STP rate (%)

\(^{20}\) Temenos Analytics Index = 0.5 x Analytics users (%) + 0.5 x Analytics Reports per FTE (%)
The distribution end will focus on providing a digital customer experience that differentiates the bank from competition. It will have the following characteristics:

**Omni-channel:** Today’s full-service banks need to support multiple channels, assisted and unassisted, internal and external. They must provide a consistent experience and share intelligent data in real-time so transactions on one channel seamlessly continue on another. The focus has moved from driving customers towards lower cost digital channels to re-injecting intimacy into these e.g. chatbots, hybrid video chats with human and digital touchpoints delivered at scale. Multimodal channel capability i.e. combining more than one channel into a single touchpoint are some of the newer challenges.

**Contextual user experience:** Personalized and analytics-driven customer journeys are the cornerstone of the retail banking experience today. A bank must hold a 360 degree view of the customer and understand customer behaviour at every touchpoint as well as preferences and spending habits. Real-time and predictive analytics are key in order to proactively monitor as well as dynamically change this behaviour by generating insights on next best interaction, propensity to buy or to leave and then using gamification, for instance, to nudge a customer towards their financial goals. It is a top priority for TVB participants (94%).

**Mass personalization:** Customers want their own personalized set of products and services, designed and priced based on a 360 degree lifetime view, preferably via a self-service menu of mix-and-match options. Additional value-added offerings such as personal finance management to enable customers to gain insights into the spending and savings habits of their peers are being commonly used to personalize the customer experience. Mass personalization has been rated high by slightly fewer TVB participants (88%) because it depends on banks’ individual business models e.g., niche players focusing on specialist products may not need to mass personalize.

**Open banking:** A direct outcome of the disintermediation of the banking value chain, open banking is now a global phenomenon, actively promoted by regulatory regimes in ~40 countries. It is all about banks flexibly and seamlessly collaborating with 3rd party service providers or technology developers via open APIs in a bid to deliver beyond banking lifestyle services to the end-customer. Examples include conveyance and home insurance bundled with mortgages or integrating a credit application on a real-estate website. It entails banks having access to well populated and well curated digital marketplaces to enhance and extend their functional capabilities with innovative third-party solutions where appropriate. Open banking has been rated high in importance by fewer TVB participants (74%) because it is still nascent in many markets.

“Leveraging Temenos deep market experience and its advanced cloud-native, cloud-agnostic and API-first technology, Next Bank will set the standard for innovative digital banking and hyper-personalized customer experiences.”

- Wang Tun Chou,
  Chief Information Officer, Next Bank (Taiwan)
The manufacturing end will need to focus on efficient and effective operations. It will have the following characteristics:

**Flexible, modular product engines:** Modern product architectures with re-usable product features, hierarchies and relationship pricing allow banks to offer customer-centric, innovative feature-rich products that are quick to create and easy to maintain. Speed to market in launching products at the manufacturing end enables test launches based on real-time customer feedback, targeted time-bound promotions and introductory offers at the distribution end.

**Straight-through, real-time processing:** In order for banks to support digital customer journeys end-to-end from prospecting, order fulfilment to servicing, they need straight-through processing all the way. Today’s always-on customers can only be catered to by highly available 24x7 real-time core processing engines which can receive and process transactions and queries any time e.g., for instant payments, it is required to have a downtime less than 60 minutes per year in Europe. 95% of TVB participants cited this as a top priority.

**Scalable, secure infrastructure (Cloud):** Banks must be able to handle the proliferation of increasingly complex customer interactions and transactions engendered by digitization, open banking or contactless payments to acceptable levels of performance. New business models mean unpredictability and rapid response to change which cloud-based infrastructures with auto-elasticity, hyper-scaling and accelerated release cycles provide. Today, it is all about instances being stood up or down in real-time. Active-active capability to move from one cloud platform to another without downtime provides the highest levels of resilience. Today’s retail banks must have a multi-level cybersecurity framework including authentication, authorization, access and consent control as well as non-repudiation. Scalable and secure infrastructure was cited as a top priority by 94% of TVB participants.

**Adaptive and resilient operating model:** The operating model of the future must have in-built mechanisms for self-monitoring and logging of interactions and transactions in real-time to continually optimize performance. Technologies like robotic process automation embedded into banking processes help achieve this.

“Temenos is a highly scalable platform, it’s a secure platform and it’s a platform that the regulators were comfortable with.”

- Colin Walsh, Founder & CEO, Varo Bank (USA)

“Temenos has been a key technology partner on our 6-year journey with its scalable and resilient core banking platform supporting our exponential growth from day one.”

- David Young, CTO, Metrobank (UK)

“What we did with M-Shwari was a big, ground-breaking project. We went live in 5 months because we were able to launch so quickly, we massively exceeded our business case targets. In the first 3 weeks, we onboarded more than 850,000 customers, and processed over 5 million transactions.”

- Eric Muriuki Njagi, General Manager, New Business Ventures M-Shwari (Kenya)
The Current Reality and the Case for Digital Transformation

The majority of established banks still have complex and fragmented legacy IT architectures, pre-dating the digital era. For some, a history of mergers and acquisitions has resulted in multiple, overlapping legacy systems across their business lines and geographies. 77% of European financial institutions reported complex IT infrastructures with high dependencies on end-of-life critical systems in an IT risk assessment by the ECB Banking Supervision IT and Cyber risk survey in 2018. As a result, ECB plans to increase its focus on these institutions with the aim of reducing reliance on these high-risk legacy systems.

Core banking systems designed decades ago were originally batch; the memo-post that evolved later still did not track full information or trace to source. Worse, product-based banking services were hardwired into channels making it prohibitively expensive and time consuming to launch new products.

The advent of always-on, anytime, anywhere digital channels, the consequent dramatic increase in both queries and transactions and the requirement for instant processing of payments propelled banks to build additional niche applications and interfaces around the legacy. This has resulted in complex and fragmented architectures with multiple interfaces and systems, which are inflexible and difficult to change and expensive to run.

Legacy-based IT architectures have several disadvantages, reducing the banks’ ability to compete in today’s world.
Banks spend on average 11%\textsuperscript{21} of their revenues on IT, a percentage much higher than industries like manufacturing or oil & gas (up to 3-4% of revenues on IT), which have already industrialized their processes with the help of packaged, upgradeable software. Moreover, only 27%\textsuperscript{22} of banks’ IT spend is on growth and innovation; the rest is on non-discretionary regulation or on business-as-usual, coping with the legacy spaghetti that leads to manual processes and greater integration and maintenance efforts. Peak usage during the batch process results in high infrastructure costs, in contrast to modern real-time systems that smooth out usage patterns and enhance efficiency.

Apart from the risk of technological obsolescence and skills shortages, a legacy landscape with manual hand-offs and re-keying of information in different systems increases the risk of processing errors. Multiple interfaces introduce multiple points of failure. There have been several instances of high-profile outages with associated reputational damage and regulatory fines. A spate of online glitches have hit almost all the UK’s high street banks in recent years prompting discussions of resilience and operational risk in the industry. The Basel Committee on Banking Supervision has recently imposed new rules to standardise the way banks assess operational risk, including the potential impact of system failures. As a result, banks using internal models that make them appear less risky face higher capital risk requirements that can undermine a retail bank’s ability to lend and increase the costs of maintaining deposits.

Legacy spaghetti behind a modern, digital front-end can imply manual hand-offs in an end-to-end banking process. A customer journey that begins digitally and switches to manual at a later stage of the process, say in a mortgage application, will frustrate customers that are expecting an Amazon-style, seamless service from their banks. It also makes it almost impossible for banks to provide customers with accurate updates on the status of their query or application as the transaction moves from the front-office to the back-office. Batch processing in some legacy systems implies that customers are forced to wait for their transactions to clear, instead of instant processing. Outages imply inconvenience and even loss of credit ratings adversely impacting customer satisfaction.

\textsuperscript{21} \textit{BCG IT benchmark in banking 2004-2011} \\ \textsuperscript{22} \textit{Celent report “IT Spending in Banking” 2018}
Reduced speed to market

Of 65 senior banking executives surveyed by Ovum in Europe\textsuperscript{23}, 80\% said outdated core banking systems were causing them to struggle to bring new products to market quickly, while 75\% felt that existing systems do not support regulatory change. Legacy systems are typically not parameter-driven, taking months (9 - 12) of coding and testing to launch new products or to adapt existing products and services to market/regulatory changes or to extend product range to non-banking services. Mainframe legacy release cycles are also too rigid and infrequent, often quarterly or half-yearly, making it difficult to respond quickly to business requirements. Google and Facebook, in contrast, have weekly release cycles. Modern packaged software providers now have continuous deployment and testing and online software updates, making them much more responsive to the fast-moving retail banking world.

Poor business insights

Powerful analytics driven off data from the core engines are required to understand customer needs, supply regulators with necessary data and to make key business decisions to improve performance. Extracting the data from legacy systems is often too complex and costly an exercise, often resulting in banks sitting with a wealth of rich transactional information across their organizations, and unable to exploit it. They could miss business opportunities from interconnected customer relationships, say, when a retail customer works for, supplies to, or purchases from a corporate customer of the bank. Legacy landscapes are also typically characterized by high duplication of data, seriously hindering the use of advanced analytics. A global Tier 1 bank, for example, embarked on a big data implementation project in 2012 to extract data from 46 mainframe-based data warehouses that over a span of 30 years, had built up 90\% data duplication\textsuperscript{24}. In contrast, even the average performing banks with packaged software have duplication in the range of 30\%, and the digital natives none at all.

\textsuperscript{23} The Business Case for Core System Transformation - Ovum Research 2012
\textsuperscript{24} Press research 2016
Strategies to Respond to Industry Pressures

Banks recognize the need to address the limitations of their IT landscapes. They are following a combination of three strategies to respond to the compelling propositions from new competition:

- **Collaborate with fintechs**
  - Source capabilities from fintechs to augment/complement own creating new revenue streams or reducing cost of funding

- **Build greenfield**
  - Launch a greenfield challenger bank (new brand/market) same solution and leverage the functionality that meets their needs.

- **Renovate existing business**
  - Adopt cloud, microservices and API technologies to renovate existing IT architecture
Collaborate with fintechs
Almost all banks are collaborating with fintechs to bring in new capabilities that augment or are complementary to their own. Banks are seeking new technologies, ideas and agility and above all innovation skills and mindsets from partners while they bring their large customer base, compliance prowess and trust to the table. Collaboration takes the form of investment, partnerships and acquisition. The last is not popular as it is hard to find a player that meets the bank’s compliance and M&A criteria. It is more common for banks to promote hackathons, accelerators, incubation hubs and venture capital funds these days. While useful in terms of providing ideas for innovation, collaboration is by no means a transformational approach. The technology platforms built by most fintechs are excellent for the specific use case they were built for but as they add more features and functions there can be a disincentive of scale as their architectures are not designed for scale or long term flexibility (geographical and product complexity).

“PSD2 opens the door for us to develop — or partner with others to provide — new services for our customers”

- Vernon Hill, Chairman, Metro Bank (UK)

Build greenfield
10-15% of banks are setting up a greenfield challenger bank with a new operating model and standalone technology platform, often as a new brand to address a new market or customer segment e.g., millennials with a simpler product proposition. As this is relatively low cost to set up (~$50M), it is becoming popular as a flanking strategy. 70% of bank-owned digital challengers are about bringing in new revenue streams but 30% allow cannibalization of existing business to build a future architecture and a low cost-to-serve model that will be the Minimum Viable Product (MVP) to move the existing business to, eventually.

“We are a digital-native bank and Temenos has enabled us to redefine banking – to use the internet as our branches.”

- Tom Lin, Executive Vice President, O-Bank (Taiwan)

Renovate existing business
Transforming their IT architecture is the most difficult strategy for incumbent banks. Cloud and Software-as-a-Service (SaaS) have led banks to address the challenges of their current IT landscapes. 60-70% of banks are in various stages of cloud enablement. However, the majority of banks are not re-architecting their IT landscape; they are avoiding difficult decisions and ending up either lifting and shifting existing systems to Cloud infrastructure platforms or building new capability on top of existing legacy say, product and pricing on top of core, also called hollowing out the core. Only 10-15% of banks are pursuing true bottom-up digital transformations involving simplifying and re-architecting their landscape and decommissioning legacy platforms bottom-up. Of the 50 largest global banks, three out of four now pledge themselves to some form of customer-experience transformation but just a handful are embarking on true digital transformation.

“Thanks to Temenos’ model bank approach, we obtained a new banking license in China, and have implemented a new core banking system that meets local regulations in 6 months”

- Said Adren, General Manager, BMCE Bank of Africa (Morocco)

“Our core banking transformation enabled us to reduce our spend on hardware and software maintenance by 50%, freeing resources that we could invest in customer service and innovation.”

- Mr. Coolson Shen, Project Manager, Sinopac (China)
Banks recognize that “hollow-out-the-core” and other fringe strategies will not address the underlying issues of extremely complex IT landscapes, and hence will not allow them to dramatically reduce their operating costs and risks or enable them to quickly and cost-effectively deliver all the products and services and experience that their customers demand now and in the future.

However, core banking platforms that support all retail transactions are critical to a bank’s operation and programmes to transform them consequently come under high regulatory and shareholder scrutiny, with associated reputational risk. For example, TSB’s high-profile failure in the UK has reduced banks’ risk appetite for core transformations.

**Current approaches**

Historically, core transformations had high execution risks, costs, complexity and multi-year timelines, often exceeding the average tenure of CIOs and other top executives. Banks’ reluctance to simplify business processes before implementation as well as changing business requirements during the long-running project led to scope creep, delays and overrunning costs. Multi-year core banking transformations structured around few and infrequent milestones, had long payback times, high initial investment and late-accruing benefits. The business case was hence difficult to justify, especially when competing with more immediate non-discretionary regulatory or customer-facing digitization projects. This is because banks followed traditional approaches involving:

1. Best-of-breed target architecture involving costly, time-consuming vendor selections and coordinating and managing multiple vendor relationships and software upgrades;
2. Implementation strategies with traditional waterfall development models, complex, interdependent work-streams involving co-existence and integration of new and old systems, duplication of effort and throwaway code.
The role of disruptive technologies

Today, the maturity of software package providers in harnessing the disruptive technologies upends these traditional approaches, dramatically lowering the complexity and cost of implementation and migration to platforms that are so compelling and cost-effective to run that banks are left with no choice but to transform.

Distributed cloud-native architectures leveraging containers, microservices and open APIs combined with automated DevOps allow software packages to be implemented in leaner, more discrete steps which lower the costs, risk and time to value, allowing incremental benefits to be achieved in a more continuous fashion. Together with rich functionality that is highly componentized, with in-built advanced configuration and smarter and more automated data migration tooling and pre-integration with 3rd party and digital marketplace providers, today’s software providers make it easier, cheaper and faster for banks to transform.

In addition, the software-as-a-service (SaaS) option enables banks to consume, manage and maintain packaged software in a secure, continually evolving, self-service platform while allowing them to develop their specific banking models through advanced configuration and extensibility capabilities at their own pace and desired frequency. This results in even greater business agility and speed as well as cost efficiency and transparency, while providing enhanced security, resilience and compliance. Banks can focus on innovation and their core business, while the software provider takes care of the rest.

Disruptive technologies allow a radically different approach to digital transformation irrespective of whether banks want to build and migrate or pursue continuous renovation.
Migrate and Consume on Demand - A new paradigm

The key to a successful digital transformation is the smooth transfer of a bank’s existing data to the new platform. Traditionally, banks built the new solution first and subsequently migrated the data in accordance with the new platform. Today, disruptive technologies allow banks to take over and understand this data much earlier in the process. Subsequently, banks can “consume” individual capabilities in accordance with the specifics of their business strategy and context. This means decoupling the actual data migration process from the subsequent consumption (or activation) of the migrated data along with the build of the new platform.

**FROM Implement and Migrate:**
Implement new platform followed by migration of existing data

1. **Step 1:** Implement new platform

2. **Step 2:** Migrate existing business data onto newly implemented platform

**TO Migrate and Consume on Demand:**
Migrate existing data using AI-based technologies first and incrementally "consume" or activate data as new functionality is built on target platform

1. **Step 1:** Migrate existing business data to target platform (before bank-specific implementation)

2. **Step 2:** Consume on Demand
Data migration is an extremely complex activity and banks often need to undertake several iterations in order to filter, de-duplicate, clean and accurately map legacy data sources to the target platform’s data structures in order to extract, transform and load the data onto the target platform. Automation and AI-based technologies can significantly speed up the migration and optimise the individual steps involved. Intelligent AI-driven data migration algorithms can automate data mapping focusing not only on client and transactional data but also legacy products, by proactively proposing the necessary product components (e.g., fee structures, lifecycle, other features) needed to re-build those products in the new system. Furthermore, Robotic Process Automation (RPA) technologies can automate several steps in the migration such as data mapping sequencing and reconciliation of the loaded data.

Minimum mandatory data can be prescribed by the new platform and enforced for each banking domain. Subsequently, the bank can conduct a full product rationalization and mapping to the new platform with far fewer resources and much reduced timelines.

Financial data cannot be duplicated during the migration process unlike master and reference data; hence there cannot be more than one source of the truth. There should be no downtime to allow continuous digital services during the migration. Online data migration capability supports financial data takeover at a customer or product level, without the need to bring down systems avoiding duplication.

Thus, intelligent, automated and online data migration massively accelerates the decommissioning of legacy systems, reduces the time needed to migrate the existing business, and provide banks full control and flexibility to sequence their migration according to their specific requirements.
The **Migrate and Consume on Demand** approach is based on the following enablers:

1. **Domain-oriented microservices architecture**
   
   Cloud-native domain microservices with preconfigured business capability and pre-packaged APIs allow banks to control what functionality to implement and when, whether they do so themselves or procure software as a service. The pre-packaged APIs that connect digital channels and other systems both within and outside the bank help speed up the required integrations. Cloud native microservices help banks better control the integration landscape in a core transformation as well as lower costs through elastic scaling. The ability to independently deploy manageable units of the required banking capability (e.g., different product lines, pricing, payments execution) with limited downtime allows smaller and simpler upgrades thereby providing banks the agility to roll out new features in a more timely manner in response to market requirements.

2. **Low code bank-specific differentiation capability**
   
   Packaged software with broad functional coverage augmented with hyper-parameterization for maximum flexibility, with preconfigured, extensible and re-usable features as well as developer-friendly technical tooling allows banks’ IT staff to extend and differentiate. Today’s software packages come with thousands of configuration, migration and extension APIs and design-time tooling to allow bank to design and publish specific APIs, enabling rapid incremental implementation.

In the context of COVID-19 and the acceleration in digital transformation, banks need to rapidly expand and deepen their digital offerings in multiple channels with straight-through execution and processing. Domain microservices allow banks to frequently update discrete core banking capabilities, avoiding the risky and costly exercise of having to test the entire platform. Finally, microservices lend themselves to automated software delivery – continuous deployment, integration and automated testing greatly speeding up any changes required during implementation.
McKinsey estimates a substantial impact on the ROE of the banking sector through digitization-driven productivity improvements (2-5% uplift) and by building on the digital foundation to orchestrate an open banking eco-system strategy (3-6% uplift), from improving margins, acquiring new customers at lower cost, and then capturing a share of some non-banking markets through the platform model. There is tangible value to be gained if banks are able to digitally transform their businesses and move from legacy-systems to modern, off-the-shelf packaged software running on the latest cloud-native, cloud-agnostic API-based platforms.

As the world’s leading provider of banking packaged software focused exclusively on banking for 27 years and with 3000 banks running our software, it is our mission at Temenos to help our banking clients out of the vicious circle of low profitability and into achieving tangible business value directly driving banking performance.

The average ROE for Temenos clients in the Temenos Value Benchmark is 16.4%, 1.5X the current industry average of 9.5%. This translates into $900-1000 billion in incremental operating profit potential for the global banking industry, were it to digitally transform and thereafter follow successful ecosystem strategies.

The trillion dollar profit opportunity
End-to-end digital transformation could unlock an incremental profit opportunity worth $1 trillion across the banking industry for those banks on their way to digital transformation, as well as those that are yet to make meaningful advances.

*By closing the 6.9 pp gap between Temenos and Global average, Every 1 pp increase in ROE quotes to incremental $140B in pre-tax profit. Source: McKinsey Global Banking Reviews 2017/2019, Temenos analysis.*
In addition, we found that our top-performing clients already achieve industry-leading returns on equity of 29%, 3X the industry average and cost-income ratios of 26.8%, 0.5X the industry average. These clients also invest over 51% of their IT budget on growth and innovation versus maintenance, which is 2X the global industry average. This data can help boards of leading banks to gain confidence that core banking transformations are not only eminently do-able, but also yield proven financial benefits, if done right.

**Our high performing clients**

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<th>Achieve cost-income ratios</th>
<th>Achieve returns on equity</th>
<th>Allocate IT spend</th>
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<td><strong>0.5x</strong> industry average</td>
<td><strong>3x</strong> industry average</td>
<td>2x industry average to growth &amp; innovation</td>
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Conclusion

At Temenos, we believe the tipping point has been reached. The banking industry is changing so dramatically that it is no longer possible for banks to stay competitive and fulfil the needs of customers with their legacy-based IT landscapes. Many bank executives have tended to view digital transformation too narrowly, concentrating on stand-alone front-end features such as mobile apps or online spend analysis charts. Digital innovation built on batch systems with inflexible product engines, hard-wired channels and broken, manual processes, is not sustainable. A modern, digital engagement platform without a modern core processing engine will eventually hurt a bank, for it will be unable to provide customers the full front-to-back service that they have come to expect from providers of lifestyle and retail services, like Amazon and Uber.

And finally the order of magnitude reduction in operating costs required for banks to compete in today’s open banking world mean they have no choice but to digitally transform and renovate their end-to-end business model to the core.
Temenos AG (SIX: TEMN) is the world’s leader in banking software. Over 3,000 banks across the globe, including 41 of the top 50 banks, rely on Temenos to process both the daily transactions and client interactions of more than 500 million banking customers. Temenos offers cloud-native, cloud-agnostic and AI-driven front office, core banking, payments and fund administration software enabling banks to deliver frictionless, omnichannel customer experiences and gain operational excellence.

Temenos software is proven to enable its top-performing clients to achieve cost-income ratios of 26.8% half the industry average and returns on equity of 29%, three times the industry average. These clients also invest 51% of their IT budget on growth and innovation versus maintenance, which is double the industry average, proving the banks’ IT investment is adding tangible value to their business.

For more information, please visit www.temenos.com.

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