HOW CAN GENERATIVE AI SHAPE THE BANKING INDUSTRY?

A PAC WHITE PAPER commissioned by

pwc

PAC

CONTENTS

AUTHOR

Spencer Izard is a PAC research director based in London, UK. As a global team member, he is responsible for research covering AI, cloud services, and cyber-security for the UK market. Spencer also leads consultancy engagements from technology and industry-focused perspectives, with a particular focus on the banking industry. Spencer is a leader and strategist with 25 years of experience helping senior leaders and CxOs evolve how they operate their businesses.

PREFACE

It is often said that the world of technology evolves and innovates at a high velocity. However, with the release of ChatGPT 3.0 at the end of November 2022, PAC feels comfortable saying that another technology inflection point has occurred. In this instance, it was the global awareness of what a large language model (LLM) generative AI is due to the media attention the public beta release of ChatGPT provided. A generative AI (GenAI) is a category of artificial intelligence designed to generate new content from existing data, such as text, images, music, or even videos. These AI models are trained on vast amounts of written, visual, and auditory data to learn patterns and structures within the data it can access. The most common interface with an LLM GenAI is a natural language text interface where a person describes what they want to be generated through a statement or question.

In the few months since its release, PAC has witnessed a technological “arms race” by software companies to address how they incorporate GenAI into their suite of products due to the mass public awareness of the technology. Software companies are approaching this from different perspectives based on the focus of their business. Still, PAC has seen many technology companies approach this innovation as “The answer is GenAI; now what is the question?”. Whilst this exuberance within the technology industry is nothing new, the sheer velocity of software companies incorporating GenAI into their existing software and services has been unprecedented, and it can be overwhelming for banks in the immediate term.

However, for this report, it is important to frame the technological journey the banking industry has been experiencing for the past decade to best understand the role and value of GenAI in its current form. PAC considers that the onset of digital transformation a decade ago forced banks to adjust how they provided business-to-consumer (B2C) services due to an expectation by customers to have access to their banking services through online and mobile application services anywhere at any time. This forced evolution impacted all forms of banking, from retail, corporate, and investment, to private and was further impacted with the onset of Open Banking being adopted across many countries. Though the now ubiquitous use of digital banking services, which still vary in maturity across regions and countries, led, in PAC’s opinion, to the rise of technology start-ups focused on disrupting and innovating the financial service sector commonly referred to as Fintech companies.

From PAC's experience, a significant part of the success of Fintech firms can be attributed to established banks not being operationally agile enough to rapidly pivot and change to meet the market demand for digitally-led banking experiences. Up to that point, established banks saw their competition as other banks of similar size and lineage. This translated means that their peer-level competitors were as complicated, cumbersome, and all too often inefficient as each other, managing a range of legacy software and services. Through changing regulations and open banking, the barrier to entry for providing banking services was greatly lowered, stimulating the rise in Fintech companies that were not encumbered by legacy operational and technological constraints faced by the established banks. The rapacious demand for digital banking services combined with the greater access to

sophisticated digital banking software across all tiers of the industry stimulated the ability of challenger banks to compete more equally with the larger institutions. However, the biggest change to the banking industry during this past decade has been the formation of neo-banks. Typically, neo-banks are entirely digital with no physical branches and provide cloud-based services to clients. However, neo-banks can operate without a banking license, as they rely on a partner licensed bank, but this limits the financial services they can offer, and because of this, obtaining one is a common aim.

With Fintech firms providing new digital banking services, often targeted at a specific industry niche, and the rise in challenger and neo-banks, significant pressure has been exerted on large traditional banking institutions. Whilst they have sat on a veritable “gold mine” of data about their clients and a range of other elements, their legacy operating models and cumbersome core banking systems have challenged their ability to compete in the digital age. This lack of agility saw many traditional banks create their own neo-bank to compete because they could build out a completely new banking service from the ground up quicker than they could evolve their existing banking services. During this period, when engaging with banks, PAC steered the discussion towards the aforementioned “gold mine” of data being the true value differentiator for traditional banks and that they needed a strategy and technologies to unlock that value whilst weathering the challenges led by an abundance of Fintechs. The reason for this discussion was that whilst challenger and neo-banks were offering modern digital banking experiences, their ability to compete with traditional institutions with decades of customer data insight was not on an equal footing. PAC still vehemently believes that, whilst digital banking services are integral to modern banking, without data-driven insight, digital experiences are less valuable over the long term. The combination of digital banking experiences and the “gold mine” of decades-long data that traditional banks have access to is the real value differentiator in the competitive banking sector.

With Fintech firms providing new digital banking services, often targeted at a specific industry niche, and the rise in challenger and neo-banks, significant pressure has been exerted on large traditional banking institutions.

As PAC has observed, over the past decade, traditional banks have focused on leveraging cloud, container, and automation technologies to deconstruct the operational complexities of core banking services, internally democratising access to data, and creating a range of digital banking services. Now with the onset of generative AI (GenAI), PAC considers there to be a confluence of factors that can drive competitive value for traditional banks to fully integrate the depth and breadth of internal and external data they have access to with a diverse range of Fintech services and solutions to drive success for them over at least the next decade. PAC believes that GenAI has the practical potential to fundamentally positively disrupt how front, middle, and back-office functions behave by democratising access to complex insights and supporting the ability to deliver banking services at new scale levels.

PAC believes that GenAI has the practical potential to fundamentally positively disrupt how front, middle, and back-office functions behave…

Despite the relatively nascent nature of GenAI, it can already be applied to the following scenarios across banks' front, middle, and back offices. This report will discuss later what banks should be doing to assess the opportunity of GenAI today, understand any risks, and how best to progress the use of GenAI from a concept to a production-ready tool.

HOW CAN GENERATIVE AI BE USED WITHIN THE FRONT OFFICE OF BANKS?

Much like digital transformation before it, the most immediate impact that GenAI can have on banks is further improving customer service points of engagement and personalised product offerings within the front office in the following ways:

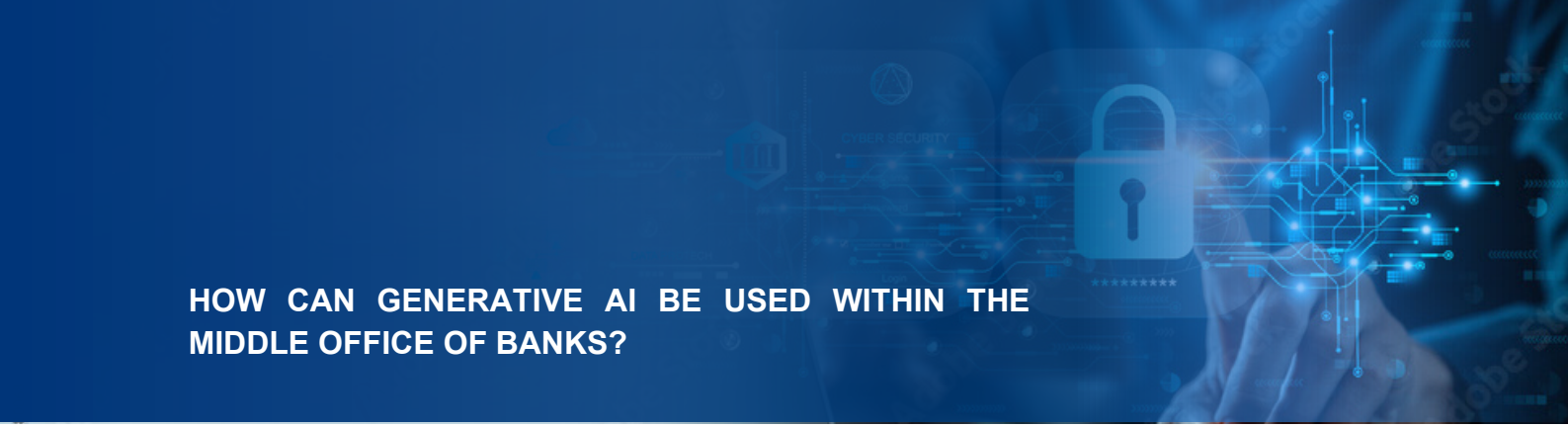
Customer Service: Over the past decade, all customer-facing channels, whether retail, corporate, wealth, or private, have introduced digital banking services through online or mobile application experiences to meet market demands. However, the majority of these experiences still required the involvement of a customer service representative across all banking channels to provide advice, insight, and recommendations. Even those banks that used chatbots and virtual assistants as a means of digital customer engagement were limited by the sophistication of ask-and-respond interactions before the introduction of conversational and generative AI. The value and capabilities now understood by the general public of generative AI (GenAI) is a combination of a range of AI disciplines, including, for example, natural language processing (NLP) and large language models (LLM). As the technologies currently stand for the purpose of customer service, a bank would leverage a GenAI service in combination with a conversational AI solution to provide new or augment existing chatbot or virtual assistant interfaces. The LLM capability at the core of GenAI can aid both digital assistants and customer service advisors with increased levels of insight relating to individual customers, their questions, and the banking services that would best meet their needs. However, like any use case for GenAI it is only as strong as the pool of data it has access to, so banks will have to determine the data strategy needed to drive value from a GenAI upfront for this use case.

… However, like any use case for GenAI it is only as strong as the pool of data it has access to…

Focused Offerings: As mentioned earlier in this report, the “gold mine” of data that large traditional banks have accumulated over the years relating to their customers and products is a key value differentiator that is unlocked by the potential of GenAI. Creating focused financial offerings for individuals within retail and private banking channels and for corporate banking tailored to their specific needs and interests is a differentiator that can drive new forms of competitive advantage. The depth and breadth of data a bank has on customers, as individuals and groups with common preferences, allows them to create recommendations for bespoke financial products or customise retail products to an individual's specific needs at a far greater scale through digital services than has been previously possible. GenAI can provide these types of personalised banking services through digital engagements via online portals or mobile apps or as an invaluable advisory tool to support front-office bank employees in customer interactions.

The role of GenAI in providing product offerings also lends itself to both reactive and proactive interactions with clients. Through chatbots and digital assistants, the technology can provide recommendations when a client requests. However, it can also assist sales staff in proactively developing one or more bank offerings to propose to clients. Generative AI (GenAI) can, with access to the right data, create realistic simulations of financial market conditions and customer behaviour. This helps to train front-office bank staff to sell products and services to clients based on different market conditions and scenarios to refine their sales strategies.

GenAI can, with access to the right data, create realistic simulations of financial market conditions and customer behaviour.



HOW CAN GENERATIVE AI BE USED WITHIN THE MIDDLE OFFICE OF BANKS?

The primary function of the bank mid-office is to support the front office by minimising financial fraud and other risks to the bank's business while ensuring the bank complies with all applicable industry regulations. The established operating model is that retail, corporate, investment and private bank channels operate their own middle-office capabilities. This part of a bank must deal with high complexity and volumes of data making it an ideal focus for applying generative AI (GenAI) to its core middle office operating functions in the following ways:

Automating Compliance: For many years, PAC has witnessed banks investing in technologies to automate compliance processes because they are often complex and time-consuming due to the volume of transactions banks have to process within each bank channel (e.g., retail, corporate, investment, and private). As compliance regulations evolve or a bank creates a financial product that has to comply with one or more regulations, degrees of operational friction are incurred. In addition, as digital banking channels democratise access for many types of bank customers to a plethora of sophisticated financial products, the scale of compliance activities are increasing in both volume and velocity. PAC believes that GenAI provides vital capabilities to support compliance teams to operate at greater scale, complexity, and sophistication by generating risk assessments, reviewing and updating compliance policies, and procedures, generating compliance reports, and responding to regulatory queries. The technology can generate compliance risk assessments by providing a GenAI with access to a range of data spanning historical and current market data combined with compliance-related data. To assist in avoiding potential fines and penalties, a GenAI focused on the compliance function can review and update compliance policies and procedures to ensure they are up to date with the most recent regulations and generate reports to identify areas of non-compliance across its operational activities.

Risk Management: As mentioned above, another core function within a bank's middle office that GenAI can add value to is the process of identifying, assessing, and mitigating risks to protect from financial losses. Risk management is typically a complex and challenging range of processes with volumes and velocity of activity often outstripping a department's ability to meet demand. Banks have already been leveraging automation technologies to stem the tide of risk exposure due to the introduction of more sophisticated and varied digital banking services. Due to the highly sensitive nature of this banking function and the potential for false positives when investigating fraud and other types of violations, this is where PAC believes GenAI, partnered with explainable AI (XAI), capabilities can advise members of risk and fraud detection teams at a scale that is currently overwhelming many such teams. As know-your-customer (KYC) and anti-money laundering (AML) policies and procedures are essential to banks managing the risk and verifying customers, clients, and suppliers, GenAI can be used to screen relevant transactions for potential risk violations to aid in mitigating risks before they occur. The technology can also be used to monitor market data and customer behaviour for patterns that could impact risk and report back with a range of risk scenarios and potential mitigations. The interactive nature of GenAI also provides an invaluable means to train employees on risk management by ensuring they are aware of risks and how to address them.

GenAI can be used to screen relevant transactions for potential risk violations to aid in mitigating risks before they occur.

HOW CAN GENERATIVE AI BE USED WITHIN THE BACK OFFICE OF BANKS?

Whether managing accounts, processing and reconciling transactions, or providing customer support capabilities, the bank's back office is understandably as complicated and integral as the front and middle. The core behaviours of a bank's back office can be supported by generative AI (GenAI) in the following ways:

Scaling Underwriting: Over the past decade, easier access to credit in all its forms has grown in abundance and sophistication processed between banks and clients through a range of digital banking services. Like so many other parts of a bank, the underwriting department within the back office continues to see increased volumes and velocity of loan and credit applications, requiring shorter risk assessment and evaluation cycles to meet the scale of demand. To authorise a credit product for a client, the underwriting department performs a risk assessment of the applicant, due diligence on related documentation, loan structuring (in partnership with front office teams), and application risk mitigation. It keeps accurate records aligned with the bank's underwriting guidelines. These tasks are highly complex, requiring sophisticated data assessments and modelling to determine the authenticity and applicability of the applicant against the bank's risk profile for providing a relevant product. From PAC's experience, underwriting is an ideal back-office function where the use of generative AI (GenAI) can aid in compressing common repeatable tasks, allowing underwriters to focus on more complex or unique scenarios by automating the data analysis of large volumes of structured and unstructured data required to assess an application. GenAI, in combination with explainable AI (XAI), can generate a risk assessment and score from access to financial statements, credit reports, and market trends. Surfacing all the information an underwriter needs to make an informed assessment and decision or leverage GenAI further, should any additional questions occur from the content generated. Access to all the data underwriters require allows a GenAI to perform scenario analysis and predictive modelling by simulating different financial scenarios to predict outcomes based on market and bank data. This, like the assessment and scoring generated for an individual applicant, allows underwriters to model complex market scenarios through the highly flexible natural language processing (NLP) interface of GenAI.

This (…) allows underwriters to model complex market scenarios through the highly flexible natural language processing (NLP) interface of GenAI.

Supporting Accounting: The accounts department within the back office of a bank performs what can be argued as the most vital role across the bank. It is responsible for maintaining accurate financial records and producing reliable financial reports that adhere to the plethora of banking regulations. The department maintains the bank's general ledger, ensuring it is balanced by ensuring transactions are reconciled and posted to the appropriate accounts. It also manages tax-related activities, including planning, calculating liabilities, filing tax returns, and adapts the bank's operations as tax laws and regulations change to minimise risk, ensure compliance, and optimise tax strategies. Due to its critical responsibility in maintaining the bank's detailed financial records, it also provides essential expert support during internal and external audits. This is only the briefest of descriptions of the department. Still, it should be clear from the breadth and depth of activities highlighted that generative AI (GenAI) has an opportunity to provide operational value akin to the prior examples due to the complex workflows and data needing to be navigated. For example, GenAI can compare tax laws and regulations to historical data to advise on tax optimising strategies and generate

compliance reports. The technology can also support audit procedures by performing audit trail analyses that adapt to any scenarios or questions raised during the process. As a precursor to participating in the performance of an audit, GenAI can perform financial statement analysis by generating reports from the analysis scenarios posited by the accounts team pertaining to balance sheets, income statements, and cash flow statements to identify patterns, trends, and anomalies to improve the bank's overall financial performance.

WHAT IS NEEDED TO ADOPT GENERATIVE AI WITHIN A BANK SUCCESSFULLY?

The opportunity generative AI (GenAI) presents for the banking industry is clear to PAC. Still, as is often the case with transformative technologies, the journey to practical value realisation is not so much. However, what PAC has seen over the last decade, spurred on by the onset of digital transformation, is an ever-increasing requirement by banks to adopt a transformative technology faster into their operational eco-system of solutions and services to meet both market demands and drive competitive advantage in ever decreasing timeframes.

Adopting a technology like GenAI into one or more of a bank's day-to-day operating functions requires the consideration of its cultural, ethical, technological, and operational impact. From PAC's experience, no matter how advantageous a technology looks, the act of adoption when the wide-spread practical use of it is still nascent presents a range of risks which, if not identified, understood, and addressed, will likely diminish the value of investing in the technology.

The question PAC posits to banks is regarding their risk appetite in correlation to the expected benefit of GenAI to drive competitive advantage through operational efficiencies and new market opportunities. Given that established banks are commonly in the process of modernising legacy bank functions and systems, the potentially disruptive adoption of GenAI could overwhelm a bank's ability to implement the technology and realise value. So, whilst it is essential to identify the opportunities presented by a transformative technology like GenAI it is also critical to identify the risk factors that a bank must consider when developing an adoption strategy. The following, in no particular order of importance, are the risks specifically relating to generative AI that PAC recommends banks develop a strategy to address:

- Data privacy and security concerns.
- Ethical and fair use of generative AI for internal and external services.
- Accuracy, explainability, and reliability of generated content.
- Integration and compatibility with existing solutions and services.
- Continuous training and management of GenAI models.
- Customer and employee acceptance and trust.
- Lack of clear business use cases and ROI/TCO models.
- Limited access to relevant data.
- Ensuring ongoing regulatory compliance.
- Cost of implementation, and ongoing maintenance, performance, and scalability costs.
- Lack of skilled generative AI talent both in the short and long term.

(…), whilst it is essential to identify the opportunities presented by a transformative technology like GenAI it is also critical to identify the risk factors that a bank must consider when developing an adoption strategy.

Whilst a range of these risks applies to adopting any technology into a bank, a selection of them PAC considers to be of particular importance to generative AI (GenAI). For example, risks two, three, and six focus on the types of risk disruption particular to GenAI. In recent years it is rare for a technology to have a sociological and societal impact on human behaviour to the degree generative AI is already starting to have. These risks, combined with risk eleven, focused on access to skilled talent, require, from PAC's perspective, a level of capability and experience not currently accessible within the internal teams of banks needed at the scale required to adopt the technology into front, middle, and back-office banking functions.

Given the range of examples of how generative AI can shape the banking industry covered in this report and a desire to adopt the technology swiftly whilst mitigating risks, PAC knows there is value in partnering with a professional services provider like PwC to reduce the time-to-market in adapting banking services to be supported by GenAI. Whilst it is essential for all the key decision-making, strategic development, and ongoing management to be led by leaders in the bank, the access to expertise and resources that a partnership provides through co-innovation and co-creation, from PAC's experience provides a solid foundation to mitigate the risks outlined above. PAC has been particularly impressed by the sustained levels of investment, talent upskilling, and development of toolkits and frameworks regarding AI broadly, and generative AI specifically, that PwC has continued to invest in for many years. To this end, examples of the value a professional services provider like PwC brings to the adoption of generative AI within a bank are as follows:

1. Help identify the right use cases for generative AI across a bank and the process, cultural, and technological interdependencies needed to be addressed.
2. Leverage PwC's responsible AI frameworks and tools to support mitigating the range of risks more specific to generative AI identified above regarding its ethical use when applied to customer and employee use cases.
3. Reduce the risk of failure by leveraging the depth and breadth of PwC's global network of banking and AI experts to achieve a swift time to market and value for incorporation into front, middle and back-office bank functions.
4. Ensuring the compliance impact of generative AI is understood by the bank, and a framework is in place to ensure AI-specific regulations are adhered to, as well as those specific to the role of AI within the banking industry.
5. Importantly, given the relatively nascent operating nature of generative AI (GenAI), PwC provides a full end-to-end managed service covering the development of a GenAI strategy, building out the capability, to managing the operation of the service. PAC considers this a particularly valuable offering due to the continuous evolution of GenAI over the coming years, which will require ongoing expertise to ensure banks have a service that evolves and expands to meet their needs across the front, middle, and back offices.
6. From PAC's perspective, one of the critical roles PwC provides for banks is the breadth and depth of partners the company has across the financial services software eco-system that minimises technology adoption risks for banks. They expand, contract, and reinforce the range of partner capabilities to evolve and adapt to meet the banking sector's needs. A good example of this is Microsoft announcing its three AI customer commitments with PwC as a key launch partner.

(…), one of the critical roles PwC provides for banks is the breadth and depth of partners the company has across the financial services software eco-system that minimises technology adoption risks for banks.

PAC RECOMMENDATIONS

After decades of moderate operating innovation within the banking industry in the last decade, as described at the start of this report, numerous waves of technology-led innovation have fundamentally changed how banks are expected to operate by their clients. PAC considers generative AI to be another such wave of innovation. However, this wave has the potential for a greater impact on the role of humans across all parts of society, as generative AI can fundamentally affect how we perform certain tasks.

Though for all the certainty of innovation being identified by what generative AI can do, how it could alter the nature of human behaviour comes with a wide range of societal and ethical questions that need to be identified, asked, and addressed. It is unclear to any of us what the full impact of generative AI and similar technologies will be on society's behaviour in the long term. However, it is clear that governments and industry bodies are likely to react faster to the impact of generative AI than occurred, for example, for data protection which took several decades.

Whilst it is essential to consider, on an ongoing basis, the ethical complexities of all forms of AI use, it is clear to PAC that the use cases for the banking sector currently provide a means in many parts of the bank to enable employees to manage front, middle, and back office tasks at a scale that aligns with the velocity, volume, and growing complexity of interactions expected between a bank and all types of its clients. To this end, PAC strongly recommends that banks consider partnering with PwC to leverage their extensive capabilities and access to expertise to co-innovate a bank’s generative AI strategy and then co-create its incorporation into front, middle, and back-office banking functions.

ABOUT PWC

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 152 countries with nearly 328,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

ABOUT PAC

We are a content-based company with a consulting DNA. PAC is the leading European consulting and analyst firm supporting software & IT service vendors worldwide. Since 1976, we have helped our clients to understand market dynamics, grow their revenue and raise their profile. Our unrivalled understanding of European markets, and deep research coverage help key market players to define their strategy, optimize their go-to-market and increase market share. PAC is an analyst-led consultancy with a team of over 100 experts across Europe. We provide market research and analysis on more than 30 countries worldwide, delivered through our portfolio pillars, Guidance, Insights, and Visibility, and our renowned SITSI® research platform. More on www.pacanalyst.com.