Is Financial Services ready for an industry utility powered by GenAI?

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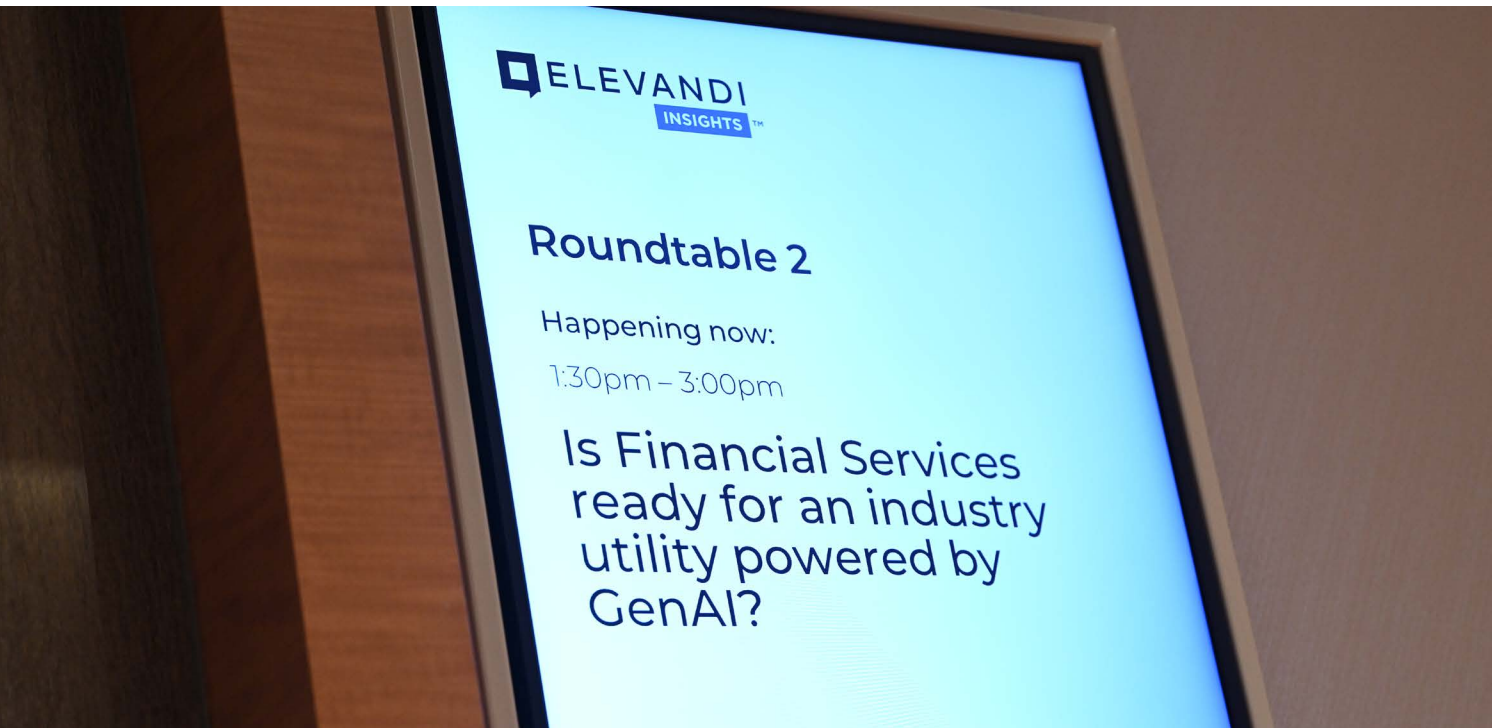
Introduction

Generative Artificial Intelligence (GenAI) applications such as ChatGPT built upon Large Language Models (LLMs) have woken up the world to the potential and possibilities of AI.

Globally, banks are already exploring or have embarked on the GenAI journey to enhance and augment their respective internal processes or external processes such as customer services. Against this backdrop, MAS organised a roundtable that was hosted by Accenture under Chatham House Rules for leading banks, regulators, and industry leaders convened at the Singapore FinTech Festival 2023 to discuss whether financial services is ready for an industry utility powered by GenAI.

This paper is the outcome of the roundtable and based on the discussions that ensued. It touches on the collaborative opportunities of GenAI technology like LLMs, how FIs can begin their GenAI journey responsibly, and complexities around data availability and sharing. As the meeting did not include a formal mechanism to establish consensus on any specific issue, takeaways and findings presented in the paper are a consolidation of individual opinions and not representative of the group's collective stance.

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The key takeaways are:

1. **Large Language Models (LLMs) offer a glimpse into the future of banking but retain echoes of challenges of former technologies:** GenAI introduces a paradigm shift in banking, offering innovative solutions through LLMs. However, it also echoes past technological challenges in AI, necessitating a nuanced approach to collaboration, data governance, and problem-solving.

2. **Learning from Project MindForge: Adopt a balanced approach between Risk and Innovation:** Drawing inspiration from Singapore's Project MindForge, we explore a methodical approach to GenAI integration in finance. This involves a tactical selection of low-risk, high-impact use cases and a strong focus on enhancing internal AI literacy, ensuring a balanced approach towards innovation and risk.

3. **Data remains a central lynchpin for GenAI acceleration:** Data sharing and pooling are pivotal for accelerating GenAI in finance, necessitating a sophisticated balance between innovation, privacy, and regulatory compliance. This involves navigating complex dynamics around scaling reliability of AI models, proprietary data, maintaining a competitive edge, and privacy/security risks.

4. **Industry collaboration could unite stakeholders for minimum standards and trust:** The establishment of minimum data standards and trust frameworks through industry collaboration is critical. This joint effort aims to address key challenges such as misinformation risk and preserving human trust in digital interfaces.

5. **Addressing multifaceted RAI challenges beyond data protection and cybersecurity in GenAI:** Responsible GenAI utilisation requires a keen understanding of the regulatory landscape concerning data protection, privacy, and cybersecurity. This involves collaborative efforts to create frameworks that foster innovation while safeguarding consumer and market interests.

LLMs offer a glimpse into the future of banking but retain echoes of challenges of former technologies

The financial services industry is poised for a revolution driven by GenAI, through enabling innovative collaboration, data sharing, and problem solving while addressing challenges associated with this transformative technology. A participant shared that GenAI will disrupt fund accounting quite significantly.

LLMs such as GPT, Bard, Llama2, and PaLM have demonstrated remarkable capabilities, in some instances outperforming human performance benchmarks[8], potentially allowing FIs to explore new ways of leveraging these advancements for innovation, efficiency, and better customer outcomes. GenAI offers transformative possibilities for impactful change in areas such as Know Your Client (KYC), Anti-Money Laundering (AML), fraud prevention, de-biasing and sustainability reporting, benefiting all stakeholders involved. The important questions to ask are "for who", "how to" and "when to".

As one participant puts it "A lot of the data problems are the same problems we had with traditional AI

in past years. GenAI has not changed that much." Besides data, areas of challenges that are synonymous with the broader scope of AI still remain:

1. Talent gap: This nascent technology is facing a talent gap in areas of data science and GenAI development. Implementing and scaling GenAI models requires professionals who are not just technically proficient but also understand the nuances in the financial services industry. FIs are now investing in specialised training programmes and partnering with academic institutions to develop a pipeline of skilled professionals. An example is JPMorgan's AI Research programme focusing on developing AI expertise within the bank.[7]

2. Explainability of AI models: The 'black box' nature of advanced LLMs poses a significant challenge, especially in an industry where decisions need to be transparent and justifiable. To address this, some banks are implementing 'explainability layers' in their AI systems, providing insights into how conclusions are reached to engender customer trust and meet regulatory requirements.

3. Scaling beyond Proof of Concept (PoC): Scaling AI technologies from successful pilot projects to full-scale implementation is a substantial hurdle. Many FIs face challenges in integrating these technologies into existing systems and workflows. For instance, a successful PoC in fraud detection using LLMs may encounter hurdles in scaling due to data privacy concerns, integration with legacy systems, or resistance within organisational culture.

4. Data sharing and pooling challenges: The pooling of data (internally and externally) necessary for the effectiveness of LLMs brings forth privacy and competitive concerns. Initiatives like the European Banking Federation's project on data sharing aim to create a balanced approach where banks can share data to improve AI models while respecting customer privacy and competitive boundaries.[2]

5. Regulatory frameworks and ethical AI use: Navigating the evolving regulatory landscape is challenging. The recent EU AI Act emphasises stringent requirements for high-risk AI systems, directly impacting how LLMs are used.[5] FIs are increasingly engaging with policymakers and participating in industry consortia to shape and anticipate regulatory changes.

With the challenges and opportunities of GenAI in the financial sector in mind, the emphasis shifts to finding a practical balance between innovation and the complexities inherent in such technologies.

Learning from Project MindForge: Adopt a balanced approach to Risk and Innovation

To address and explore the opportunities of GenAI in finance, an industry consortium comprising FIs, technology partners and consultants was formed. Project MindForge, led by the MAS, emerged as a strategic blueprint for selecting and implementing use cases. This project underscores a methodical approach to integrating GenAI, emphasising the creation of a responsible GenAI framework that serves as a guide for the industry.

The initial selection of use cases is a balancing act that prioritises minimal risk and non-competitive, collaborative environments. This

early-stage focus on "win-win" scenarios for all collaborators is key to rapidly launching the project and gaining momentum. It involves choosing use cases that are low risk and conducive to mutual benefit, fostering a spirit of cooperation rather than competition. Project MindForge exemplifies this balance through its comprehensive risk framework that addresses accountability, governance, transparency, fairness, legality, ethics, and cybersecurity.

Project MindForge also highlights the importance of industry-wide collaboration and the need for experimentation. In this initial phase, focusing on non-competitive use cases encouraged shared learning, resource pooling, and the development of industry-wide best practices. This collaborative approach can be particularly beneficial in areas like AML, sustainability, and cybersecurity, where collective effort could yield significant advances.

Building on the learning points, FIs globally have the opportunity to drive the next wave of innovation. The key lies in how they adopt and adapt the principles and practices outlined by this pioneering project.

1. **Enhancing internal capabilities through AI literacy**

Project MindForge brought to light the need for extensive AI education within the finance sector. This goes beyond training a team of AI experts; it's about instilling an organisation-wide comprehension of AI's capabilities and boundaries. As AI becomes a cornerstone technology, having a workforce that is well-versed in AI is no longer a luxury but a necessity.

A comprehensive AI education program should encompass various aspects of AI, including its technical foundations, ethical considerations, and practical applications in the financial sector, to create a culture where employees of all levels understand AI's role in enhancing customer experiences, streamlining operations, and driving innovation.

AI literacy can empower employees to identify processes that can be optimised, leading to more effective human-AI collaborations and more innovative solutions. Employee's awareness of AI's ethical and societal implications can help ensure that AI deployments are responsible and aligned with the institution's values and regulatory requirements.

2. Experimenting with low-risk, high-impact use cases

Project MindForge's approach to prioritising low-risk, high-impact use cases for AI application is a strategic method for FIs to cautiously yet effectively integrate AI into their operations. This methodology isn't just about playing it safe; it's about smartly navigating the AI landscape to yield tangible benefits while minimising disruptions. As one participant puts it, it is about balancing impactful use cases versus ease of execution, and making a start is probably the best start.

This cautious but progressive strategy is adequately prudent for the financial services industry as it allows for a learning curve where FIs can iteratively refine their AI strategies based on actual results and feedback. Focusing on lower-risk areas provides a practical testing ground for AI systems, allowing FIs to gauge the technology's effectiveness, gather data, and understand how AI decisions are made. This will gradually build trust and confidence in AI systems among the workforce and the customers for more complex tasks.

3. **Keeping the human element central in AI development**

    Project MindForge emphasises a human-centric approach in AI development and marks a significant shift in how FIs should view and implement AI technologies. This philosophy centres around creating AI solutions that are not just technically proficient, but also deeply attuned to the human aspects of their application — considering the needs, preferences, and experiences of the end users.

    Beyond codes and algorithms, it is important to understand the nuances behind how and who will be using the technology. In practice, this involves incorporating user feedback throughout the AI development cycle. For example, in AI-driven financial advisory services, this approach would involve understanding the diverse financial goals and risk tolerances of different customers to provide recommendations in a personalised and sensitive manner. One participant shared that "human in the loop" during the development, fine-tuning, testing and validation yields better outcomes and more precise responses to questions.

    Moreover, a human-centric AI approach also encompasses ethical considerations. It requires a commitment to developing AI that respects user privacy, avoids bias, and operates transparently. Where decisions made by AI can have significant impacts on customers' financial health, it's crucial that these systems are designed with fairness and accountability in mind.

    The principles set by Project MindForge, such as AI literacy, risk management, and human-centric development, naturally steered the conversation towards the next crucial element in GenAI's advancement: data. Understanding and leveraging the right kind of data is key and this step is essential in harnessing GenAI's full potential, allowing for more targeted and effective applications.

Data remains a central lynchpin for GenAI acceleration

One participant said: "Data is king for training the models, and expanding the models". Another participant further pointed out that "we need a much more refined notion of what kind of data we are talking about, because for different kinds of data, the discussion is completely different". Understanding different data types and identifying relevant combinations of datasets is a critical early step for GenAI development. For example, transactional data can offer profound insights into customer behaviour, making it a priority in the data engineering pipeline.

The collection and mining of data require a focus on both diversity and quality. Techniques like data cleansing and enrichment are vital, enhancing the data's suitability for GenAI applications. Moreover, integrating and aggregating data from various sources is essential for a holistic view and uncovering hidden patterns. A robust data governance is another crucial aspect and establishing strong governance frameworks ensures ethical, responsible data use and compliance with regulations like GDPR.

The backbone of effective data handling is the technology infrastructure. Investments in cloud storage and big data platforms facilitate the efficient storage and processing of large data volumes. Such infrastructure is fundamental to managing the heterogeneity and scale of data typically involved in GenAI applications.

As with most AI applications, data quality and availability is a vital component. Pooling data across organisations could unlock collective intelligence and potential for operational improvements and business opportunities. However, data sharing raises significant concerns regarding privacy, competitive considerations, and governance. It necessitates a careful approach balancing innovation, privacy, competitive dynamics, and regulatory compliance. There are several complexities that organisations would have to navigate (non-exhaustively):

1. Data as a strategic asset: FIs possess vast amounts of data that could be considered proprietary (i.e., data points that other banks would not have). It necessitates a detailed data assessment to ensure that proprietary data are not shared.

2. Maintaining competitive edge: While sharing data can level the playing field, firms must balance this with the need to preserve competitive advantages. Collaborating in non-competitive areas for societal good like fraud detection could be beneficial.

3. Privacy and security risks: Data sharing carries risks like potential privacy breaches. Institutions must enforce strict data protection protocols to maintain customer trust and comply with regulations.

4. Regulatory compliance: Adhering to data protection laws (like GDPR or CCPA) is non-negotiable. Institutions must navigate the evolving regulatory landscape carefully while sharing data.

5. Preventing power imbalances: There's a risk of larger institutions dominating data initiatives. Ensuring equitable data sharing arrangements is crucial to prevent power concentration and allow fair benefits for all participants.

Industry consortia could be potential solutions to common data challenges related to GenAI applications. Creating a shared infrastructure for AI development and deployment could help overcome barriers associated with data privacy, competition, and regulatory compliance. By establishing clear guidelines for data sharing and pooling, creating effective governance structures and mechanisms, and exploring the creation of industry utilities, FIs can ensure that this powerful technology supports broader societal goals and contributes to a more inclusive, sustainable, and prosperous future for all.

As we consider the complexities of data in GenAI, the focus shifts to the importance of industry collaboration in establishing shared guidelines. This collective effort is essential for navigating GenAI's data challenges, ensuring regulatory compliance, and fostering trust within the financial sector.

Industry collaboration could unite stakeholders for minimum standards and trust

While these advancements hold promise for increased efficiency and innovation, they also present a set of challenges that must be addressed. One of the first obstacles to overcome is the need for clearer terminology and understanding of different types of data. By developing a common language, stakeholders can engage in more informed discussions about data sharing and pooling, ultimately leading to the creation of industry-wide applications for GenAI.

While there has not been a formalised standard within Southeast Asia, organisations can take reference from the recent EU AI Act[3] and White House's Executive Order on AI[9]. Some of the perspectives discussed in these documents include:

1. Risk-based approach for AI: The EU AI Act adopts a risk-based approach which lays down different requirements and obligations for the development, placing on the market and use of AI systems in the EU. Breaking down into (i) unacceptable risk, (ii) high risk, (iii) limited risk, and (iv) low or minimal risk, AI applications would be regulated only as strictly necessary to address specific levels of risk.[4]

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2. Enhanced AI governance and accountability: Organisations should establish robust AI governance structures involving clear roles for AI oversight and ensuring alignment with legal, ethical, and organisational standards. The aim is to create a transparent, accountable environment for AI deployment, echoing regulatory trends in the EU and initiatives by the SEC to prioritise transparency and responsibility in AI applications.

3. Worker and consumer protection in the AI era: Organisations must integrate AI in ways that augment human jobs, enhance service quality, and safeguard consumer interests. This means prioritising AI applications that are fair, unbiased, and designed to improve rather than disrupt the customer and employee experience, a perspective shared by regulatory bodies in the EU.

4. Commitment to equity and ethical AI use: Organisations must ensure their AI strategies do not perpetuate biases or cause new forms of discrimination. This requires a commitment to ethical AI use, where AI systems are developed and deployed responsibly, advancing inclusivity and justice, and aligning with broader societal values.

Open banking and open finance initiatives in the UK are great examples where sharing of data, through those models and systems, has allowed new innovative solutions to improve customer experiences and financial inclusivity within the industry.[1] Regulators could play an active and pivotal role in encouraging collaboration among banks; these initiatives could pave the way to addressing industry problems like KYC, AML, and fraud prevention. Alongside, an ethical AI framework prioritising fairness and customer rights should be embedded, ensuring banks innovate responsibly.

Using fraud prevention as an example, strategic interbank collaboration using GenAI could potentially be a game changer in combating financial crimes. Some potential use cases could include using GenAI to create synthetic data that mirrors actual fraudulent patterns without compromising data privacy and to develop models simulating yet-to-emerge complex fraud scenarios. By coming together and collaborating, the industry could better identify and combat complex fraud scenarios, and in turn better prepare for yet-to-emerge fraud scenarios.

As we round up our discussion on the potential collaborative and security-enhancing capabilities of GenAI, our focus broadens to encompass the multifaceted challenges in the broader RAI landscape. GenAI ventures into intricate areas like bias, hallucination, and regulatory compliance and highlights the need for comprehensive and responsible strategies in the deployment of GenAI.

Addressing multifaceted RAI challenges beyond data protection and cybersecurity in GenAI

A thought-provoking topic was discussed in the roundtable: if an industry utility produces a bad output, who is accountable in an utility where multiple parties have contributed to build the system? One participant shared that it depends on the construct of the utility - is it government sponsored and owned, or industry owned? Liability and accountability have made it increasingly important to involve legal departments to work out the liability framework on how to share the risks as well as the potential consequential management.

GenAI introduces new risks and challenges such as hallucination, injection attacks, bias, outcomes management, and discrimination. The phenomenon of hallucination where AI generates misleading or false information presents a novel challenge. It necessitates the development of advanced protocols to ensure the accuracy and ethical integrity of AI-generated content. This is especially relevant in the financial services sector, where precision and reliability are paramount. In this industry, mistakes not only suffer potentially irreparable reputational damage, but also the risk of crossing regulatory red lines.

Moreover, GenAI's susceptibility to sophisticated prompt injection attacks raises the stakes for cybersecurity.[6] These attacks, where external actors manipulate AI outputs via carefully crafted instructions, call for enhanced security measures and robust user monitoring processes. Addressing these vulnerabilities is crucial to maintaining the integrity and trustworthiness of GenAI applications. Another critical area is the mitigation of bias. Given GenAI's broad impact, ensuring equitable outcomes and preventing discrimination becomes more complex and significant. This involves deploying diverse datasets, fairness algorithms, and continuous monitoring to identify and rectify biases.

The responsible development of GenAI applications is intricate and requires a comprehensive assessment and management strategy. Transparency and accountability are essential in engendering trust and confidence. Organisations choosing to disclose their GenAI methodologies, data sources, and decision-making processes may promote customer trust and ensure AI-driven decisions are comprehensible and accountable. Compliance audits and reporting should be routine, fostering a culture of continuous improvement and adherence to the highest standards in GenAI usage.

Finally, regulatory compliance and anti-discrimination practices in GenAI usage demand ongoing attention. With GenAI's evolving nature, regulations must adapt to cover new ethical grounds and anti discriminatory practices, ensuring GenAI's advancement is both innovative and socially responsible.

Conclusion

The latest trends in GenAI offer fresh opportunities for collaborative innovations in the financial services industry to collectively address the issues of today and tomorrow such as combating financial crimes. But there are challenges as there are opportunities.

Firstly, investing in education, training, and building opportunities in fields disrupted by GenAI is key to ensure harmonious coexistence between human intuition and AI-enabled decision-making. The financial services industry should strive to create a culture that attracts responsible and accountable usage of this technology through transparency, education on responsible usage, and proactively identifying and preventing abuse of GenAI products and services.

Secondly, the rapid advancements of AI call for regulatory alignment across jurisdictions. Regulators must establish common definitions for terminology related to AI, update existing frameworks, and work together with innovators to create guidelines that promote collaborations and responsible use of AI and data analytics. By promoting collaborations and responsible use of this groundbreaking technology, we can harness its power to create a more efficient, accurate, and resilient financial ecosystem for all.

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Acknowledgement

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